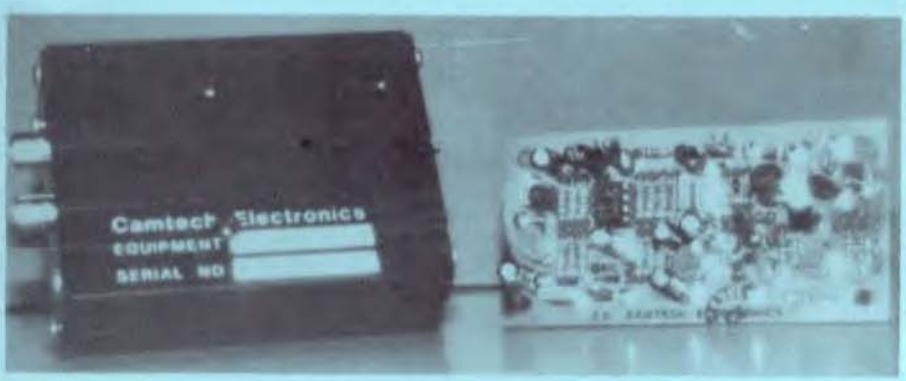
CQ-TV MAGAZINE No.149

BRITISH AMATEUR TELEVISION CLUB

FEBRUARY 1990

THE CQ-TV COMPETITION

WIN THIS 24CM CAMTECH ATV TRANSMITTER



SEE SUPPLEMENT PAGE SUP8

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MEMBERSHIP

FULL YEAR: Subscription to the club is £6 per year for 1990, thereafter £9.00 per year. All subscriptions fall due on the first of January. Membership application forms are available by sending a stamped addressed envelope to Dave Lawton, whose address may be found on page–2 of this issue.

OVERSEAS MEMBERS are asked to send cheques bearing the name of the banker's London agent. Postage stamps are not acceptable as payment. Overseas airmail is extra – please enquire from Dave Lawton or see the rates list with your last subscription reminder form.

The British Amateur Television Club is affiliated to the Radio Society of Great Britain and has representatives on the committee of the European Amateur Television Working Group.

The BATC is registered under the DATA PROTECTION ACT – all queries to Dave Lawton, and VAT registered – number 468 3863 01.

CQ–TV is produced by the British Amateur Television Club as its official journal and is sent free to all members. It is not for general sale.

The BATC is a non–profitmaking club run by a committee elected from the mebership for the benefit of the membership.

Please note that any opinions expressed in this magazine are those of the writers, and do not necessarily reflect the opinions or official policy of the committee or the editor.

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CLOSE FOR PRESS FOR THE NEXT ISSUE ..... **1st MARCH** 1990

PLEASE NOTE THAT THE CLOSING DATE IS EARLIER THAN USUAL TO ENABLE US TO HAVE THE MAGAZINE DELIVERED BEFORE THE CONVENTION

WHO TO WRITE TO

Members of the BATC committee are available to help and advise club members on any ATV related subject. Remember that all such work is done in spare time, so please try to keep such queries to a minimum.

CQ-TV MAGAZINE - Anything destined for publication in CQ-TV magazine or forthcoming BATC publications. Articles; review items; advertisements; other material. EDITOR: MIKE WOODING G6IQM, 5 Ware Orchard, Barby, Nr. Rugby CV23 8UF Tel: (0788) 890365 (Answerphone).

CLUB AFFAIRS - video tape library; technical queries, especially related to handbook projects: TREVOR BROWN G8CJS, 14 Stairfoot Close, Adel, Leeds LS16 8JR. Tel: (0532) 670115

MEMBERS SERVICES - PCB's; components; camera tubes; accessories etc. (other than publications); queries related to such supplies: PETER DELANEY G8KZG, 6 East View Close, Wargrave, Berkshire RG10 8BJ. Tel: (0734) 403121

MEMBERSHIP - Anything to do with membership including new applications; queries and information about new and existing membership, non-receipt of CQ-TV; subscriptions; membership records; data protection: DAVE LAWTON G0ANO, 'Grenehurst', Pinewood Road, High Wycombe, Bucks HP12 4DD: Tel: (0494) 28899

GENERAL CLUB CORESPONDENCE & LIBRARY - Any general club business. Queries relating to the borrowing or donation of written material. PAUL MARSHALL G8MJW, Fern House, Church Road, Harby, Nottinghamshire NG23 7ED: Tel: (0522) 703348

PUBLICATIONS - Anything related to the supply of BATC publications. IAN PAWSON G8IQU, 14 Lilac Avenue, Leicester LE5 1FN Tel: (0533) 769425

EXHIBITIONS AND RALLIES - also arrangements and information about lectures and talks to clubs; demonstrations etc: PAUL MARSHALL (address as above).

CLUB LIAISON - and anything of a 'political' nature; co-ordination of ATV repeater licences: GRAHAM SHIRVILLE G3VZV, The Hill Farm, Potsgrove, Milton Keynes, Bucks MK17 9HF. Tel: (0525) 25343

PUBLIC RELATIONS AND PUBLICITY - IAN SHEPHERD, Grosvenor House, Watsons Lane, Harby, Melton Mowbray, LE14 4DD. Tel: (0949) 61267

TVI & RADIO INTERFERENCE - problems of this nature to: LES ROBOTHAM G8KLH, 38 Ennerdale Avenue, Stanmore, Middx. HA7 2LD. Tel:(01 907) 4219 (not committee).

CONTESTS - BOB PLATTS G8OZP, 8 Station Road, Rolleston-on-Dove, Burton-on-Trent. Tel: 0283 813181.

CQ-TV AWARDS - BOB WEBB G8VBA, 78 Station Road, Rolleston-on-Dove, Burton-on-Trent, Staffs, DE13 9AB. Tel: 0283 814582

Where possible it is better to telephone your query rather than write. Please do not call at unsocial hours. As a guide, try to call between 6.30 and 9.30pm evenings and not before 11am at weekends.

POSTBAG

EIREAN ATV

Dear Ed,

just a few words from one of the EI BATC members. My main reason for writing is to ask if someone over there will turn their beams over here. We know we haven't been entirely forgotten because some of you made it to the recent North Dublin rally and seemed to have a good time (did they enjoy the trip around RTE?).

Even so, nice as it is to see the faces in person a little bit of video wouldn't go amiss. Take last month's contest -months of playing around building the W&D transceiver, sending video to a local station EI2GK, and receiving video from EI6EV was about to pay off. Here was our big chance! The saturday night arrived, the beer arrived, EI2GK, EI7FI, EI8CZ and myself EI3FW arrived.

The 2M rig failed so EI2GK got his from home and, despite this, in seven hours of operation all we got was a one-way with G4DVN/P and a two-way with GW7ATG/P, and two other 2M only contacts. We think the contact with GW7ATG/P was a first two-way, at least under the new EI licences, but we had hoped to make a few more.

Are there any North Wales ATV'ers? Do any of the G's have rotators that turn past 180°? Please next time think of us in EI with our restricted licences and only ourselves to talk to!

On a serious note; can anyone confirm one way or the other that the contact with GW7ATG/P was a first (2240 - 09/09/89) and does anyone want to try for a new country? If anyone wants to arrange a sked phone me on Dublin 877366 - direct UK dial prefix 0001. Best 73, Craig Robinson EI3FW

Re your enquiry concerning the record, we have checked the entries etc. and you certainly appear to have a first 2-way since reinstatement of ATV in Eire, congratulations Craig from the BATC, our illustrious contest and awards managers may have something up their sleeves. Concerning the letter ... come on UK, remember our friends in Eire and give it a go! ... Ed

BRISTOL OR BATH ?

Dear Mike,

we are very grateful for the kind comments on page-5 of CQ-TV 148 about GB3ZZ. Viv will shortly send you the latest 'P5' newsletter, which confirms the latest enhancements to the repeater.

But Mike, **GB3ZZ** is in **BRISTOL**, Bath is where the other people are, or at least rumoured to be ! 73 .. Shaun G8PVG

My sincere apologies to all concerned, 'ZZ is indeed in Bristol and not Bath ... Ed.

24CM IN MANCHESTER?

Dear Mike,

would you please let it be known through post bag in that great publication 'CQ-TV' that I have been **(WOULD LIKE TO BE!)** active on 24CM FM fast scan TV for several years, but contacts up here are few and far between.

I have a home-built 24CM FM TV transceiver with intercarrier sound and an output of 20W to two stacked 15 over 15's, which can be raised to 45ft provided that the wind is not too strong.

A quick phone call any evening up to 21.30 hours will usually get me on the band. Unfortunately, up here 144,.750 very often seems to get used for **NON TV** contacts. yours ... John M Horrocks G8GTP

PC COMPAT SSTV

Dear Mike,

for all our SSTVers out there I now have available as Public Domain Shareware the software for receive-only SSTV on IBM PC compatibles. The software supports all modes and formats including colour. All that is required is a simple interface, the PCB for which is available from Germany.

If anyone wants a copy of the software just send me a 5.25" disc for a free copy. Alternatively, just ring me on the number below for further information. Dennis Anderson, 97 Liegh Road, Atherton, Gtr. Manchester, M29 0LX. Tel: 0942 891140

NEWS ROUNDUP

POWER GaAsFET's

A new family of high-power GaAsFET's for microwave applications has been developed with satellite communications systems, car telephone and similar applications in mind. The NE345L family delivers up to 20W of output power at 2.3GHz, making it the highest power GaAs device family currently available

Two devices, the NE345L-10L and the NE345L-20B, are rated for power output of 40dBm (10W) and 43dBm (20W) respectively. Operating in the range 1.5 to 2.5GHz (L-band to S-band) the family employs maximum reliability. Housed in small hermetically sealed packages, the NE345L family is particularly suitable for use in compact equipment applications.

NEC Electronics.

USA BOY SCOUT JAMBOREE

The ARRL reports that the National Bopy Scout Jamboree in Virginia proved yet again that amateur radio and scouting go together. Two sites were connected by a Packet radio and an ATV link. This enabled scouts to send messages to each other via packet and to see each other via the fast-scan TV link. There was also a satellite station for accessing AO-13.

Any news of TV stations operating special; events during the UK Jamboree-on-the air?

SPECIAL OFFER !!

Members Services sale price printed circuit boards (at half-price or less) are nearly all sold. See the Market Place section in this issue), these boards will not be available again once the sale stock has gone!!

IN RETROSPECT

An error in the paperwork sent with the "Teletext pattern generator" (from the Amateur Television Compendium), has been spotted by Clive, G8EQZ. Below the 74LS04 is shown a 1k resistor, two links, and another 1k resistor. This should be link, two 1k resistors, and the other link. Corrected paperwork has been sent out since August 1989.

MEMBERS SERVICES

BATC Members Services does not hold stocks of BATC publications, and vice versa. Please note that only the items listed in the CURRENT "Services for Members" leaflet are available. A description of the PCB's and components available can be found in the What's What supplement enclosed with this issue.

To avoid delay and inconvenience, please

be careful to include the correct amount of VAT with your order, ie 15% of total goods **AND** postage, unless an overseas member. Payment should be by cheque or crossed postal order in favour of BATC - do not send cash or stamps please.

Batches of callsign badges are sent to the engravers once per magazine cycle. Please ensure that your order reaches BATC Members Services by the CQ-TV close for press date, given in each issue. Badges are distributed to members as soon as they have been engraved.

VIDICONS

We have now arranged for an additional source of vidicons to be available through Members' Services. Tubes available include electrostatic focus or deflection, and low light types not previously available to club members. Prices vary depending on the size, type and grade of tube. Please contact Members Services for information on equivalents, price and delivery times.

The stripe filter tubes used in domestic type colour cameras are not available through BATC, and normally must be ordered direct from equipment supplier.

TV HEALTH HAZARD !

A question being asked in a leaflet distributed by one of the local community TV groups in Eire, in opposition to the introduction of Microwave TV asks: 'DO YOU want a TV system that could create a HEALTH HAZARD'.

It appears that there is a lot of rural opposition to the introduction of 2.6GHz microwave transmitted TV in Eire. Apparently, there are enough problems with VHF and UHF coverage in hilly areas, and there are numerous community and TV dealer run deflector systems anyway. Some of these 'unauthorised' deflector systems, which subscribers contribute £15 to £50 per year each to run, are located atop 1800ft mountains in remote areas.

The microwave MMDS is still delayed and does not look as attractive as it did at first. It may cost £150 per annum (if you can receive it) and scrambled one channel at a time, which will not be very popular with multi TV set/video owners.

GB3ZZ NEWS

The usual quarterly update of activity in **BRISTOL** tells me that the new control software package has undergone initial trials and is now resident. The new software controls the novel features of selectable Yagi aerials for stations working through the repeater and the 'infotext' news pages. The control software also takes care of the general repeater housekeeping functions.

Plans for 1990 include improvements to the repeater transmitter and also the inclusion of a digital framestore. On the experimental side the group is to build some 10GHz gear with a view to exploring the possibilities and problems of repeater interlinking.

More power to the Group's elbows! Good luck with your plans, I agree with the comment in P5 'probably the most advanced ATV repeater in the U.K. ..... Ed

TAX-DEDUCTABLE SUBS !

It may come as a surprise, but it is possible to claim your subscription to the BATC as an expense against income tax if you work in television or electronics!

Write it on your tax return under "subscriptions to professional bodies"....Hon. Treasurer.

DIGITALLY ASSISTED TV

A way of broadcasting high-quality cinema-type pictures over existing TV frequencies has been unveiled by the BBC. Their technique is said to give high-definition TV pictures four times as sharp as current ones, with enhanced colour and stereo sound. Called 'Digitally Assisted Television' (DATV) it takes the high-definition picture and selects parts of its electronic information.

Conventional TV pictures in the UK are transmitted at 1/50th second intervals. As the DATV signal contains four times as much information it needs to be reduced by three quarters to fit the existing transmission system.

The DATV technique isolates static parts of the picture and stores them in the set, sending fresh information on them only one in four times. Similarly, it determines the direction and speed of movement in moving parts of the image, so that they too can be stored and sent four times less frequently.

BATC LIBRARY

The BATC Library is trying to locate for an overseas member the following manuals/ circuit diagrams for the following Philips items:

Monitor model EL8100/03

Camera model EL8010/02

Power Supply model EL8015/02

Also any info on Wrasse SC1 SSTV Converter. Finally, an appeal to the member who borrowed the Library Pye Lynx manual and general information. **PLEASE RETURN IT!** The name and address recorded against the loan does not seem to exist any more. All information to: BATC Library, Fern House, Church Road, Harby, Nr.Newark, Notts., NG23 7ED. Tel: 0522 703348.

CONVENTION TRADE ENQUIRIES

All traders wishing to book tables at the 1990 BATC Convention at Harlaxton Manor May 6th next: The cost per 6ft table is £20 inc VAT.

Spaces in the car-boot sale/ lea-market area will be £5 inc VAT per car/space.

Please book early to ensure your table etc. All enquiries to: PAUL MARSHALL, FERN HOUSE, CHURCH ROAD, HARBY, Nr.NEWARK, NOTTS., NG23 7ED. Tel: 0522 703348

EDITORIAL

Well it's that time again, put the magazine together and hope that it works. Of course, this one is an anniversary issue, I have been Editor for a year already. *Who was that at the back who said it seems like a lifetime ?*

A trifle more seriously though, during this past year I have made quite a few changes to the magazine and how it is produced. Some of these changes will not be evident to you, but the others will. Firstly, much to our Hon. Treasurer's chagrin, I went and purchased the new computer system – an Atari Mega ST4 + 40M hard disc etc. Then came the new word processor package – Protext (as good and as powerful as Word Perfect any day!). More recently on the software side, came the Desk Top Publishing package – Timeworks. Altogether these bits and pieces have made it easier for me to assemble the magazine, and especially with the DTP software, more able to produce what I like to think is a more professional looking publication. I know that I have said it before, but without John Wood's 'training', and more importantly now, his opinions, help and advice, CQ-TV would not have progressed to the point where I took over, let alone to where it is now.

One final note on the look of the magazine in relation to the DTP system in use. Unfortunately, most of the articles etc. come in printed form. This means that they have to be typed into the word processor before I can get them into the publisher. I do have occasional use of a document scanner via the good offices of Andy Emmerson, but this is limited both by the quality of the incoming material and by the availability of Andy's time etc. Also affecting the system is when the articles actually arrive; some of the regular items, by the necessity of being up-to-date, are left until the last minute before being despatched to me.

The outcome of this is that some articles end up appearing as sent, that is, not produced via the publisher, or even the word processor. Hence, unfortunately, we end up with a mix of text font styles through the magazine in a few of the articles. Secondly, partly because of the latter, I am unable to collate the magazine until the last minute (literally, with it spread all over the lounge floor!). This means that the pages have to be hand numbered – not a task I would wish on anyone! Mind you, if I had the whole 96 pages in the desk top publisher, collated in correct order etc and ready to output, it would take around 24 hours to print it out as camera-ready copy for the printers. It takes about 16 minutes per page in the 360 dots-per-inch mode that Timeworks puts the 24-pin NEC2200 printer in! (I haven't considered the electricity bill yet – Brian?). Anyway, I enjoy doing it and I hope that you enjoy reading it.

ENCLOSURES WITH THIS ISSUE

Quite a bumper package this time. Enclosed with your magazine you should have a copy of the Index Supplement, which brings your CQ-TV index up-to-date.

Also enclosed is a copy of the new supplement, What's What. This is an explanatory list of all the printed circuit boards and components, etc, obtainable for Members' Services. This is a totally new publication and we hope to up-date this yearly, as with the index.

Finally, there is another supplement enclosed which is described later in this editorial. Suffice it to say that we really would like you to read it and come to the Biennial General Meeting and vote on it.

THE BATC CONVENTION

Yes it will soon be time again for our annual do. A few comments were aired in the magazine after last year's event and I do not apologise for raising one of them again now.

If you have any home-brew gear that you wish to display, or have a special interest group that wishes to exhibit please contact Paul Marshall on 0522 703348 for details. Don't leave it all to us, we do not have crystal balls, neither do we have all the time in the world to organise everything. *If you don't let us know or don't help, don't criticise!*

We will need volunteers on the day as there are only 22 of us on the committee, and we like to see a little of the Convention as well, surprisingly enough. My appeal through these pages last year brought us the vast total of ZERO volunteers - my heartfelt thanks to you all! Let's try a little harder this year shall we, please let Paul Marshall know on 0522 703348 how you can help - we thank you.

BATC CONSTITUTION

Well, by now you have noticed that the address label carrier for this issue is something different, it is in fact the draft of the new constitution!! 3600 words of the most exciting article you have read to date.

Seriously though, before you complain of the utter waste of paper etc, it is important that the club is properly organised, and as part of that organisation the club constitution plays a central role.

The BATC is a members club, run for the members, on a non profit making basis, by the elected committee. The constitution is the "rule book" of the club and governs the actions of the committee and members.

The proposed constitution printed here has been extended to cover the wide range of activities that the club now provides, and to form the foundation for future benefits and services. I ask you to read it carefully and come to the General Meeting at the next convention to vote for it.

I must stress the importance of the General Meeting, it is the time when some input from the ordinary membership is essential. Also, it is the occasion when you vote in the new members of the committee and re-elect those up for re-election, thus your attendance is vital.

Information regarding the current committee members standing for re-election and the vacant posts requiring new committee members will be published in CQ-TV 150.

THE END

That's it then for this issue, may I take this opportunity to wish you all a belated Happy New Year. I look forward to seeing you all at the Convention.

Please keep sending in your information and articles for the magazine. It is certainly easier for me if you can send your material in on 3.5" discs. I can accept pure ASCII text dumps, or straight Wordstar, Word Perfect, First Word, Wordwiter or, of course, Protext text files on 3.5" disc, and we must not forget BBC Wordwise or View Word text files on 5.25" discs. If you really feel ambitious I can accept DTP files from Timeworks.

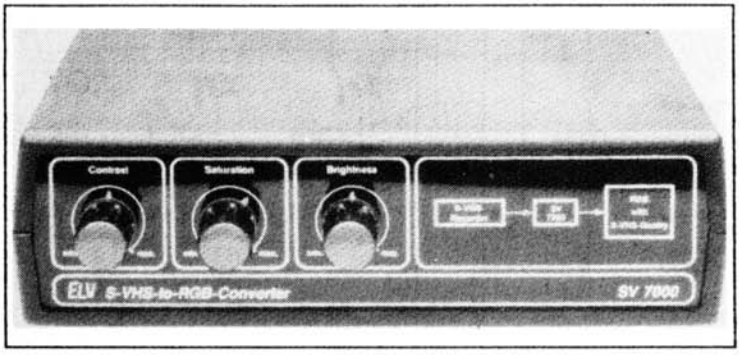
All artwork destined for the magazine should be preferably drawn on A4 sized paper maximum. Please copntact me for border sizes etc. and further details.

Don't forget, your free entrance program for the Convention will be on the reverse of the label carrier for CQ-TV 150, which you will receive a couple of weeks before the event.

OK folks, that's all ..... 73 and 88 ... Mike

SUPER-VHS TO RGB CONVERTER

This article first appeared in the May 1989 issue of Elektor Electronics and is reproduced here by kind permission of Elector Electronics (Publishing) and ELV GmbH. The unit was designed by ELV GmbH.



Almost any radio and TV salesman will confidently tell you that the excellent picture quality from a S-(super)VHS video cassette recorder can only come into its own on a new, compatible, TV set with separate luminance and chrominance inputs. Unfortunately, these TV sets are still relatively rare and also quite expensive.

The SV7000 converter presented here is a cost-effective alternative to a new TV set. This is because it provides a function not available on most S-VHS VCR's: conversion of the luminance and chrominance signals into RGB signals that can be applied to a SCART-compatible TV set.

There can be no argument that super-VHS (S-VHS) video tape recorders provide higher resolution and better picture quality than any of the currently available high-quality (HQ-) models. Although the price of S-VHS VCR's is coming down, and many video enthusiasts are beginning to see the real benefits of the new system, the cost of a matching TV set is nearly always a prohibitive factor.

For some reason S-VHS compatible TV sets are in rather short supply, so that many owners of a new recorder are forced, for the moment, to make do with the reduced picture quality offered by their existing TV set, which may be upgraded in some cases with an S-VHS interface. Alternatively, an audio/video (AV) connection, or, worst of all a UHF modulator , may be used to get the new S-VHS VCR to work with a current TV set. Clearly, these solutions give poor results considering the outlay for the new VCR.

The SV7000 S-VHS-to-RGB converter described here accepts the luminance and chrominance signals from the S-VHS VCR, and converts these into RGB signals for driving the corresponding inputs on the SCART input of the TV set. This solution is very cost-effective, compared with buying an S-VHS compatible TV set, and guarantees the best possible picture quality from the combination of an S-VHS recorder and a SCART-compatible TV set.

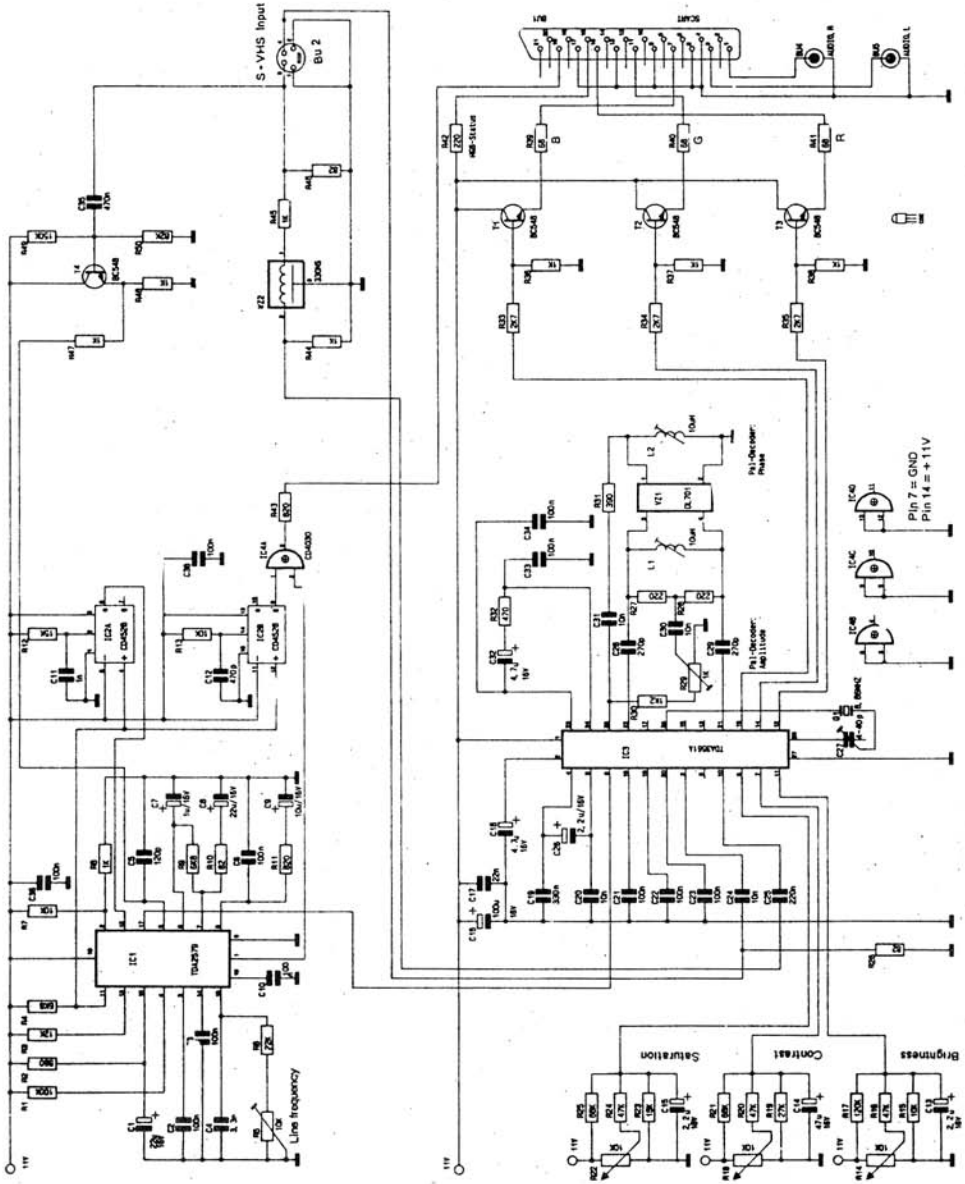


Fig.1 SV7000 Circuit Diagram.

SIMPLE TO CONNECT

Most currently available S-VHS VCR's have a so called mini-DIN 4-way socket that carries the two components of the picture signal, luminance (*Y*, brightness information) and chrominance (*C*, or colour information). These two signals are fed to the corresponding inputs on an S-VHS TV set via a flexible 2-way, individually screened, cable terminated in 4-way mini-DIN plugs.

The SV7000 is inserted between the Y-C output of the S-VHS recorder and the SCART input of the TV set. The audio signals from the recorder are also applied to the SV7000, in this case via a pair of phono plugs and mating sockets. The SCART output of the SV7000 carries all the necessary signals for driving the corresponding input on the TV set: colour signals R (red), G (green) and B (blue), composite synchronisation and the audio signal (mono VCR) or signals (left/right: stereo VCR). Hence, the SV7000 is connected to the TV set via a standard SCART cable.

It should be noted that the presence of a SCART socket on an S-VHS recorder need not mean that RGB signals are actually available: on some models the pins reserved for the R,G and B signals (15,11 and 17) are not connected. In the case of TV sets with a SCART socket, the RGB inputs are, fortunately, nearly always connected. None the less, this should be checked by consulting the user manual or the supplier.

The external RGB inputs of the TV set are automatically enabled when the SV70000 is connected to the SCART input.

The SV7000 is powered from a 12V DC mains adaptor capable of supplying 300mA. Provision has been made to protect the circuits of the SV7000 from being damaged when the external supply voltage is accidentally reversed.

FRONT PANEL CONTROLS

So far, the video industry has not been able to define a common standard for signal amplitudes. To ensure that the SV7000 gives optimum quality with any S-VHS recorder, it is, therefore, provided with three front panel controls to compensate level differences. The **Contrast** control at the left of the front panel allows the SV7000 to handle a wide range of luminance signal levels. The centre control, **Saturation**, does the same for the chrominance signal. The function of the third control, **Brightness**, speaks for itself. Together, the three controls make the SV7000 a remarkably flexible converter because it can be used with virtually any input signal level, while giving the user the opportunity of setting the picture controls for personal taste.

CIRCUIT DESCRIPTION

The circuit diagram of the SV7000 is shown in Fig.1. The luminance and chrominance signals supplied by the S-VHS VCR are fed to the SV7000 via pins-4 and 3 respectively of mini-DIN socket BU_2. Both signals are terminated in 82-ohm resistors, R_{46} and R_{26}, to ensure correct matching to the cable and the drivers in the VCR. The chrominance and luminance signals are coupled capacitively to the corresponding inputs of single-chip PAL decoder IC_3 by C_{24} and C_{25} respectively. The PAL encoder is a TDA3561A from Philips Components

and a block schematic diagram of this interesting chip is shown in Fig.2. The application circuit used here is different from that in many modern TV sets, in order to obtain a greater luminance bandwidth. In a laboratory test with a high-resolution colour monitor, the converter was found capable of correctly processing luminance signals of up tp 6MHz.

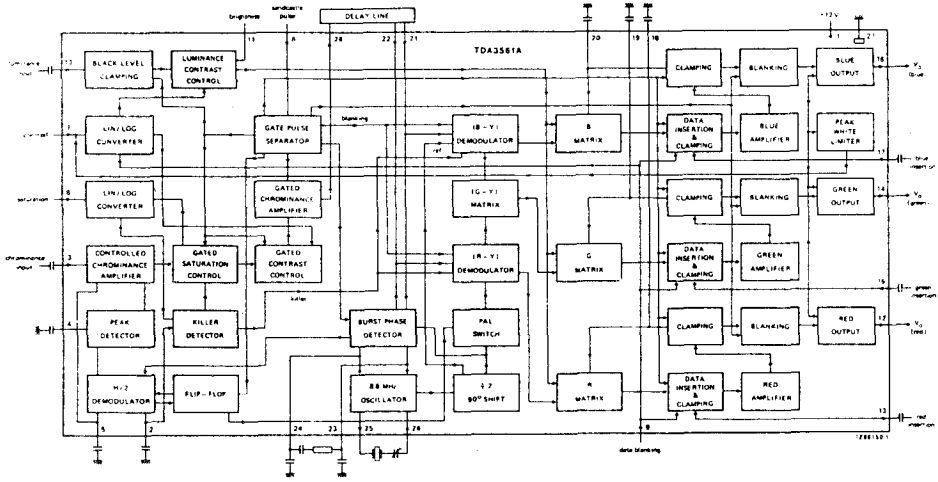


Fig.2 Block Schematic Diagram of the TDA3561A PAL Decoder IC.

The clock oscillator on board the TDA3561A is set to work at 8.86MHz (twice chrominance subcarrier frequency) under the control of a quartz crystal, Q_1, which is trimmed by C_{27}. All operations internal to the chip are timed by signals derived from this clock.

PAL delay line VZ_1 (a type DL701) introduces a delay of one picture line (64uS) and enables colour difference signals B-Y and R-Y to be extracted from the chrominance signal. Phase correction is provided by inductor L_2 and preset potentiometer R_{29}. Potentiometers R_{22}, R_{18} and R_{14} allow colour saturation, contrast and brightness to be set to individual taste.

The decoded RGB signals available at pins-12, 14 and 16 of the TDA3561A are fed to drivers T_1, T_2 and T_3 via series resistors R_{35}, R_{34} and R_{33} respectively. The 68-ohm emitter resistors ensure correct matching to the respective RGB inputs on the colour TV set.

Pin-16 of the SCART connector is made high via R_{42} to force the TV set to connect the inputs of its RGB amplifiers to the corresponding inputs on the SCART socket.

The synchronisation pulses are extracted from the S-VHS luminance signal with the aid of an integrated circuit sync separator type TDA2579 (IC_1), an IC typically used conjunction with the TDA3561. Driven by buffer T_4, the TDA2579 generates separate horizontal and

vertical sync pulses, and a so-called sandcastle waveform (Fig.3) which the TDA3561A needs for its internal timing, level definition and keying out of the colour burst. The sandcastle waveform available at pin-17 of the TDA2579 is fed direct to pin-8 of the TDA3561A.

Fig.3 Sandcastle Waveform.

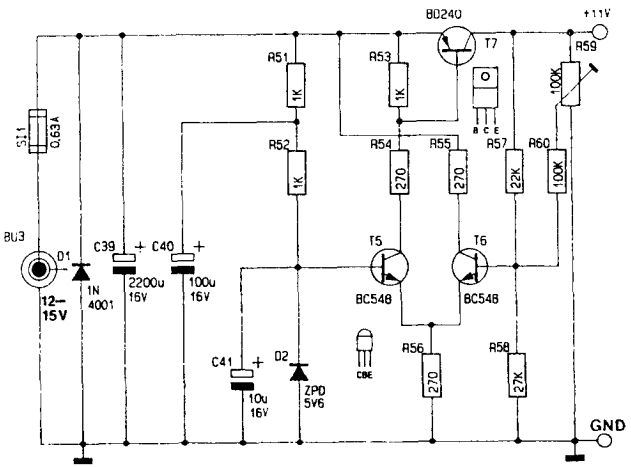


Fig.4 The On-Board Power Supply.
Supply reqd: 12 to 15V @ 300mA.

Exclusive OR (XOR) gate IC_{4a} combines the vertical sync pulses from pin-1 od the TDA2579 with the horizontal sync pulses from one-shots IC_{2a} and IC_{2b}. The resulting composite sync signal is fed to pin-19 of the SCART connector via series resistor R_{43}.

The 11 volt regulated power supply for the converter is a low-drop design around discrete components - see Fig.4. Diode D_1 protects the converter circuit and the supply itself by causing fuse SI_1 to blow when the unregulated input voltage from the 12-15 volts mains adaptor is accidentally reversed.

CONSTRUCTION

These construction notes refer to items available as part of a complete kit for this project, details of which are given at the end of this article. Those wishing to construct their own PCB etc may find these instructions irrelevant. It must also be noted that photocopies and/or films of the PCB are not available.

The printed circuit board layout (shown actual size) and component overlay are shown in Fig's.5 and 6 respectively. Wiring is kept to a minimum by using PCB-mounted sockets and potentiometers. The construction is best started by fitting the 15 wire links and then the low-profile components, vertically mounted parts and the PCB-mounted connectors. before fitting the potentiometers, cut their spindles to a length of 10mm.

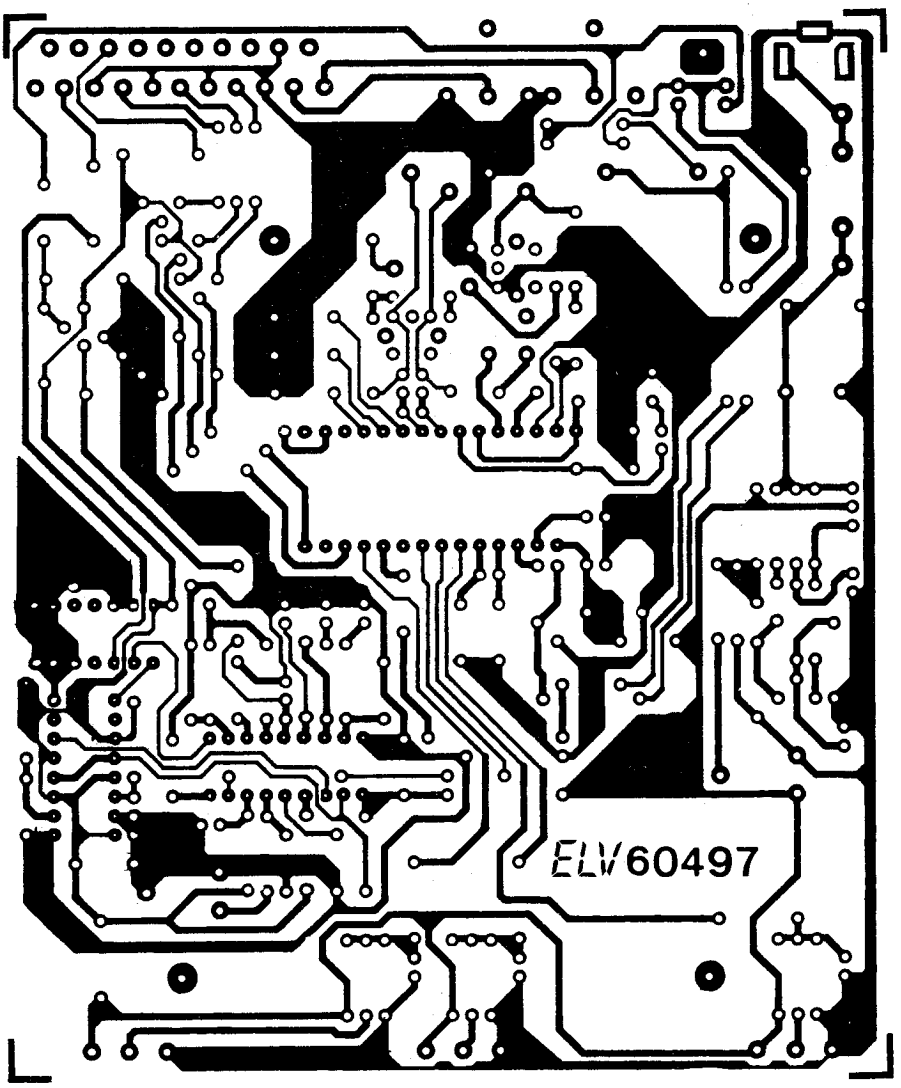


Fig.5 Printed Circuit Board Layout. (Actual size).

Carefully check the completed PCB before securing it to the rear panel of the enclosure with two M3x10 screws. These are inserted through the holes in the rear panel and those in the flanges of the SCART socket, and then locked with nuts on the inside of the enclosure.

Remove the locking nut from the PCB-mounted 3.5mm jack socket for the supply voltage before inserting this in the relevant hole provided in the rear panel. Then turn the nut on the threaded shaft and secure the socket firmly.

The front panel is fixed to the PCB in a similar fashion. Remove the nuts from the potentiometers, insert the spindles in the holes provided, and then use the nuts to secure the front panel. Lastly, fit the three knobs on the spindles.

After the unit has been aligned as detailed below, the converter is housed in the lightweight ABS enclosure supplied with the kit. Place the PCB with front and rear panel attached into the grooves provided in the bottom section of the enclosure. Then mount the top section with the aid of two long screws inserted from the underside.

SETTING UP

The S-VHS-to-RGB converter is relatively simple to align with the aid of an S-VHS recorder, a recording of an electronic test card, and a TV set or monitor with a SCART input.

Start with a separate test of the power supply and adjust preset R_{59} for an output voltage of 11 volts.

Make a recording of a half an hour or so of an electronic test chart. The FuBK (Fig.7) and PM5534 (Fig.8) test charts are given here for reference.

Connect the SV7000 to the recorder, the TV set and the mains adaptor. Set the trimmer, the two presets and the three picture controls to the centres of their travel. Start the tape and, if necessary, synchronise the picture by adjusting R_5. The colour may fail at this stage, but can be restored by carefully adjusting trimmer C_{27}.

Resistors:
R39;R40;R41=68R
R10;R26;R46=82R
R27;R28;R42=220R
R54;R55;R56=270R
R31=390R
R32=470R
R2=560R
R11;R43=820R
R8;R36;R37;R38R44;R45;R47;R48;R51;R52; R53=1K0
R30=1K2
R33;R34;R35=2K7
R4;R9=6K8
R7;R13;R15=10K
R3=12K
R12;R23=15K
R6;R57=22K
R19;R58=27K
R16;R20;R24=47K
R21;R25=68K
R50=82K
R1;R60=100K
R17=120K
R49=150K
R29=1K0 preset H
R5=10K preset H
R59=100K preset H
R14;R18;R22=10K potentiometer

Capacitors:
C5=120p
C28;C29=270p
C12=470p
C11=1n0
C4=3n3
C20;C24;C30;C31=10n
C17=22n
C2;C3;C6;C10;C21;C22;C23;C33;C34;C36; C38=100n
C25=220n
C19=330n
C35=470n
C7=1µ0; 16 V
C13;C15;C26=2µ2; 16 V
C18;C32=4µ7; 16 V
C9;C41=10µ; 16 V
C1;C8=22µ; 16 V
C14=47µ; 16 V
C16;C40=100µ; 16 V
C39=2200µ; 16 V
C27=40p trimmer
C37= not fitted

Semiconductors:
D1=1N4001
D2=5V6; 400 mW zener diode
T1...T6 incl.=BC548
T7=BD240
IC1=TDA2579
IC2=4528
IC3=TDA3561A
IC4=4030

Miscellaneous:
Q1= quartz crystal 8.86 MHz.
VZ1= DL701 PAL delay line.
VZ2= 330ns delay line.
L1;L2= 10µH adjustable inductor.
BU1= female SCART connector.
BU2= mini-DIN S-VHS socket.
BU3= 3.5 mm jack socket.
BU4;BU5= phono socket.
SI1= fuse; 0.63 A slow; with PCB-mount holder.

Parts List.

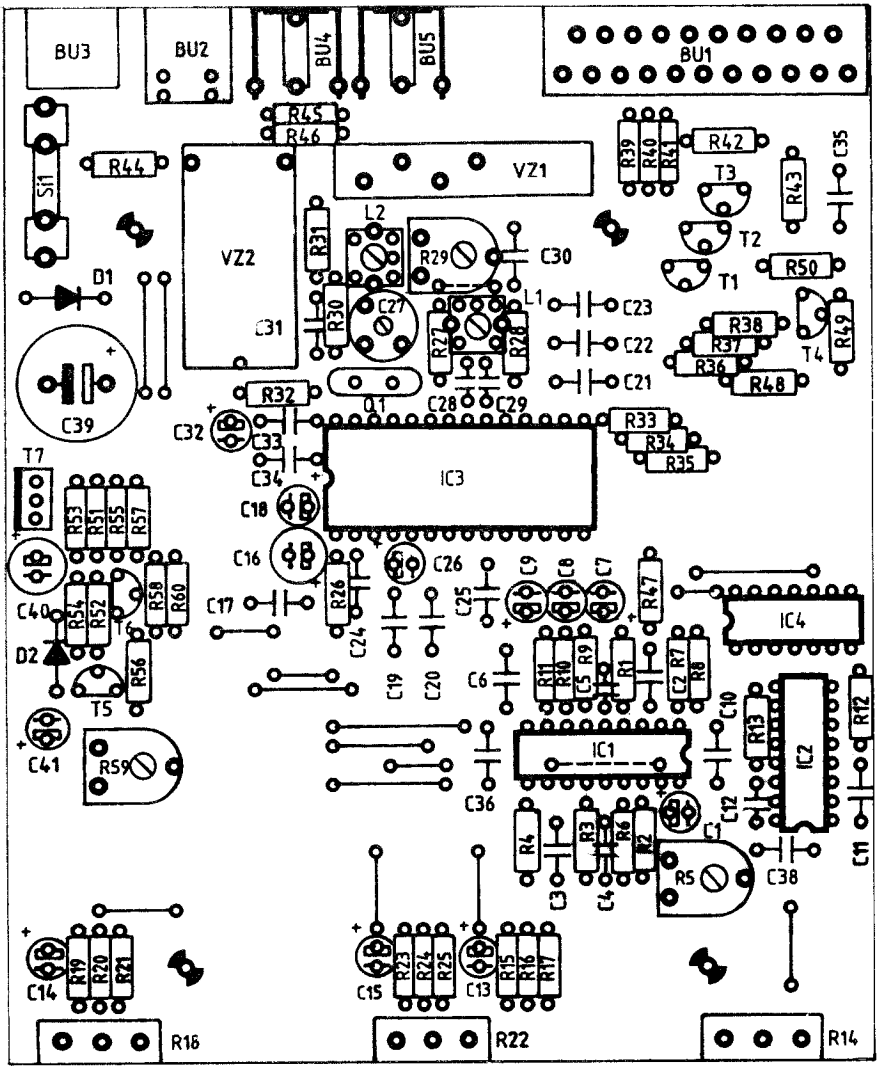


Fig.6 Component Overlay.
(Actual size).

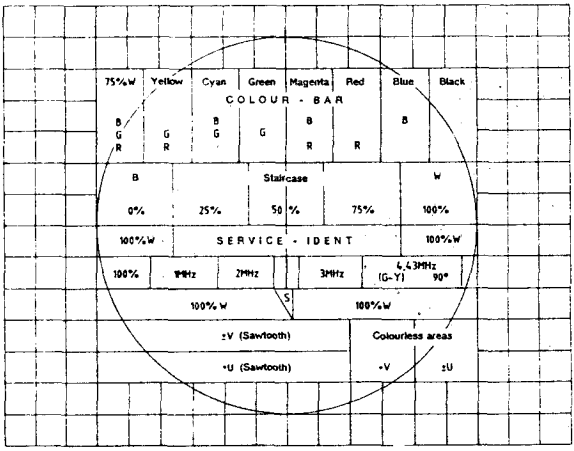


Fig.7 FuBK Electronic Test Chart.

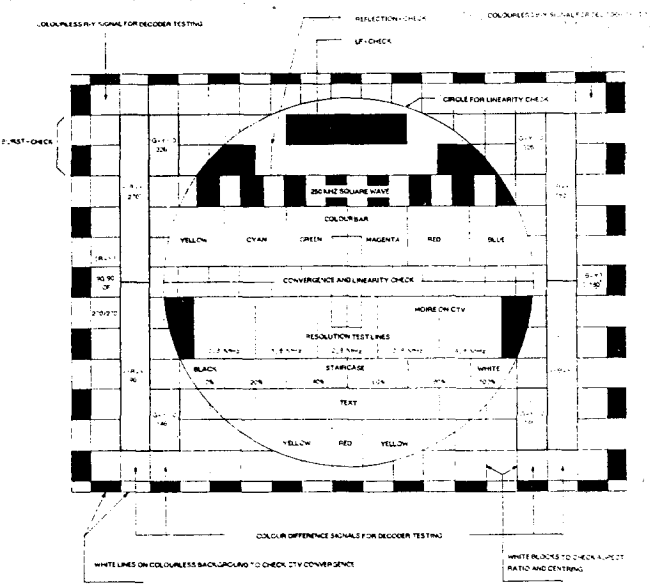


Fig.8 PM5534 Electronic Test Chart.

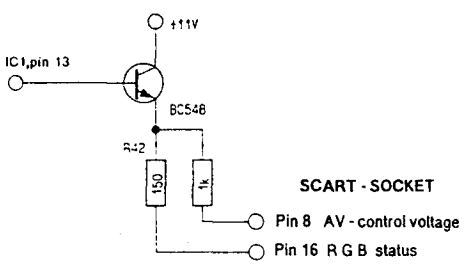


Fig.9 Modified RGB Status-Driver.

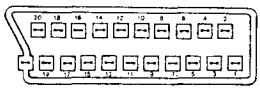
The PAL decoder is aligned by carefully looking at the picture areas reserved for the sawtooth +/-V and +/-C (FuBK/PM5534: +/-U). Any coloured horizontal lines or other patterning effects noticed in these areas point to amplitude errors that may be corrected by adjusting R_{28} and L_{21}. Similarly, when horizontal bars are noted in the G-Y area, the causative phase errors may be corrected by adjusting L_{22}. The picture quality is the optimised by small, alternate, corrective alignments of the amplitude (R_{28}-L_{21}) and phase (L_{22}). The inductors must be aligned with an insulated trimming tool. Never use a metal screwdriver because this changes the inductance of the coil whilst the core is being adjusted.

FINAL NOTES

The RGB status is forced in a fairly crude way by resistor R_{42}, and causes the TV set to switch to RGB input irrespective of whether a programme is played back on the VCR or not. This may be remedied by installing the simple extension circuit shown in Fig.9, which does not pull pin-16 of the SCART connector high until sync pulses are detected.

The PLL circuit internal to the sync separator may not be fast enough to follow tape speed variations that occur in certain types of camcorder. Fortunately, this problem is solved simply by the fitting of a 180k resistor in parallel with C_{16}.

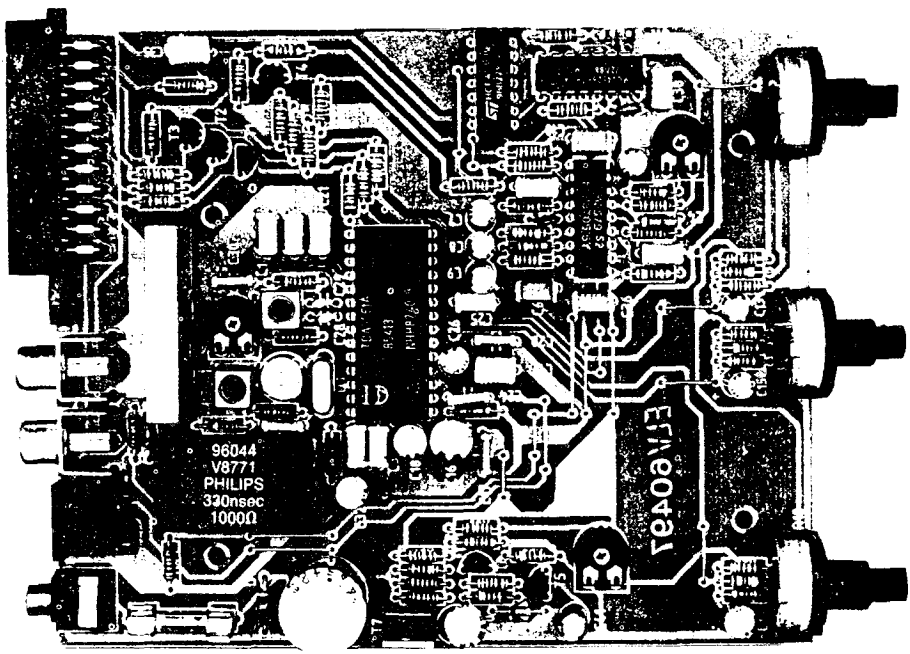
The vertical sync signal does not contain the so-called *back-porch equalisation pulses*. On a few types of TV set or monitor, the absence of these pulses may cause slight instability or deforming effects near the top of the picture.



SCART connectors
Virtually all modern video equipment is fitted with a SCART connector. The pin assigment is uniform among manufacturers, but in some cases not all pins are used.

pin	signal
1	audio out R or Ch. 2
2	audio in R or Ch. 2
3	audio out L or Ch. 1 (or mono)
4	ground (audio)
5	ground (blue)
6	audio in L or Ch. 1 (or mono)
7	blue
8	control voltage
9	ground (green)
10	not used
11	green
12	not used
13	ground (red)
14	not used
15	red
16	blanking (active high)
17	ground (video)
18	ground (blanking)
19	CVBS out
20	CVBS in
21	conector shield and or ground

Fig.10 SCART socket pinning.



Top view of the completed PCB.
Note the use of PCB mounted potentiometers and sockets.

As stated earlier a complete kit of parts for this project is available at a cost of £76.25 from:

ELV France, B.P. 40, F-57480 Sierck-les-Bains, FRANCE.
Tel: (33) 82827213

CAMERA REGISTRY

Brian Summers G8GKQ

After my enquiries regarding EMI 204's, three complete camera channels and one incomplete one have come to light. These are in good homes and will survive for the future.

The next camera to track down is the Marconi MK 4. This was a 4.5" Image Othicon camera almost entirely thermionic (valves !) and very nice too with many advanced features. The Marconi Company produced 916 MK 4's, almost certainly a U.K. record and possibly a world record for an Image Orthicon camera! Where have they all gone? I don't know of any in amateur hands, and have only ever seen two myself, and that was some time ago.

The table below lists the post war Marconi Broadcast Camera family.

The Marconi MK1 was a copy of an RCA camera and is very rare now and the MK2 was an improved version of the MK1. The MK3 was much used by the BBC and, later, the ITV companies often seen in period photos with its substantial square appearance. The MK5,6 & 7's were all of the same style of construction. Each of the "families" of cameras had matching ancillary equipment, monitors, video mixers, pulse generators all in the similar construction style although there was quite a bit of overlap as new items were introduced.

If anyone has a Marconi MK 3 I know of some spares which are available and I have been asked if I can find an I.O. camera, so if you have one for disposal please give me a ring. Also there is a demand for 405 line SPG's.

I hope to write about the PYE cameras in the next CQTV so give me a ring if you have anything interesting.

Brian Summers G8GQ, 29 Perivale Grange, Perivale Lane, Greenford, Middx. UB6 8TN. Tel: 01 998 4739.

Generation	Tube	No. Manufactured Approx. U.K.	Exp.	Totals	Date	Data	
MK1 & 2	3" Image Orthicon	28	94	122	1948	VT	F1
MK3	3" or 4.5"I.O.	181	122	303	1953	VT	F1
MK4	4.5" I.O.	114	802	916	1961	VT	F2
MK5	4.5" I.O.	49	369	418	1965	SZ	F3
MK6	Plumbicon/Vidicon	29	49	78	1968	SZ	F3
MK7	4 * Plumbicon 30mm.	107	223	330{1}	1966	SZ	F3
MK7 TK	4 * Plumbicon 30mm.	18	30	48	1968	S	F3
MK8	3 * Plumbicon 30mm.	43	426	469	1971	SZA	F4
MK8 Port.	3 * Plumbicon 30mm.	1	28	29	1974	SZAB	F4
MK8 TK	3 * Plumbicon 30mm.	2	81	83	1973	SA	F4
MK9	3 * Plumbicon				1979	SA	

KEY: V valve, T turret, S solid-state, Z zoom, A automatic, B backpack, 1 not including those made under licence in USA. F1 to 4 family resemblance, see text.

Post war Marconi Broadcast Camera Family

USING OSCILLOSCOPES

Part–2

Mike Wooding G6IQM

In part–1 of this series we looked at the display section of the oscilloscope and the controls associated with it. In this part we shall be discussing the vertical control section.

THE VERTICAL CONTROL SECTION

The vertical control section of an oscilloscope supplies the display system with the Y–axis (or vertical) information for the graph on the CRT screen. To do this the vertical system takes the input signals and develops deflection voltages. The display system then uses the deflection voltages to control – deflect – the electron beam. The vertical control section has circuitry that gives a choice of how the input signals may be connected (called coupling and described below) and also provides internal signals for the trigger control system, to be described in part–4.

An example of a vertical control system is shown in the block diagram in Fig.1. Oscilloscopes with multiple channels have duplicates of these for each channel. Each channel has circuits to couple an input signal to that channel, attenuate (reduce) the input signal when necessary, pre–amplify it, delay it and finally amplify the signal for use by the display system. The delay line allows the beginning of a waveform to be viewed even when the scope is being triggered on that point.

The major controls associated with the vertical control section are Vertical Sensitivity (Volts/Division), Vertical Position and Input Coupling. Other controls found on the more up–market instruments are Variable Volts/Division and if the scope is a dual–beam type then it will also feature at least one channel Inversion facility and probably a set of Mode switches.

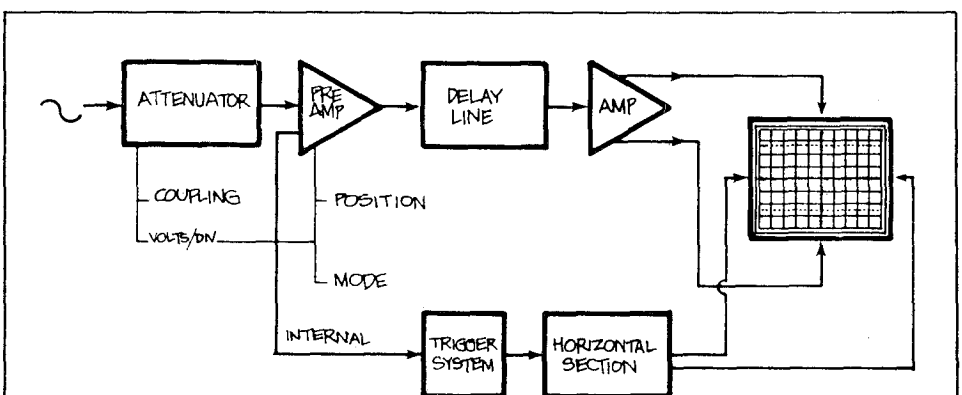


Fig.1 Vertical Control System Block Diagram.

VERTICAL SENSITIVITY

The vertical sensitivity, often called the volts per division switch, controls the sensitivity of the vertical channel. (In dual and multiple-beam oscilloscopes there is a vertical sensitivity control for each channel). Having different sensitivities extends the range of the scope's applications; with a volts/division switch a multi-purpose scope is capable of accurately displaying signal levels from millivolts to many volts.

Using the volts/division switch to change sensitivity also changes the scale factor, the value of each major division on the screen. Each setting of the control knob is marked with a number that represents the scale factor for that channel. For example, with a setting of 10V each of the eight vertical major divisions represents 10 volts. Although it may seem obvious to most people, an easy way to remember the action of this control is to pronounce the '/' in volts/division as 'per', thus in the example setting the scale factor is 10 volts per division. Another factor that can affect the scale factor is the type of probe in use, but this will be dealt with part-5.

VERTICAL POSITION

The action of the vertical position control is rather self-explanatory, it allows the user to position the trace exactly in the required position vertically on the screen. There is a vertical position control for each channel on multiple-beam instruments, and each control adjusts the position of its trace independently.

INPUT COUPLING

The input coupling switch for each vertical channel lets the user control how the input signal is coupled to the vertical channel.

DC input coupling lets all of the input signal through. AC coupling blocks the constant signal components (DC) and permits only the alternating components of the input signal to reach the channel. An illustration of the differences is shown in Fig.2.

AC coupling is handy when the entire signal (alternating plus constant components) might be too large for the VOLTS/DIV switch setting required. In this case the display could be similar to Fig.2a. However, by selecting AC coupling and eliminating the DC component, the VOLTS/DIV setting can be reselected to give a display similar to Fig.2b.

The middle position of an input coupling switch is generally marked 'GND' for ground. Choosing this position disconnects the input signal from the vertical system and makes a triggered display show the

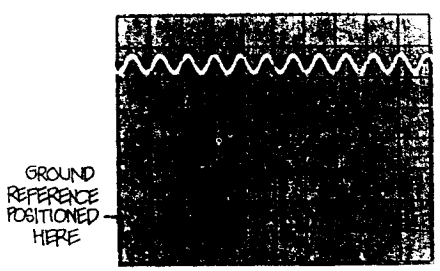


Fig.2a DC Coupled

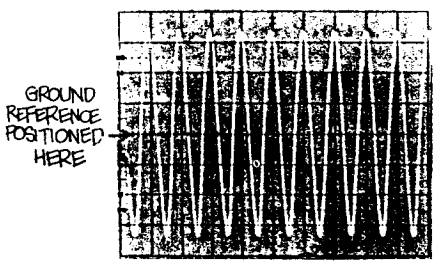


Fig.2b AC Coupled

Fig.2 Input Coupling Modes.

oscilloscopes chassis ground. The position of the trace on the screen in this mode is the ground reference level.

Switching from AC to DC to GND and back is a handy way to measure signal voltage levels with respect to chassis ground. Using the GND position does not ground the signal in the circuit under test.

VARIABLE VOLTS PER DIVISION (VOLTS/DIV)

The variable volts-per-division control, usually denoted as VAR, is found, when fitted, as the centre control of the Vertical Sensitivity switch. This control provides a continuously variable change in the scale factor and is useful when quick amplitude comparisons are required on a number of signals.

For example: take a known signal of almost any amplitude and use the VAR control to ensure that the waveform fits exactly on major division graticule lines. A second signal is inspected using the same vertical channel, and it can quickly be seen whether or not the two signals have the same amplitude, or which has the larger.

CHANNEL 2 INVERSION

To make differential measurements (to be described fully later in the series) the polarity of one channel has to be inverted with respect to the other. The INVERT control (usually fitted to channel 2 when available) provides this facility by automatically inverting the channel when selected. Thus, when selected the two channels are at opposite polarities, when not selected both channels have the same polarity.

VERTICAL OPERATING MODES

Oscilloscopes are more useful if they have more than one vertical display mode. The usual choice of modes is: Channel 1 alone, Channel 2 alone, both channels in the alternate mode, both channels in the chopped mode and both channels algebraically summed. The required mode is selected by operation of a multiple push-button bank.

To make the oscilloscope display only one channel at a time the mode switch for the required channel is selected.

To display both channels in the alternate mode, where one sweep of each channel is alternately displayed with one sweep of the other channel and so on, select both channels and the alternate mode switch.

To display both channels in the chopped mode, where a small increment of one sweep is displayed and then a small increment of the other and so on at a fast fixed rate, select both channels and the chopped mode switch.

Both chopped and alternate modes are provided so that two signals at any sweep speed can be looked at. The alternate mode draws first one trace and then the other, but not both at the same time. This is fine at fast sweep speeds where the viewer's eyes cannot see the alternating sweeps. However, at slow sweep speeds this switching interferes with measurements etc. so in this case the chopped mode is used.

If it is required to view the two signals on channel 1 and 2 combined into one, the algebraic, or add, mode is selected. This will result in a single sweep display showing the two channels added together. If channel 2 is inverted, the resultant algebraically summed display will be the difference between the two input signals.

This concludes part-2 of the series. In part-3 I shall be looking at the Horizontal Control Section, and the controls associated with it. Should you have any questions relating to oscilloscopes and their operation please do not hesitate to write to me. I will endeavour to answer any queries that you may have, The address is on the 'Who to Write To Page' at the front of the magazine.

24CM PHASE-LOCK-LOOP EXCITER FOR ATV

W.E.Parker W8DMR

A single IC and a TVG-12A varactor Diode oscillator make a very low-cost 24CM exciter unit, in fact the phase-lock-loop (PLL) exciter can be assembled for around $49. The TVG-12A can be purchased from P-C Electronics (USA) and the SP5060 IC from any Plessey semiconductor stockist.

THEORY

The basic PLL principle is shown in the block diagram of Fig.1, some additional circuit elements need to be incorporated into the PLL configuration.

The two inputs to the phase comparator or phase detector should be of the same frequency range for fixed modular frequency synthesisers. For example: let the stable reference frequency be 4.1952MHz and the voltage-controlled oscillator (VCO) frequency be 1258.2912MHz. In order to present two frequencies of the same order to the phase comparator the VCO frequency will have to be divided down.

Fig.2 shows a block representation of a PLL using down-counters. These down-counters are used to divide the VCO output so that it can be input tp the phase comparator with the reference frequency.

The phase comparator and the down-counters are all contained within the SP5060 IC. The phase comparator needs only to perform at the low frequency of around 4800Hz as the upper working limit of the device is quoted as 8Mhz.

Each of the down-counters are partitioned into sections that are powers of two. The first section of a counter must perform at the highest frequency, therefore special circuitry and higher currents than normal are required. (A counter placed before another is called a pre-scaler).

Although the SP5060 was designed for use in satellite TV receivers the IC, along with a VCO, forms a complete phase-lock-loop synthesiser. Only one external transistor is required to drive the varicap diode and three passive components for the loop filter. The device is powered from +5 volts and draws around 50mA. Fig.3 shows a block diagram of the SP5060 and the external components required.

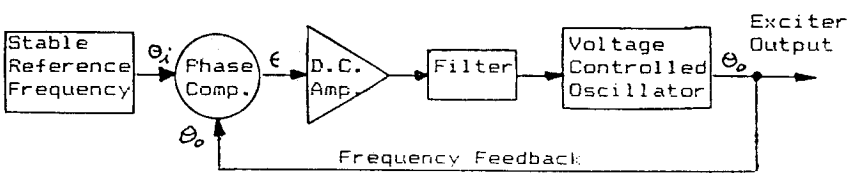


Fig.1 Basic Phased-Lock-Loop Block Diagram.

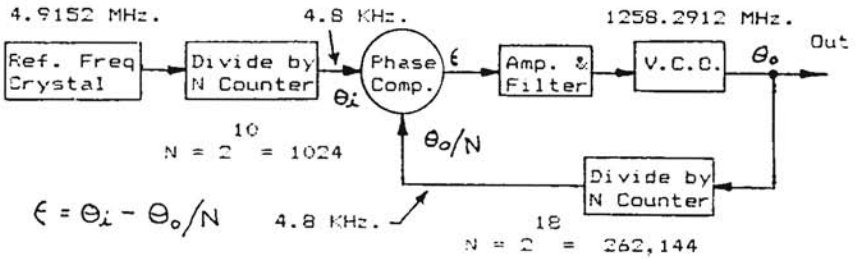


Fig.2 Block Diagram of PLL using Down-counters.

CIRCUIT DESCRIPTION

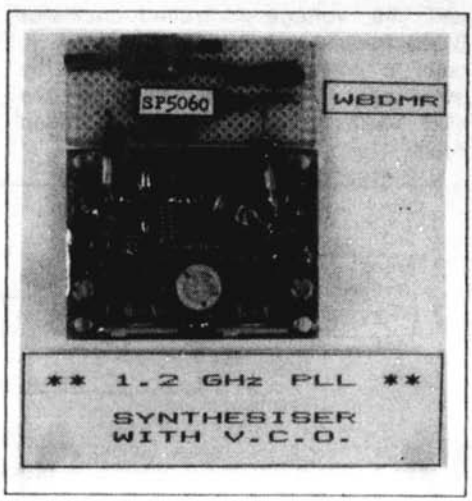
The overall circuit of the exciter is shown in Fig.4. the output of the VCO will be 256 times the reference crystal frequency. The exciter output into 50-ohms will be at least 50mW, which is ample to drive an SC1043 'brick' amplifier to around 5W.

The phase comparator does it all! If the scaled frequency of the VCO does not match the scaled frequency of the reference crystal an error signal is produced at the output of the comparator, which increases or decreases, dependant on whether the scaled VCO frequency is higher or lower than the scaled reference frequency. A charge-pump within the SP5060 outputs the error signal to the loop amplifier Q3.

NOTE: A charge-pump can supply current to, or draw current from, the same circuit element. It is much like adding or draining water from a bucket so to speak. The charge storing element in such a circuit is usually a capacitor.

Located within the SP5060 is a Darlington emitter follower transistor, with pin-7 of The IC as its output. The external transistor Q3 and the internal emitter follower together form the DC loop-error amplifier. The filter components C1, C2 and R2 are connected in the path from the output of Q3 to pin-8 of the IC, which is connected to the input of the Darlington emitter follower. The output from the internal charge-pump is also connected to the input of the Darlington transistor. Pin-8 is effectively the summing junction of a simple op-amp configuration. Because there is NOT an input summing resistor the amplifier operates as a current-to-voltage converter. The charge-pump supplies the current input into the low impedance of the formed op-amp. The signal level at pin-8 of the IC is low because of the nature of the summing junction acting as a virtual earth.

The phase-lock-loop including the filter forms a second order operating system. One purpose of the filter is to smooth out the ripple variations introduced by the phase detector. The amplifier and passive element combination form a filter with



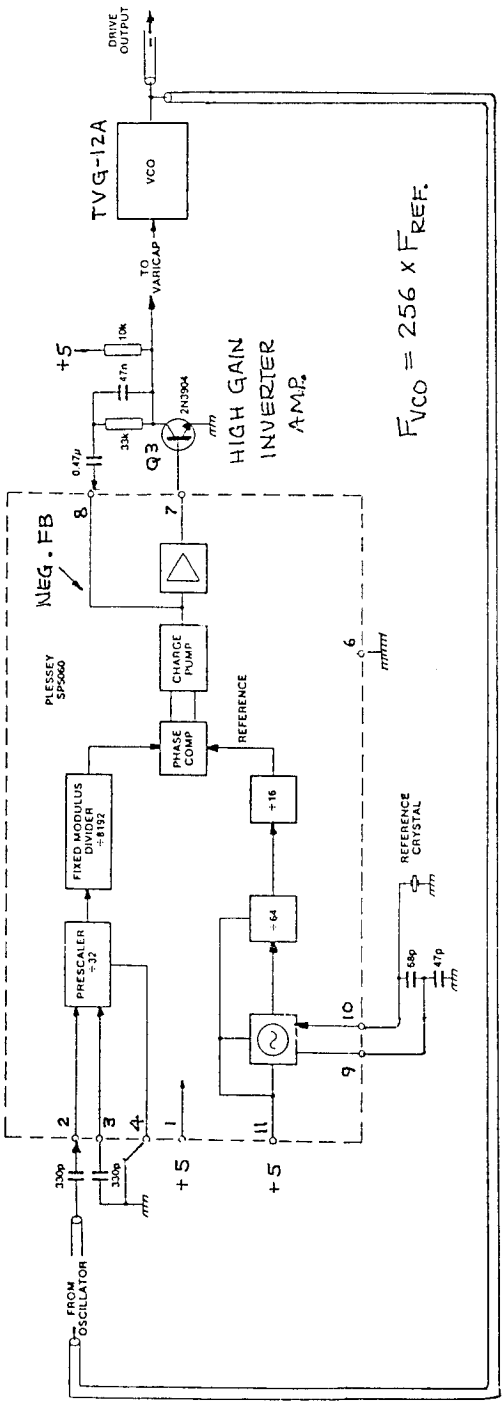


Fig.3 Block Diagram of SP5060.

Video Amplifier & Inverter Parts List

Item	Description
R1	Resistor, 100 ohm Pot.
R2	Resistor, 33 K ohms 1/2 W.
R3,R7	Resistor, 10 K ohms 1/2 W.
R4	Resistor, 1 K ohms 1/2 W.
R5	Resistor, 220 ohms 1/2 W.
R6	Resistor, 15 k ohms 1/2 W.
R8	Resistor, 100 ohms 1/2 W.
R9	Resistor, 560 ohms 1/2 W.
R10	Resistor, 68 ohms 1/2 W.
C1,2,3	Capacitor, 220 uF, 16 V.
Q1,2	Transistor, MPS-3904, NPN
SW-1	Switch, SPDT, Center Off

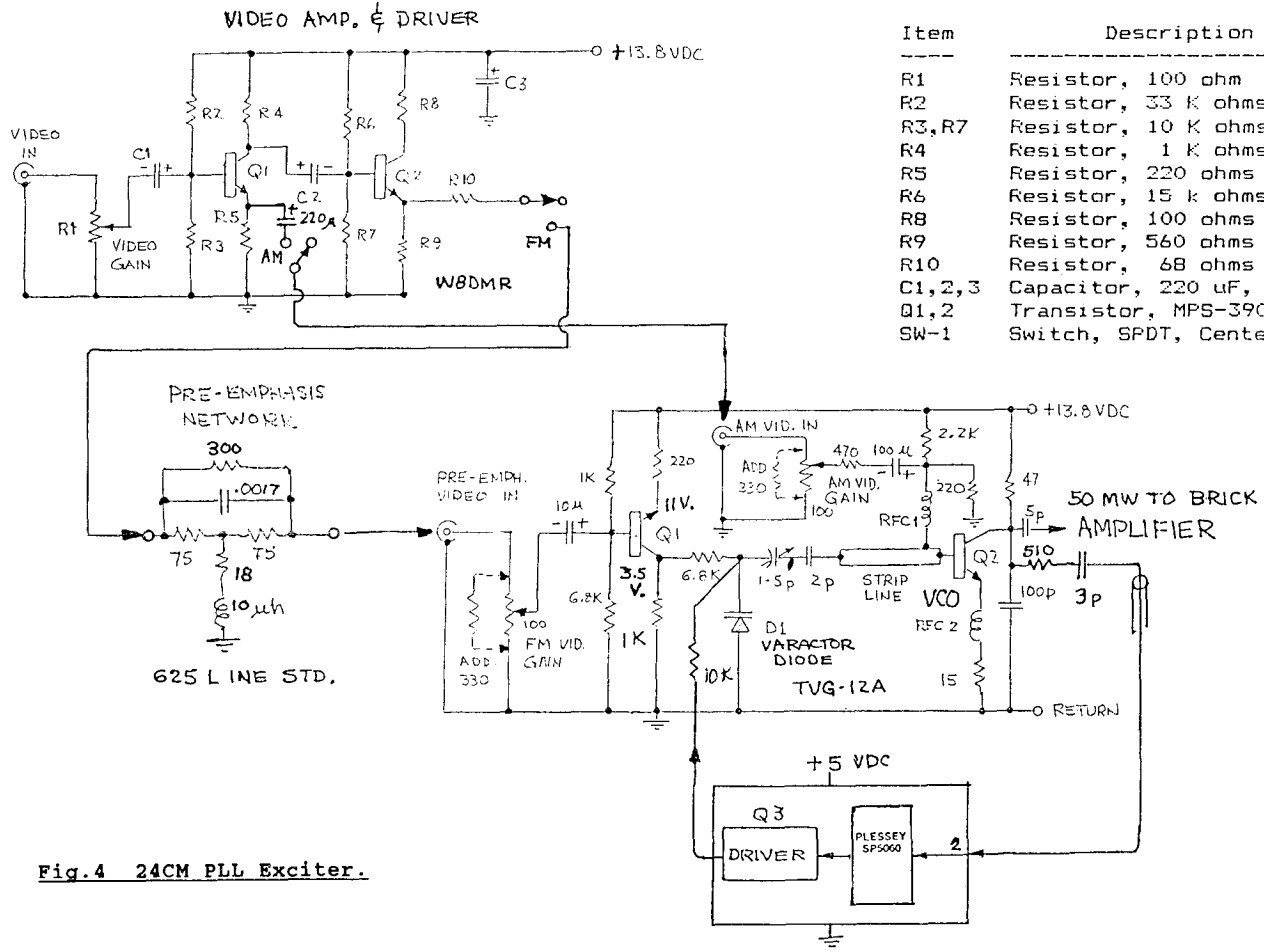


Fig.4 24CM PLL Exciter.

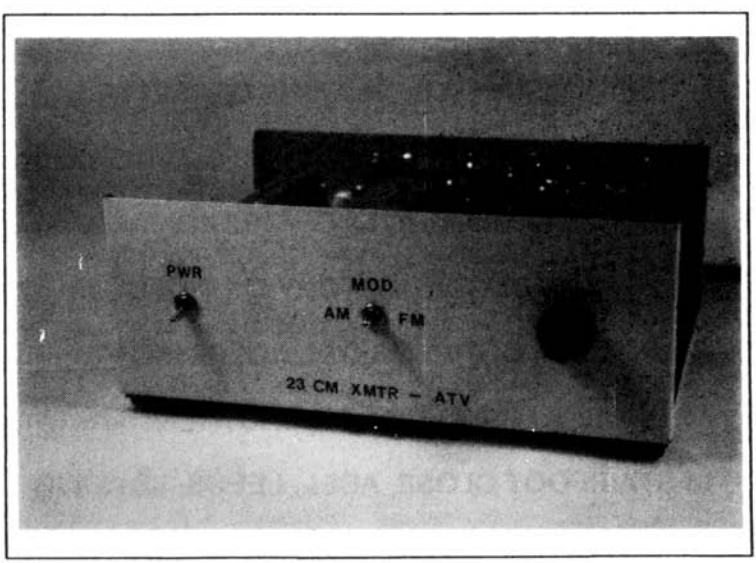
medium gain and low-pass frequency characteristics.

If the phase of the signal derived from the reference signal is in phase with the signal derived from the VCO, then the error signal (except for a constant base DC level) is considered to be zero. If the loop amplifier gain is high, as soon as the error signal starts to increase the VCO control bias voltage changes, thus causing the VCO frequency to change, hence reducing the error signal to the base DC level. The loop is then considered phase-locked.

A standard CCIR pre-emphasis network is included in the circuit and is preceded by a gain-adjustable video amplifier. The video amplifier also has switching for AM or FM modulation as applied to the VCO. In the AM mode the video signal is applied to the base of Q2, the output RF amplifier, and is thus amplitude modulated onto the carrier. In the FM mode, the video signal is applied to the VCO via Q1, and is thus frequency modulated onto the VCO.

In the FM mode the video signal is also routed via the optional pre-emphasis network. The total DC resistance of the 10uH choke and the series resistor in the pre-emphasis network should be 20-ohms, otherwise the correct frequency response will not be obtained. Thus, the value of 18-ohms given for the series resistor may require altering. If the pre-emphasis network is to be included in the unit then a further 330-ohm resistor must be connected across the FM VID GAIN potentiometer in the VCO. This is to provide the correct 75-ohm impedance for terminating the network.

NOTE: *Although I have been unable to locate a source of the TVG-12A Varactor Diode used in this circuit in the U.K., it may be possible to substitute a readily available type. If anyone knows of such a substitute or of a suitable alternative component please let me know... Editor.*



SATELLITE CHAT

Paul van Rossum.

'Always running behind the facts' seems to be one's fate when reporting on developments in the satellite world. This past week I got the first copy of my Handbook on worldwide satellite TV reception handed to me, only to find out that my latest amendments concerning Kopernikus and TV-Sat 2 hadn't been included by the publisher. This same week I sent in the final version of 'World Satellite Broadcasting', a new section to appear in the 1990 issue of the world Radio & Television Handbook (WRTH), wondering how much of the information would still be valid at the time the book is in the shops.

RECEIVER REVIEW: CHAPPARAL'S CHEYENNE.

Before going into detail about the many changes to be reported since the last 'satellite chat' I'd like to first introduce you to a not-so-new but very good satellite receiver, the Chapparal Cheyenne. After my extensive review of the Drake System 4240 I was asked by Marios Colocassides, a BATC member and electronics dealer/ importer in Cyprus, why I hadn't picked the Cheyenne receiver as reference instead.

Well, the answer was rather simple: it just wasn't available to me. Chapparal's export manager David Thomas kept promising, and promising, and promising but never delivered. Not being independently wealthy I could hardly go out and purchase my testing sample, and a dealer in Holland couldn't be found. After at least 15 letters in as many months however, Chapparal finally responded and sent out their newly appointed dealer for the Dutch and German markets to loan me a sample for a few weeks. Here are the results:

DISPLAY

The Cheyenne is a very sophisticated receiver, offering a very high video quality and excellent fine-tune and display possibilities. Display takes place on-screen, with self-generated sync in case there's no TV-picture with sync as background available. Blanking-out background is possible, also elimination of self-generated sync (necessary when receiving 525-line transmissions).

One can read out real frequencies (meaning that the IF-frequency of C-and Ku-bands are automatically subtracted after installation), and frequency indications even go beyond whole MHz, in steps of 200kHz to be precise. In addition it is possible to programme a standard deviation value in case your LNB's IF frequency isn't exactly what it should be.

Audio subcarrier frequencies, too, are indicated very finely in increments of 10kHz! Signal strength and antenna position are also indicated in detail in multi-digital figures. Although personally I would have preferred to find this display on the receiver rather than on the screen, I have to admit that for monitoring purposes there's little left to be desired.

RECEPTION RESULTS

Of course, nothing yet is said about the most important issue: reception results. Although due to an unfortunate mishap while modifying my Drake system to include stepless bandwidth control to less

than 10 MHz no direct comparisons could be made, I felt well able to evaluate results based on daily experience with this receiver. In terms of sensitivity (threshold) it seems that there was no difference between the Drake and the Chapparal receiver.

It was, however, very noticeable that even under the worst of circumstances (such as reception of extremely weak Intelsat C-Band news exchanges) pictures by Chapparal included colour right away, while with other receivers this was a feature that often took some time to arrive if it came at all.

This worked equally well on PAL, SECAM and NTSC. Somewhat frustrating hereby was however the fact that weaker pictures often didn't lock into sync with the Chapparal, whereas the Drake receiver would have.

BANDWIDTH

The available bandwidth choices on the Cheyenne offer a substantial bonus: the narrower 14 MHz bandwidth offers pretty good reception of half-transponder (= 18 MHz wide) Intelsat C-Band stations, while inclusion of a 36 MHz bandwidth guarantees perfect reception of stations like RAI-Uno and RAI-Due.

Receiving these stations with a standard 22 or 27 MHz bandwidth receiver causes some sparkles in very bright colours due to cut-off of the video frequency spectrum.

Also receiving Soviet television with it's 8MHz frequency dispersal allowed for perfectly stable pictures in that position.

The receiver on test was by the way the first with new software including the option to tune down to 3400MHz to include Gorizont and Raduga frequencies.

This version is available with German on-screen text only, but I guess it won't be long before the English version will be modified to include the same possibilities.

TUNING

A special feature on this receiver is the wide scope of stored information available. Among other things many frequency standards are stored. Aside from the American 24-channel C-Band format all relevant Eutelsat, Intelsat, Astra and DBS frequencies are stored. This storage is separate from the already programmed 100 channel presets, and is available to facilitate scanning all available channels from any satellite, or to help programme new ones.

To programme a new selection of satellite channels, one first gives the satellite a name (for instance, EI), and then chooses a frequency format (for instance the 12 standard Eutelsat frequencies). Then it is time to modify each of these channels, fine-tuning them to the exact frequency used by the particular satellite, audio subcarrier frequency, bandwidth, skew, and so on. Pushing the hidden 'store' button on the remote control with a special plastic tool stores this information permanently. This, in fact, makes the receiver very versatile, much beyond the regular programme presets also available.

GENERAL REMARKS

The receiver gets pretty warm during operation, due to the fact that it also incorporates a positioner. Unfortunately I couldn't try out this feature because my actuator is potentiometer-controlled and the sample on test was only equipped to handle reed-relay controlled actuators.

The audio options only included a wide and narrow position, but where weaker signals are concerned an 'extremely narrow' option would have been very desirable. The improved video of a half-transponder signal was unfortunately accompanied by a very noisy audio when using the available narrow position. At the same time it should be said that Gorizont's companded audio was reproduces rather well without the use of a compander.

Although the receiver provides programmable loopthroughs for video and audio to incorporate descramblers, it was unfortunate that just attaching the Lavianim audio expander for Gorizont as described in CQ-TV 146 appeared impossible; the system works only when there is video to be descrambled.

There is also an external 70MHz loop available, but for some reason the set wouldn't work on an external 70 MHz signal, taken from an Anderson Scientific receiver. Rens Maas, one of the owners of The Satellite Shop confirmed that in other situations it had been possible to feed external 70MHz signals into the Chapparal with good results, so perhaps the signal level was too low, as this was a home-made branch-off (Anderson doesn't offer external 70 MHz). Earlier on the Drake had accepted the same 70 MHz signal OK though.

NON-VIDEO USE

When trying to use this receiver to receive FDMA signals such as telephony we found this hardly possible because there were tremendously high noise levels, as if extremely weak signals were received. Little or no real telephony could be detected, not to mention RTTY.

The Drake receiver isn't very useful in this field either as the built-in synthesiser of that machine creates quite a lot of whistles and noises. I guess it takes a no-frills straight forward design like the Anderson's to make reception of FDMA possible. By the way, SCPC-reception was flawless as expected using a home-brew 70MHz receiver.

CONCLUSION

The Cheyenne is a very good receiver, in terms of reception quality equal but not better than my Drake System 4240 reference receiver. Lack of stereo audio gives the improved Drake the lead, but Chapparal is expected to market a new receiver with Wegener audio in the Summer of 1990.

In terms of tuning facilities the Cheyenne is superb, and for those not particularly caring for stereo audio it's quite a recommendable machine.

UPDATING THE LOGGINGS

To start with: both Sudan and Zaire left 21.5 deg West and surfaced on satellites above the Indian Ocean. Sudan now broadcasts via transponder 13 of Intelsat V/f5 at 63 deg East on 3915MHz (half transponder), RHCP, audio SCPC 3940.7MHz, accompanied by Radio Sudan at 3940.2MHz. Zaire TV moved to transponder 22 of Intelsat V/f7 at 66 deg East, on 3795MHz, also in half-transponder use and with SCPC audio on 3823.7MHz and an extra radio programme on 3824MHz. In this same frequency region some telephone activity on separate SCPC carriers can be found too. Chile (4095MHz) is permanently off 27.5 deg West, having moved to one of the special S. American beams of PanamSat at 45 deg west or Intelsat at 53 deg West.

Following the replacement of Intelsat VA/f12 to 1 deg West, signal strength of RTG Gabon and especially Tele Sahel improved drastically. AFRTS and SEB remained the same, but now are both B-MAC encrypted full time, so of no further use to the 'innocent viewer'. CNN now has its own Gorizont satellite, positioned at 40 deg East. Broadcasting on Gorizont channel 9 (3825MHz) started shortly after a huge decrease in stability and strength of the Gorizont transmissions from 11 deg West (Gorizont 12 relaying the Central TV 2nd programme). It seems therefore likely that this bird was moved to 40 deg East, leaving the elderly Gorizont 4 to fill the gap. Without tracking possibilities at this moment the CT2 transmissions only can be seen around 02:00 and 14:00 GMT.

Next time a complete Ku-Band update, including the latest developments on the

Dutch commercial radio and television scene. I'd like to conclude this time with a description of two useful reception aids.

PHANTOM IFP ADJUSTABLE BANDWIDTH FILTER

When receiving weaker signals substantial gains can be obtained by narrowing the bandwidth of the receiver. This is particularly the case when receiving half-transponder C-Band signals, but also weaker full-band signals such as those of Iran or Israel on Ku-Band can be improved from just seeing a few lines to an identifiable picture.

I could borrow the filter from Micro-X in the 70MHz version, enabling me to combine it with the Drake 4240, the Chapparal Cheyenne and the Anderson Scientific receiver. The filter has an adjustable bandwidth know, tunable between 12 and 32MHz (maximum width is of course determined by receiver used), and a circuit that is able to attenuate or amplify the incoming signal stepless. A dangerous knob: the whole broad midrange section causes the image to be severely disturbed! It should, however, be said that results with this filter in either amplification (extreme right) or attenuation (extreme left) position are excellent, and also well adjustable from neutral to extreme.

A later modification of the Drake receiver itself created comparable but not better results. For the Cheyenne receiver this filter seemed at first useless, because the best narrow bandwidth of the Phantom with weak half transponder signals seemed around 14MHz, and that's exactly what the Cheyenne has aboard.

Nevertheless worthwhile improvements could be witnessed when applying the Phantom filter in the 70MHz loop: the signals didn't become much stronger but the sync improved notably!

For the Drake receiver it should be said that annoying intermodulation products (most notable on 3725MHz when tuned to Gorizont at 14 deg West, causing the spot beam 3675MHz transmissions to drown out the first Intersputnik channel) were eliminated completely when this filter was put between front-end tuner and IF strip.

The filter is sold by Micro-X, Unit 2, Drury Way Industrial Est., Laxton Close, London NW10 0TG. Tel. 01 459 1200. Mr. Keith Ellis is the Export Manager.

The Phantom filter only works based on the frequency of the 2nd IF of your receiver, so you should mention the IF frequency (or type of receiver you use if you don't know) when enquiring about availability of this filter. It's available in quite a range of frequencies, although many of them aren't in use in Europe.

DONATEC FREQUENCY EXPANDER

Another product to make life cheaper is a so called frequency expander. With the rich European range of Ku-Band one would need three LNB's packed together to get the standard (KI), DBS (K2) and Telecom (K3) bands. When using either Uniden's dual band (KI/K2) or a separate DB$ band LNB, the frequencies between 12.25-12.75GHz also end up being sent down to your receiver, but as they arrive on frequencies between 1750-225MHz there's precious little you can do with them.

During Mediavec '89 in Paris I found the French company Donatec selling this extender, which in fact adds an extra IF, putting the received frequencies down an extra 520MHz or so, and therefore placing them right within the range of your receiver.

Of course, although it is made to work with the Uniden constellation in other combinations, it can be made to work, for instance to make a good part of the DBS

range available to people only receiving the standard KI (Astra) Band. The unit works only when it is being fed an LNB supply voltage above 18V, while simultaneously receiving the pulse that turns the poloriser in vertical position (1800uS). Using skew allows for this system to work, even when tuned in to horizontally polarised K3 Band Kopernikus signals.

Donatec can be contacted at 118 rue Marcel Hartmann, 94851 Ivry-sur-Seine, Cedex. Tel: (France)-1-45.21.44.77. Mr. A. Bogean is the commercial manager.

To conclude this section a brief line-up of Kopernikus is shown below.

In the Ku-3 Band (France-Telecom) range there are 7 transponders, each with a 44MHz bandwidth:

12,524 GHz. Kanal 1 (Vertical) Digital txm. (non-video)

12,558 GHz. Kanal 2 (Horizontal) 'PR0-7' (commercial TV)

12,591 GHz. Kanal 3 (Vertical) Digital txm. (non-video)

12,625 GHz. Kanal 4 (Horizontal) Digital txm. (non-video)

12,658 GHz. Kanal 5 (Vertical) (Regional programme for Nordrhein-Westphalia)

12.692 GHz. Kanal 6 (Horizontal) Tele-5 (commercial TV)

12.725 GHz. Kanal 7 (Vertical) B (Bayerisches Fernsehe-Regional programmes for Bavaria)

In the Ku-I Band (Astra, Eutelsat) there are three 90 MHz wide transponders, which each can be split into two tv channels.

11,500 GHz. Kanal I (Horizontal) (used for experiments only)

11,575 GHz. Kanal II (Vertical), split transponder use: (Halbtransponderverfahren:)

IIA SAT 1 (commercial TV with regional Hannover programme in the early evening)

IIB 3-SAT (cooperative German-Swiss-Austrian network, with regional commercial TV in the early evening)

11,650 GHz. Kanal III (Horizontal), split transponder use

IIIA ARD-Eins Plus, Baden-Baden.

IIIB RTL-Plus, Koeln/Luxemburg.

KOPERNIKUS TRANSPONDERS

Well, so much for this time. Letters are always welcome, Happy Holidays to everyone, and see you next time.

A MORE VERSATILE CABLE ADAPTOR FOR CAMCORDERS

Andy Emmerson G8PTH,

This article relates specifically to the camcorders made by JVC but no doubt the general principles apply to similar models of other makes.

The problem is simple: the camcorder is supplied with a so-called RF adapter, in other words a UHF modulator for replaying tapes on a TV receiver. If you wish to copy your recordings across to another VCR you must either do this at RF using this adapter or buy an optional accessory cable. Option-A will affect the picture quality and is not really acceptable, while option-B means some additional expense.

So how about option-C, making your own cable? It's really quite easy and not at all expensive. You will need the following parts, all of which can be obtained easily (for instance from Maplin Electronic Supplies).

Two 5-pin DIN audio plugs (I suggest the 270 degree variety)
One 5 pin DIN line socket (to mate with the above)
One 10 pin 'J' type video plug
Length of twin screen audio cable.

What we are going to do is to cut off the RF adapter from the rest of the cable and then reconnect it, using a DIN plug and socket. Now, if you disconnect the RF adapter and instead attach another cable ending in the 10 pin audio/video connector which can plug into the front panel of your VHS deck. Alternatively, if your recorder uses, say BNC and phono plugs, you could fit those instead.

The original JVC adapter cable contains two screened cables and one unscreened. The latter is black and carries DC to the RF modulator; we shall ignore it. The grey screened cable carries video and the green one is for audio. For the new cable you are making twin screened audio cable is quite adequate, and the connections of each connector are given below.

DIN CONNECTORS	'J' TYPE VIDEO PLUG
1. Audio	1. Video
2. Ground for audio	2. Ground for video
3. DC (if used)	7. Audio
4. Ground for video	8. Ground for audio.
5. Video	

Good luck! If you are careful and consistent with your soldering (and identifying the numbered pins) you will have no problems.

THE LYNX YET AGAIN!

Malcolm Perry G8AKX

Having read Andy Emmerson's article 'More Lynx Ideas' on page-49 of CQ-TV 147, I decided to jot down a couple of simple modifications that may also be of interest.

FIRSTLY ... The standard Belling-Lee video output socket is fitted on the underside of the camera, which is a very awkward position if you wish to use the camera with it standing on its feet, even if only when repairing/adjusting. One easy answer is to replace the socket with a free cable socket fitted to a length of coaxial cable, which is wired through the original socket hole to the PCB. The 'Video Out' plate makes a useful cable clamp.

SECONDLY ... When working on the camera with the cover removed patterning is usually present on the picture, which can cause severe problems when trying to make adjustments to the picture. A simple but effective cure for this is to fit a metal screen over the video amplifier section of the PCB.

A piece of single-sided copper board is adequate for this screen, cut around two inches long and the same width as the PCB. Push it between the metal frame and the PCB, **COPPER SIDE OUT**, and hold in place by using a short piece of wire soldered to the copper side of the screen and the PCB earth plane. If one end of the screen is pushed into the front casing flange it will be held firmly in place. It is also advisable to drill a hole in the screen so that the Video Gain preset control can be adjusted.

These two modifications to the Lynx camera, although very simple, can be very useful for the do-it-yourself ATV'er.]

In response to Andy's question concerning hum bars, unfortunately this is one problem I have not (yet!) experienced. However, perhaps the problem may be power supply oriented. I would suggest looking at C87 or a faulty rectifier section.

One problem that I have experienced is the electronic focus refusing to operate. This was caused in both cases that I came across the problem by R109 (5.5M) being open-circuit. R109 is located on the board supporting the focus potentiometer, and the back-plate must be removed to gain access to it.

That's all from me. I hope that the above may be of use to someone.

SSTV FREQUENCY - 144.5MHZ

A HIGH PERFORMANCE PREAMPLIFIER FOR 24CM

The following design was published in the July 1989 issue of Radio Rivista, the Italian national society's equivalent to Radcom. Designed by peter Rimi OE9PMJ and described by Michele Senestro I1TEX this English translation by Mike Dixon G3PFR surfaced in the Microwave Newsletter. I wish to thank all concerned for permission to reproduce it here.

Mike Dixon G3PFR

The diagrams included below show the circuit and practical layout, together with my primitive interpretation of the Italian text. The extracted information should be sufficient for an experienced constructor to duplicate the circuit successfully.

The schematic is shown in Fig.1. The circuit is a two stage amplifier whose performance depends on the GaAsFETs used: the gain, around 35dB, coupled with a low noise figure should well overcome mixer noise. Both stages use parallel-tuned input circuits. It is possible to use only the first stage by substituting trimmer C3 with a chip capacitor of the same value as C5 and 'shortening' the design.

Figs.2 and 3 give details of the construction, including detailed dimensions. The housing, which can be made from thin, solderable sheet metal (copper, tin-plate or brass) is divided into two longitudinal compartments, one of which is subdivided transversely into three chambers.

The longitudinal compartment contains the bias setting and stabilising components, and the three transverse compartments house the tuned input and output for each stage, with the GaAsFETs mounted on the cross-screens. All 'chassis' joints are soldered. Signal input and output is via N-type sockets. Chassis dimensions should be closely followed in order to minimise all lead lengths and to ensure correct resonance of the stripline tuned circuits.

Source bypass capacitors are disc shaped chips soldered directly to the screens close to the drain feed-through screen hole, minimising the source lead length. The source resistor is a conventional

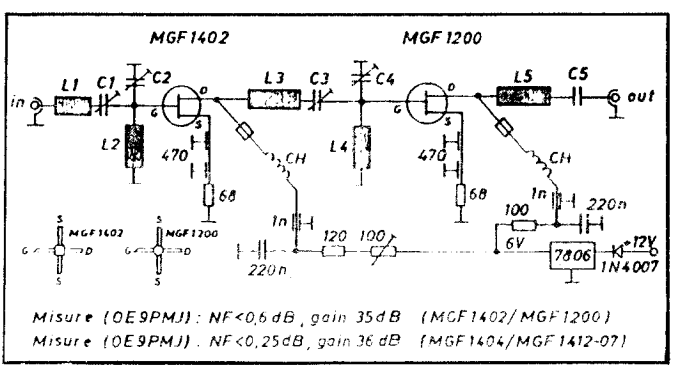


Fig.1 Circuit Diagram

resistor soldered to one source lead and ground with the absolute minimum lead length. Drain feeds are decoupled by chokes and ferrite beads as well as by feedthrough capacitors. It is probable that trapezoidal capacitors of the same value could be substituted for the disc-chips.

Once built the 100-ohm variable should be used to set the drain current of the first (input) stage to 10mA, which offers lowest noise figure. The gain against frequency graph of the amplifier circuit is shown in Fig.4. The measured gain and noise performance by OE9PMJ is shown in Fig.1 against two different GaAsFET combinations. Pretty close to state-of-the-art performance!

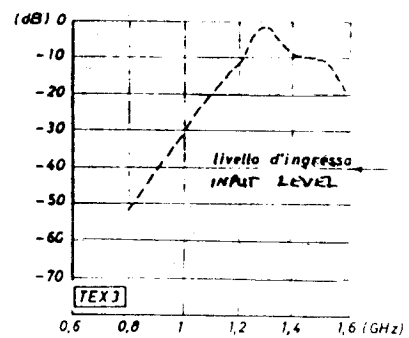
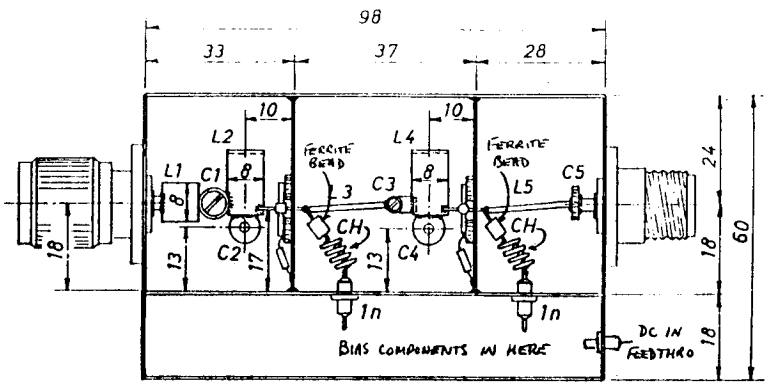
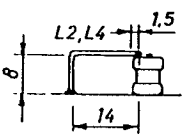


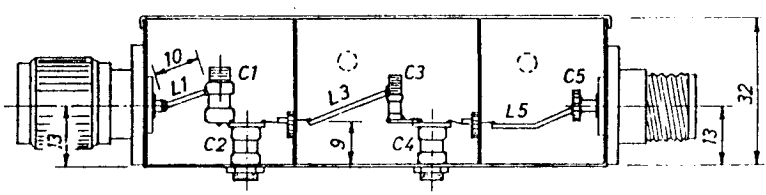
Fig.4 Performance Curve



C1, C2, C4 = 0,5 + 6 pF trimmer ad alto Q
C3 = 0,3 + 3 pF trimmer ad alto Q
C5 = 100 pF chip a disco



L3,L5 = Silver-plated copper wire, 1mm diam., 18mm long.
L1,L2,L4 = Silver-plated copper sheet, 0.5mm thick. CH = 5 spaced turns, silver-plated copper wire, 0.5mm diam., winding diam. 4mm plus ferrite bead.



Fig's.2 & 3 Plan and Side Views (dimensions in millimeters)

BROADCAST BAND DX-TV RECEPTION

Gary Smith and Keith Hamer

Sporadic-E activity continued well into September but at a very much reduced level than during the main season. There were several excellent periods of tropospheric reception, the best days being the 21st and 24th -see logs.

The first F2 openings of any significance materialised during the early part of October and reception became almost a daily event. Countries identified included Australia, Malaysia, Russia, China, Dubai, Iran, Jordan, Zimbabwe, and Nigeria with possible signals from the U.A.E. and Ghana. At times, channels E2 and R1 became jammed with exceptionally strong signals.

RAPID FADE

Throughout October and November there was plenty of activity from Malaysia and Dubai on channel E2. Signals were frequently present at 0800 GMT and continued well into the early afternoon. Strangely, a morning of intense activity with high m.u.f's from the east failed to produce similar results from the west during the afternoon. Activity tended to decrease rapidly during the early afternoon leaving very little of interest from the west above about 46 MHz.

Australian TV was received by DX-ers on a number of dates. On October 15th strong vision signals were present between 0900 and 0950 GMT from the DDQ-0 transmitter in Queensland. On other occasions the reception was not quite as dramatic with only line syncs visible mixed with all the communications splatter around 46MHz.

MYSTERIES

The F2 reception was not without its mysteries and here is a really good one! On October 30th at 1235 GMT on channel E2 a modified PM5544 test pattern was resolved featuring a large and distinctive black rectangle towards the bottom bearing Arabic identification. The lower greyscale was missing and this appeared to have been added to the top of the colour bar strip with the chequered band moved up one space thus touching the upper black rectangle. At 1251 a caption was shown with a circular logo to the left with about four lines of Arabic text to its right. There are only two channel E2 transmitters known to be operating in the Gulf area -Dubai and Iran. Dubai uses the conventional PM5544 with teletext (Gulfax) pages shown until the station opens while Iran uses the FuBK.

Apparently the caption is remarkably similar to the one used by Sharjah TV but, unfortunately, transmissions take place at UHF. Also. teletext pages (Addaleel Service) were scheduled at the time of reception.

Another mystery is a white crosshatch transmitted on the 525-line 60Hz system but using channel R1! This has been noted several times so it tends to rule out the theory that it was accidentally radiated over the terrestrial network by Russia while sending signals to Cuba via satellite!

A third mystery is the sighting of a chessboard test pattern followed by Indian-style writing on E2 around noon on November 5th. This again brings up the subject as to whether there is a channel E2 transmitter operating in, or around, India.

Any information from Overseas readers concerning the use of channel E2 in their area (main transmitter or relay) would be very much appreciated.

RECEPTION LOGS

The logs show a typical selection of DX openings encountered during the past three months. The best days are shown, of course. The full reception reports and logs appear in Issues 43 and 44 of TeleRadio News. All times are in GMT.

SEPTEMBER LOG

21.09.89: Excellent tropospheric opening. Highlights include:-
E48 SSVC (British Forces TV) West Germany on PM5534 (SH)
E8 and E11 NRK (Norway) (SH)
E6 and E9 SVT-1 (Sweden) (SH)
E24 and E30 SVT-2 (SH)
R8 and R35 TVP (Poland) PM5544 (SH)
R10 CST-1 (Czechoslovakia) with flag and national anthem (SH)
R36 and R38 CST-2 (SH)
E5 ORF (Austria) with "ORF FS1" PM5544 -all trops (SH)
A80 AFN-TV Soesterberg (US Forces, Netherlands) (SH)
E6 BR-1; SWF-1 E8 and E22 RB-1 -all West German ARD-1 network (SH)
E6, E8, E11, E12 and E27 DDRF:1, also E34 DDRF:2 -East Germany (SH)
E22, E27, E28, E30, E35, E40, E52 and E53 TV-2 Denmark (SH)

24.09.89: E7 and E9 TVE-1 (Spain)-via trops (SH)
E35 Unid Spanish station -via trops (SH)

OCTOBER LOG

01.10.89: Trops inc. Switzerland E6 (Rigi) and E7 (Saentis) (CH)
02.10.89: Trops inc. Swiss E6, E7, E34 (also E12 Niederhorn tx GS) (CH) (GS)
03.10.89: Trops inc. Swiss +PTT TSI E34 and France (KJ) (SH)
Trops inc. Norway, Sweden, Denmark, East and West Germany (SH)
TVP R8, CST-1 R10, CST-2 R38, ORF-1 E5, ORF-2 E34 (SH)
Swiss +PTT SRG1 E6 and E7; SSVC (W. Ger) E48 (SH)

10.10.89: 1400 E3 Denmark with PM5534 via SpE (IJ)
E2 Zimbabwe with "ZBC TV" PM5534 (SH)

13.10.89: 0725 R1 TSS (Russia) UEIT test card via F2 (JP)
0730 E2 Vision buzz -weak signal via F2 (GS)
0815 E2 Blank raster or multiburst pattern (GS)
0810 R1 TSS (CT-1) progs via F2 (MD) (GS)
0805 E2 Dubai on teletext -PM5544 at 0844 (0kHz offset) (MD) (JP)
0810 E2 Malaysia TV3 until 1105 (Zero offset) (JP)
0815 R1 TSS UEIT test card via F2 (GS)
0840 E2 PM5544 with ID at top and bottom ZBC? switching to text pages at 0900! (GS) (DG)
0930 E2 RTM Malaysia on progs until 1100 (-10kHz offset) (MD) (BB)
1058 E2 Dark-skinned people dancing with Arabic captions (DG)

14.10.89: 0700 E2 TV3 Malaysia (Zero offset) progs until 1030 (JP)
0830 R1 Progs via F2 (GS)
0923 E2 RTM Malaysia on progs -strong signals (KJ) (MD) (GS)
0933 A0 DDQ-10 Australia (KJ)
1040 E2 ZTV2 Zimbabwe on PM5534 then blank raster at 1042 (JP)

15.10.89: 0743 E2 TV3 Malaysia (Zero offset) (KJ) (JP)
0815 R1 China -programme with Chinese text and announcers (KJ)
0825 E2 FuBK -very strong -suspect Iran (KJ)
0912 A0 DDQ-10 Australia (KJ) (GS) (CH) (BB)
0940 E2 Prog with Arabic subtitles -Dubai? (BB) (GS) (DG)
1245 E2 Football from south until 1340 -Ghana? (Zero offset) (CH) (GS)
1610 IA RAI UNO (Italy) progs via SpE (JP)

16.10.89: 0654 R1 TSS progs via F2 (KJ)(JP)
0730 R1 TSS UEIT test pattern via F2 (GS)
0805 R1 Unid. cross-hatch pattern -60Hz frame!!!!! via F2 (GS)
0830 R1 TSS (CT-1) prog (-10kHz offset) (MD)
0830 E2 Dubai with progs (MD)(BP)
0910 R1 CST "1 SR-P" test pattern via SpE (BP)
1510 E2 NRK "NORGE STEIGEN" PM5534 until 1538 via SpE (JP)
1743 E2 TVE-1 progs and commercials until 1003 via SpE (JP)

19.10.89: 0845 E2 Dubai on progs (BB)(JP)
0927 E2 Iran with FuBK/progs (signals present until 1400!) (JP)
1230 E2 Dubai on progs (GS)(JP)
1250 E2 Iran on progs (-5kHz offset) (MD)
1320 E2 Malaysia (+10kHz offset) (MD)(DG)
1321 R1 TSS progs? via F2 (MD)
1400 E2 Unid progs until 1430 (Zero offset) via F2 (MD)
1510 E2 Unid progs via F2 (BB)

20.10.89: 1030 E2 Dubai with football match (JP)
1155 E3 NRK "NORGE GAMLEM" PM5534 via SpE (IJ)
1440 E3 Weak signals -southerly Africa? via TEP (JP)
1735 R2 and R3 TVR progs until 1845 via SpE (JP)
1740 IA RAI with "Santa Barbara" via SpE (JP)
1743 E3 TVE-1 progs via SpE (JP)
1805 E2 ZTV Zimbabwe signals (weak) via TEP until 1812 (JP)
1806 E2 TVE2 commercials via SpE (JP)
1834 R3 TSS news reader until 1840 via SpE (JP)
1843 E3 JRT (Yugoslavia) news via SpE (JP)
1904 E2 ZTV2 Zimbabwe -weak signals until 1920 via TEP (JP)
1910 E3 ERT Greece with football match until 1940 via SpE (JP)
2012 E2 ZTV2 Zimbabwe progs until 2052 via TEP (JP)

21.10.89: 1330 E2 Prog from south until 1345 (GS)
1325 E2 Dubai with football match until 1350 (JP)
1435 E2 Unid prog until 1446 (strong) -African? via F2 (KJ)(GS)(DG)
1530 E2 Prog from south until 1600 via TEP/F2 (GS)
1605 E2 Unid prog -very weak via TEP/F2 (KJ)
1748 E2 ZTV2 Zimbabwe until 1807 via TEP (JP)
Minor Aurora -Band I "E" and "R" channels, also Band III RTE (MD)

28.10.89: 0650 E2 Dubai with football match -signals until 1312 (JP)
0840 E2 Prog (with co-ch. signal) then closedown flag at 0845 (GS)(DG)
0854 E2 Blank raster or greyscale via F2 (GS)
0908 R1 TSS prog via F2 (KJ)
1206 E2 Dubai with football match with co-channel FuBK (Iran?) (GS)
1207 E2 Unid prog via F2 (KJ)(MD)
1236 E2 Unid test card FuBK-type??? via F2 (GS)
1241 E3 TVE-1 progs via SpE (KJ)
1541 E3 NTA Nigeria (0kHz offset) -strong F2 until 1610 (KJ)(JP)(AW)
1600 E2 Prog. different to above -Ghana? via F2 (AW)

30.10.89: 0855 A0 Weak video/line syncs?? (GS)
0915 R1 TSS progs via F2 (KB)(GS)
0835 IA (later IB) RAI progs via SpE (BB)(MD)
0935 E3 Jordan with "JTV AMMAN" PM5544 (co-channel to below) (NP)
0945 E3 Unid PM5534/44 -on to progs at 0950 (0kHz offset) (MD)(NP)
0950 R1 TSS co-channel progs via F2 (MD)
1054 E2 NRK "NORGE MELHUS" PM5534 via SpE (BB)
1230 E2 Colour bars via F2 (GS)
1235 E2 Unid test card -modified PM5544 via F2 (MD)(GS)
1251 E2 Arabic caption with circular logo in top left via F2 (GS)

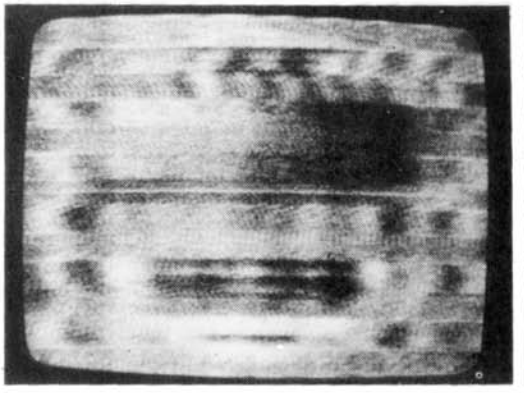
NOVEMBER LOG

01.11.89: 0805 R1 TSS progs via F2 (KJ)(KB)(GS)
0840 R1 Unid. cross-hatch with 60Hz frame!!! via F2 (GS)
0847 A0 Australia DDQ-10 (GS)(CH)(JG)(RB)
0900 E3 Unid -slides with Arabic script via F2 (IM)
0943 E2 NRK "NORGE TELEVERKET" PM5544 via SpE (BB)
0944 E2 NRK "NORGE STEIGEN" PM5534 via SpE (BB)
0952 E4 Finland with "YLE TV1" FuBK via SpE (BB)
1006 E2 and E4 Sweden with "KANAL 1 SVERIGE" PM5534 via SpE (BB)(DG)
1007 R2 EESTI TV PM5537 test pattern the UEIT tc via SpE (DG)
1034 E3 NRK "BAGN" PM5534 via SpE (BB)
1042 E2 NRK "MELHUS" PM5534 via SpE (BB)
1045 E3 NRK "NORGE HEMNES" PM5534 via SpE (BB)
1054 E3 NRK "NORGE GAMLEM" PM5534 via SpE (BB)
1058 E2, E3 and E4 TVE-1 until 1255 via SpE (DG)
1114 R1 TSS UEIT test card also 0249 mono card -via SpE (KB)(BB)(DG)
1203 L3 Canal Plus progs via SpE (DG)
1210 E2 and E3 Switzerland SRG1 with "Love Boat" soap opera -SpE (DG)
1220 E2 TVE-2 test card via SpE (BB)
1222 E2 FuBK -Iran? (BB)
1305 R1 CST test pattern via SpE (DG)
1245 E2 Modified PM5544 with large black rectangle via F2 (DG)
1255 R1 TSS UEIT test pattern -SpE? (DG)

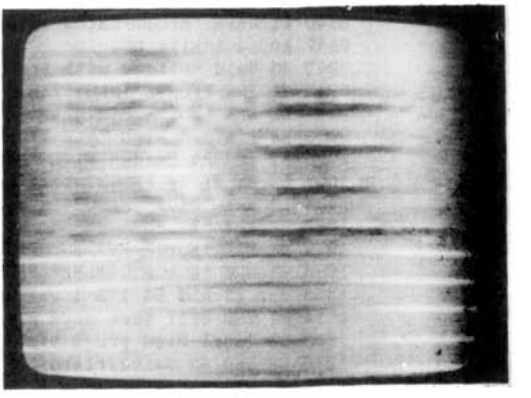
02.11.89: 0825 A0 Australia -progs (GS)(JG)
0825 R1 Unid prog via F2 (GS)
0938 R1 Unid cross-hatch pattern -60Hz frame!!! via F2 (GS)
0940 L2 Canal Plus progs via SpE (DG)
0950 E2 & E3 Sweden -prog about houses, later PM5534 -via SpE (KB)(IJ)
0950 IB RAI football via SpE (DG)
R1 TSS UEIT test card via F2 (KB)(GS)(DG)
1035 E4 TVE-1 progs via SpE (IJ)
1040 E2 NRK "NORGE HEMNES" PM5534 via SpE (KB)(IJ)
1047 E3 NRK "NORGE GAMLEM" PM5534 via SpE (IJ)
1134 R1 TVP PM5544 via SpE (DG)
1150 R1 CST test pattern via SpE until 1200 (DG)
1220 E3 SRG1 "Love Boat" soap opera via SpE (DG)
1335 E2 Unid Arabic programme with text via F2 (GS)

05.11.89: 0745 E2 Unid progs until 1235 via F2 (BP)(BB)
0745 R1 Unid progs until 1235 via F2 (BP)(BB)
0830 A0 Australia -with line pairing (SH)(GS)
0803 E2 Arabic programme with Koran reader (KJ)
0808 IA RAI progs via SpE (KB)
0830 R1 Co-channel signals via F2 (KJ)(KB)(DG)
0830 R1 Chinese characters?, also Russian (SH)
0830 E2 Progs inc. a greyscale -Dubai? (SH)
0916 E3 Unid prog -also PM5544 with ID top and bottom (Arabic?) (KJ)
1010 E2 sound channel -Arabic/Oriental music (GS)
1025 E2 Blank raster? kept switching off at 1040 -prog beneath (GS)
1135 E3 Unid prog via F2 (DG)
1155 E2 Unid YL announcer with logo (see TRN36 page 9) via F2 (DG)
1200 E2 Mixture of PM5544, FuBK, Arabic captions and a test card with letterbox. Many signals had no VITS. (SH)
1200 E2 Chessboard pattern, also Indian style writing (SH)
1245 E3 Unid progs until 1400 (BP)

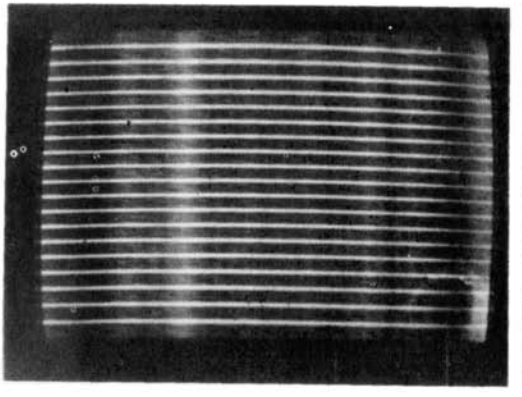
Many thanks to the following who have supplied logs and reception reports:- Ian Johnson, Bromsgrove (IJ); Kevin Bolger, Scarborough (KB); Kevin Jackson, Leeds (KJ); Mark Dent, Leeds (MD); Simon Hamer, New Radnor (SH); Bertrand Prince, France (BP); Bob Brooks, South Wirral (BB); Iain Menzies, Aberdeen (IM); Chris Howles, Lichfield (CH); Garry Smith, Derby (GS); Joop Prosee, Netherlands (JP); Jan Griep, Netherlands (JG); Ian Beckett, Buckingham (IB); David Glenday, Arbroath (DG); Roger Bunney, Romsey (RB); Andrew Webster, Billinge (AW).



Heavily disguised PM5544 test card of unknown origin seen on channel E2



Arabic identification caption which followed at 1251 GMT on 30/10/89



Mysterious 525-line 60Hz grid from the Far East on channel R1

Hungarian TV caption photographed during an October Sporadic-E opening

PICTURE-IN-PICTURE NEW TECHNOLOGY

Reproduced from the November 1989 issue of Elektor Electronics.

SIEMENS SDA 9088

The SDA 9088 Picture Insertion Processor (PIP) from Siemens allows the picture-in-picture facility to be installed not only in digital TV sets, but also in analogue ones.

The need for only two chips reduces time and material requirements and increases reliability. The SDA 9088, which is designed in Siemens 1Mbit DRAM technology, also provides a much better picture quality than previous designs.

The SDA 9088 permits the insertion of a reduced-size picture into the main picture by using picture signals that may be based on completely different standards and synchronisation principles.

The combination of frame memory, control, digital signal processor and digital-to-analogue converters on a single chip enables equipment manufacturers to realise the picture-in-picture function in TV sets and video recorders on a high-performance and particularly cost-effective basis.

Although the picture-in-picture function has been in existence for some years it has failed to become widely established in domestic video equipment owing to its high cost, incurred mainly by the expensive but indispensable frame memory and the peripherals required for the analogue-to-digital converters.

Through the use of the most up-to-date semiconductor technology, it has now been possible to integrate all essential functions into a single circuit.

The primary function of the PIP is to reduce the picture produced by the secondary picture signal and synchronise it with the main picture.

Two formats are available for the inserted picture; 1/9 and 1/16 the size of the main picture. The insert may be displayed in any of the four corners. A positioner for each corner permits adjustment to the particular set's geometry.

In contrast to previous designs, picture reduction is effected not by omitting the pixels that are not needed, but by digital filtering of the horizontal and vertical signals to ensure that all the information is utilised.

The SDA 9088 handles all worldwide TV standards; a detector performs automatic transfer to the standard being received. It is also able to supply standard-converted picture signals at a line frequency of 32kHz.

CQ-TV AWARD

This award is available to both transmitting and receiving enthusiasts, in any part of the world, whether they are members of the BATC or not. The award is for contacts made using fast-scan high definition television systems only.

TRANSMITTING AWARD

For pictures transmitted which have been successfully identified by another station, claim 2-points per kilometer; if the contact becomes a successfull two-way exchange of pictures, then 10 bonus points may be claimed by each station regardless of distance. For contacts on the 1.3GHz band or above, points are doubled.

RECEIVING AWARD

For any picture positively identified - claim for a one-way contact. Otherwise rules are as for transmitting.

POINTS

The award is divided into four grades: For the Bronze - 1,000 points, for the Silver - 5,000 points, for the Gold - 10,000 points and for the Diamond - 100,000 points. Points already gained for an existing award may be added in when applying for a higher grade.

CONTACTS

A station may be worked once only per day for the purpose of this award. It is quite possible for it to be gained by working the same station many times. Contacts through TV repeaters do not count.

THE AWARD

Upon qualification for the Bronze award, a certificate will be issued together with a Bronze seal; the certificate may be up-graded later with Silver and Gold seals. The Diamond award is in the form of a specially made trophy.

APPLICATIONS

Applications should include log details consisting of call sign, date of QSO, band, location of the station worked and points claimed. Contacts made from other than the home station should be clearly marked. QSL cards are not required, but the application should be checked and signed by either a licenced amateur or a BATC member.

CERTIFICATE APPLICATIONS SHOULD INCLUDE A LARGE (12" x 8.5") STAMPED ADDRESSED ENVELOPE. For upgrade seals an ordinary SAE should be enclosed.

Applications should be made to the Awards Manager: Bob Webb G8VBA, 78 Station Road, Rolleston-on-Dove, Burton-on-Trent Staffs. DE13 9AB. Tel: (0283) 814582

SERVICES FOR MEMBERS

PUBLICATIONS

PUBLICATION	EACH	QTY	AMOUNT
THE AMATEUR TV COMPENDIUM (155gm) by M.Wooding G6IQM. The latest handbook featuring construction articles on video units, 24CM and 3CM ATV, a Digital Frame Store, and much more.	£3.50	.....	.....
TV FOR AMATEURS (85gm) by John Wood G3YQC The definitive introduction to Amateur television, including construction articles.	£1.75	.....	.....
MICRO & TELEVISION PROJECTS (140gm) by Trevor Brown G8CJS. Constructing logic and Spectrum computer based aids for ATV'ers.	£1.00	.....	.....
THE BEST OF CQ-TV (150gm) *** NEW *** By Mike Wooding G6IQM *** ISSUE *** A compilation of the best construction articles from CQ-TV's 133 to 146.	£3.50	.....	.....
THE SLOW-SCAN COMPANION (165gm) By Grant Dixon, John Wood G3YQC & Mike Wooding G6IQM. The Slow Scanner's textbook, dealing with the whole aspect of SSTV, from basic principles to construction articles on full transceivers.	£3.50	.....	.....
CQ-TV BACK ISSUES. The following issues are still available, although stocks of some are low. Please circle those required: 128,135,139,143,144,145,146,147 148,149	£1.50	.....	.....
		TOTAL THIS PAGE	£.....

PUBLICATION	EACH	QTY	AMOUNT
INDEX (40gm)			
All main articles in past issues of CQ-TV and seven Handbooks. Including page count, (essential for ordering re-prints)	£1.00	.....	.....
RE-PRINTS.			
Photocopies of any article from past publications are available. Please quote the issue number, page numbers and the article name. Discounts as shown, prices are per sheet:			
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6 to 10 sheets	£0.20	.....	.....
11 to 20 sheets	£0.15	.....	.....
21 sheets and above	£0.10	.....	.....

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MEMBERS' SERVICES

Items from these lists can ONLY be supplied to CURRENT members of the BATC. These lists supercede all previous ones. Components for club projects are not available from Members Services unless contained within these lists.

PUBLICATIONS should NOT be ordered on this form. A separate form is provided for that purpose elsewhere in this supplement. We reserve the right to change prices without notice. All Club crystals are HC18/U (wire ended).
HB1 = ATV Handbook (blue); HB2 = ATV Handbook vol.2, or revised;
TVA = TV for Amateurs; MTP = Micro & Television Projects; COM = SSTV Companion; ATC = Amateur Television Compendium.

1" vidicon tubes are available in different heater ratings (95 and 300mA) - 6" long; (EMI types 9677, 9728 and EEV types P849). 2/3" tubes have 95mA heaters (EEV type P8037). All tubes are of separate mesh construction, with magnetic focus and cost £25 each, including postage. Electrostatic vidicons, Leddicon and Ebitron tubes are available, to special order. Members requesting information on different types of tube or equivalents for other manufacturers are asked to send a stamped, addressed envelope for their reply.

QTY	CAMERA TUBES, SCAN COILS, BASES & LENS MTS	EACH	P&P	TOTAL
.....	1" Vidicon scan-coils (low Z focus)	£6.00	£1.20	.....
.....	1" Vidicon scan-coils (high Z focus)	£6.00	£1.20	.....
.....	2/3" Vidicon scan-coils	£6.00	0.80	.....
.....	Vidicon bases - 1"	£1.00	0.20	.....
.....	Vidicon bases - 2/3"	0.65	0.20	.....
.....	C Mount for lenses	£4.00	0.20	.....
.....	Vidicon camera tubes - see above	-	-	
.....	Image Orthicon camera tubes type 9565 ** (+ Buyer to arrange transport).	£10.00	+	....
QTY	VIDEO CIRCUIT BOARDS AND COMPONENTS	EACH	P&P	TOTAL
.....	Sync pulse generator (HB2 rev)	£3.00	0.30	.....
.....	2.5625MHz SPG crystal for ZNA134 (HB2)	£2.75	0.20	.....
.....	SPG, greyscale, char gen (MTP)	£4 set	0.60	.....
.....	Keyboard add-on(for this char. gen) (MTP)	£2.25	0.30	.....
.....	Character generator (ATC)	£4.00	0.30	.....
.....	Teletext pattern generator (ATC)	£3.00	0.30	.....

TOTAL GOODS THIS PAGE £.....

QTY	VIDEO CIRCUIT BOARDS AND COMPONENTS	EACH	P&P	TOTAL
.....	Colour test card (set of 3-double-sided)	£15.00	0.60	.....
.....	TBP28L22 PROM for test card circle	£10.00	0.20	.....
.....	PAL colour coder (CQTV 134)	£6.00	0.30	.....
.....	Character colourizer,(printed legends HB2	£5.00	0.30	.....
.....	Video filter (TVA and CQ-TV122)	£1.00	0.20	.....
.....	Vision processing amplifier (CQ-TV130)	£4.00	0.30	.....
.....	Vision switcher matrix (HB2)	£4.00	0.30	.....
.....	Vision switcher logic (HB2)	£4.00	0.30	.....
.....	Vision mixer (HB2)	£4.00	0.30	.....
.....	Wipe effect generator (HB2 rev)	£3.00	0.30	.....
.....	4 Way vision switch (MTP) **	£3.00	0.30	.....
.....	4 Input TEA5114 vision selector (ATC)	£3.00	0.30	.....
.....	Audio/video fader (2 pcb set) (CQ-TV140)	£2.50	0.20	.....
.....	Video level indicator (CQ-TV142)	£5.00	0.30	.....
.....	ADAC -for digital video (ATC)	£5.00	0.30	.....
.....	Read address - for digital video (ATC)	£5.00	0.30	.....
.....	Write address - for digital video (ATC)	£5.00	0.30	.....
.....	RAM card - for digital video (ATC)	£4.00	0.30	.....
.....	Digital video backplane p.c.b. (ATC)	£6.00	0.30	.....
.....	UVC3130-08 A/D,D/A IC(ATC)	£40.00	0.20	.....
.....	Spectrum user port (MTP)	£3.00	0.30	.....
.....	Spectrum PROM blower (MTP)	£3.00	0.30	.....
.....	PROM blower FLEX (CQ-TV143)	£5.00	0.20	.....
.....	Teletron (MTP)	£3.00	0.30	.....
.....	Teletron VDU (MTP)	£4.00	0.30	.....
.....	2716 E-PROM - Teletron VDU program	£5.00	0.20	.....
.....	2764 E-PROM - Teletron Monitor program	£5.00	0.20	.....

TOTAL GOODS THIS PAGE £.....

QTY	RX, TX AND SSTV PCBS & COMPONENTS	EACH	P&P	TOTAL
.....	Power supplies - 2 +ve and 2 -ve rails	£3.00	0.30	.....
.....	70cm VSB transmitter-7 boards (HB2)	£15.00	0.40	.....
.....	13.14MHz TV TX crystal (HB2)	£5.00	0.20	.....
.....	70cm TV transmitter (TVA and CQ-TV122)	£3.00	0.30	.....
.....	10@.875MHz TV TX crystal (TVA)	£7.00	0.20	.....
.....	ATV up-converter (TVA and CQ-TV112)	£2.25	0.30	.....
.....	Amateur television receiver (HB1)	£1.50	0.30	.....
.....	GaAs FET 24cm converter (CQ-TV144)	£3.50	0.20	.....
.....	FM-TV demodulator (CQ-TV122)	£3.00	0.20	.....
.....	Gunn diode modulator (CQ-TV141)	£2.50	0.20	.....
.....	10GHz Head unit (2 pcb set) (ATC)	£2.50	0.20	.....
.....	Tunable I.F. (ATC)	£2.50	0.20	.....
.....	6MHz audio generator (CQ-TV139)	£1.50	0.20	.....
.....	G3WCY SSTV to FSTV RX & reprint (COM)	£10 set	0.60	.....
.....	G4ENA mods for above (CQ'127,COM)set of 4	£5 set	0.30	.....
.....	G4ENA SSTV transmit board (CQ-TV129,COM) Add on to G3WCY - uses same memory	£6.00	0.30	.....
.....	G4ENA SSTV aux board (CQ-TV130,COM)	£2.00	0.20	.....
.....	G8CGK SSTV pattern gen. + notes (COM)	£3.00	0.35	.....
.....	SSTV pattern/sync generator HB2)	£3.00	0.35	.....
.....	2732 E-PROM. SSTV program (HB2)	£12.00	0.20	.....
.....	MC1445N Gated video amplifier IC	£3.50	0.20	.....
.....	TEA2014A video switch IC	£1.10	0.20	.....
.....	TEA5114A video switch IC	£1.50	0.20	.....
.....	2716 E-PROM - programmed as a substitute for 74S262 (see mod in CQ-TV132)	£5.00	0.20	.....
.....	4.433618MHz PAL colour subcarrier crystal	£2.70	0.20	.....
.....	5MHz SPG crystal	£2.70	0.20	.....

TOTAL GOODS THIS PAGE £.....

QTY	STATIONERY AND STATION ACCESSORIES	EACH	P&P	TOTAL
.....	BATC test card - with data sheet	0.50	0.30	.....
.....	BATC reporting chart (illustrated)	0.12	0.20	.....
.....	BATC lapel badge - diamond - button hole	0.40	0.20	.....
.....	BATC lapel badge - round - pin fastening	0.50	0.20	.....
.....	BATC callsign badge - pin fastening ++ (Please print callsign clearly)	£1.50	0.20	.....
.....	BATC key fob	0.60	0.20	.....
.....	BATC equipment stickers - 1" round	0.15	0.20	.....
.....	BATC windscreen stickers - 2.5" round	0.10	0.20	.....

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CHEQUES should be made payable to "BATC" and should be for English banks only please, in pounds sterling.
NORTH AMERICAN MEMBERS may prefer to order from Wyman Research Inc., Box 95, Waldron, IN.46182. A sales form in US$ is available on request.

ORDERS PLEASE TO:- Mr. P.Delaney. 6 East View Close, Wargrave, BERKS RG10 8BJ, England. Tel: 0734 403121 (evenings/weekends only please).

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THE NEW BATC HANDBOOK!

THE ATV COMPENDIUM

Mike Wooding, G6IQM

BRITISH AMATEUR TELEVISION CLUB

104 PAGES OF CIRCUITS AND CONSTRUCTIONAL PROJECTS COVERING VIDEO SHACK EQUIPMENT, 24CM AND 3CM ATV TRANSCEIVERS AND SPECIAL PROJECTS.

FROM BATC PUBLICATIONS - £3.50

THE CQ-TV COMPETITION

As stated in CQ-TV 148 at the end of the Camtech 24cm Transmitter review, Camtech Electronics have kindly offered the review transmitter and audio sub-carrier generator unit as prizes in a club competition. We wish to thank Camtech for their generosity and have devised the simple competition below, which will give all members, new and old, a chance to win one of these prizes. First prize will be the transmitter itself, and second prize will be the audio subcarrier unit, which can be used with any 24cm transmitter.

Below is a list of eight questions, each with three possible answers (a bit like the RAE this, but harder!!!). The idea is to list your answers on a post card etc. (where have I heard this before ?) along with your name and address **AND membership number,** and send them to me at the usual address below. Entries **MUST** be received by MAY 1st 1990. Entry address: Mike Wooding G6IQM, 5 Ware Orchard, Barby, Nr.Rugby, CV23 8UF.

The two winners will be drawn from the 'hat' at the Convention next May 6th during the Biennial General Meeting, *SO BE THERE!*

Rules: Only current paid-up members of the BATC may enter.
Officers and Committee Members are disqualified from entry.
Only one entry (the first received) per member will be allowed.
The decision of the Editor and the committee will be final.

Questions:	**Answers:**
1 - Who founded the BATC ?	a - John Tanner
	b - Mike Barlow
	c - Grant Dixon
2 - In what year was the BATC founded ?	a - 1949
	b - 1951
	c - 1956
3 - How many Officers and Committee members currently administer the BATC ?	a - 19
	b - 21
	c - 23
4 - How often does the BATC hold its Convention ?	a - Every year
	b - Every two years
	c - Every five years
5 - Who is the odd man out ?	a - John Wood
	b - Mike Wooding
	c - Trevor Brown
6 - Who or what was MATILDA ?	a - A bus
	b - A London taxi
	c - An Australian member
7 - Who is credited with inventing Television	a - John Logie Baird
	b - Alexander Graham Bell
	c - Thomas Eddison
8 - In which band can U.K. ATV repeaters be found ?	a - 23cm
	b - 3cm
	c - 70cm

TV ON THE AIR

Andy Emmerson G8PTH

Last time I suggested that 70 cm lives on and this is confirmed by Jamie Powers G0JNK of Ambergate. He writes "Just a quick note to say that good old 70 is not dead – in fact I've found it quite active. From my shack five miles north of Derby I have contacted the following stations. Unfortunately not all were successful TV contacts.

"Around the Coventry area there are John G1IJT, Tony G0HOV, Len G8ONX, Dave G1GPE (Leamington) and Barry G6IKQ (Banbury). In the Birmingham area there are Arthur G5KS, Ken G1UGD and Paul G0EJL. They have regular nets in that area on Sunday mornings and Tuesday evenings.

"In the Derby area we find Pete G6KUI, Dave G8TNE, Dave G4TAY, John G6CTD, 'eyewig' Robert G7DDR and myself. Also further north near Mansfield is Chris G1UAZ and others who also have regular SSTV nets. I hope this list of callsigns will help dispel any thought that there is no activity on seventy." Excellent, and I hope to be rejoining this bunch soon myself!

SSTV lives too

Talking of SSTV nets we have a welcome note from Dick G3LUI, one of the old-stagers of SSTV.

"No doubt you will be relieved to hear that slow-scan is alive, well and living in south east Essex. The Wednesday night net continues each week plus individual stations active on other evenings. Modes in use include 8, 16, 25, 32, 72 and 96-second frames. Several stations are equipped for high resolution pictures using the Amiga computer, Robot 1200C and the 'Wallywonga LM9000' kit. Colour is also available in 8-second frame and 25-second line sequential from Wraase, Robot 400C and WCY/ENA equipment. If anybody is interested in joining us please just call in on 144.5 MHz any time after 20.30 hours local – or contact G3LUI."

Good news – I know that the Essex SSTV net has several long-distance participants, so if you can get in on 2 metres why not try it? I presume that the use of a Wallywonga is not essential: I always thought that SSTVers were a bit of a race apart but some of their equipment leaves me standing. Seriously, we could do with a letter from someone to state definitively which standards SSTVers use these days. ('Sure, we're in favour of standards – that's why we have so many of them!').

Out and about

The BATC has been attending several exhibitions during the past few months: our presence helps keep our hobby in people's minds, enables us to keep in touch with members and also introduces the hobby to people who have never heard of ATV before. One such example was the Institute of Videography's national convention during October. Held over two days at the National Motorcycle Museum (between Coventry and Birmingham), this exhibition was primarily for wedding videographers and 'serious' devotees of the video hobby.

At the show there were presentations from all the major video suppliers and I think a fine time was had by all. The venue was pleasant without being crowded and we were abie to introduce amateur television

to folk who had never realised that video need not be expensive if you start doing things yourself. The institute does a useful job in co-ordinating an otherwise rather dispersed group of video users, and if you'd like to get in touch with them you can write to the Institute of Videography at P.O. Box 774, Erdington, Birmingham, B23 7LF.

The summer fun starts here

"Summer is here at last", writes Michael Sheffield ZL1ABS. No, he's not out of his mind, merely resident 'down under' in New Zealand! "I have recently been out and about portable getting my 24cm FM ATV receive equipment into good condition. I have a home-built 10-element loop yagi (brass elements and boom) and a Microwave Modules converter. I've added a BFR91A internally as the MM is only a diode mixer with no RF stage). This feeds a Yaesu FRG9600, with another BFR91A ahead of the Yaesu.

"The Yaesu has an AM video board fitted, so its slope detection at the moment. Also the IF amp in the MM has been removed as it is too narrow-band for the 130-140MHz IF out I need. With Ralph ZL1TBG sending 10 watts I have copied him 26km away so far. Further improvements are underway - a MRF901 pre-amp to try ahead of the MM converter and a FM-IF to put inside the Yaesu. It's a toss-up whether I use a NE564 or the better NE568.

"The object of all this portable work is to get the gear working well enough to bridge the 30km gap between ZL1TBG's QTH and mine. A trial run idea is to get all the gear up on my roof and see what signals are like before I take the plunge with long yagis and expensive 9913 co-ax.

"During the winter I have been building 70cm transmitters and receive converters for other people as part of the kit offer by the Auckland VHF Group. I also built a 2 watt amplifier for my wideband FM sound transmitter. This has meant a 10dB improvement in vision-sound ratio - 40 watts vision and 2 watts sound. One of my regular contacts can now hear my sound where he could not before, while another reports that there is less hiss on the sound. As the vision aerial is 13 elements and the sound aerial only 7 elements I could probably do with even more sound power.

"National VHF Field Day is December 9/10 and I have found a few hams to come north with me to a good high spot on the western coast near Mongonui Bluff. As the distance is more than 100km to most parts of Auckland a good points score is likely. I hope to have 6 metres, 2 metres, 70cm, 23cm phone and 70cm ATV. I haven't got a working 23cm transmitter for ATV so I might take the receive gear for a trial run anyway.

"The ATV repeater in Auckland has been back on the air for a few days now as a beacon. Some problems with that video sync detector locking up meant that it is back on Quentin ZL1BPW's workbench. Oh dear, we haven't had a trouble-free run of more than a week in the last five years! That's life ... My savings towards attending Dayton in 1990 are going well. Still I will have to keep saving over the next few months if I am to have the extra needed to visit the BATC convention as well. I'll be looking at getting a 24cm FM-TV transmitter kit or built-up and high-gain aerials when I make it to the UK. " Well done Michael - but how do you find time for all this?!?

News from GB3ET

Back to the UK then and Clive G8EQZ advises that GB3ET, the Emley Moor TV repeater is now running on a Solent one-watt transmitter he rebuilt. This feeds a power amplifier belonging to Barry G6LIC and temporarily on loan. This is working very nicely, far better than the commercial

product in use before. In due course the loan equipment will be replaced with GB3ET's own gear. Clive is also pressing ahead with plans for GB3KT, a television repeater for Kingston upon Hull. The logic is already built and running, and they are now looking for a convenient site.

Clive has been promoting 24cm TV and believes that if a job is worth doing, it's worth doing well. Accordingly he is now collecting parts for a 200 watt 24cm TV transmitter using water-cooled 2C39 valves! Apparently three of these are to be built, so watch this space.

Continent calling

Crossing the Channel, a copy of ON-Screen informs us that the Belgian ATV Working Group is in fine form. They held a convention in Lierre last September and the next will be in the Gent region during April.

From Germany it is reported by the German ATV club that the microwave managers of the national societies have decided to attempt to harmonise the microwave amateur bands across Europe and to try and achieve common allocations on a primary basis. "Pursuing this goal, even the reduction of national allocations would be tolerated as a trade-off towards European harmonisation".

At the moment most of the GHz allocations are on a secondary basis and cover different segments of the bands in different countries. In some cases international amateur contacts are not possible because of mutually exclusive allocations.

A particular problem in West Germany is on 13cm where TV broadcasters have been allotted three channels for vision links and there are seven radio channels for industry, reactors, the police and the military across the band. As these have primary status ATV operations (particularly repeater outputs) on 13cm are being restricted. What with dense packet radio activity on 70cm and loads of radar on 24, the only clear band for ATV seems to be 10GHz!

In the USA (I know it's not across the Channel!) John KD0LO writes from St Louis. He uses the Amiga computer for ATV captioning and is hoping to put up a fixed 10GHz vision link to his friend Dave WB0ZJP. On August 30 he reports there was a tremendous band opening and he was able to work into Ohio, Indiana and northern Illinois on 439MHz.

He has been spending most of his hobby time developing a 900MHz FM-TV transmitter. This one is phase-locked and channelised using a synthesised local oscillator. Dave is helping the development process and the goal is to make it work both AM and FM for maximum versatility.

Records revisited

From France Marc F3YX writes to confirm his 800km contact on 70cm with EA1CR. But, he says, this was beaten by ON5ID who also hooked up with EA1CR. This distance was 1080km, but Marc does not recall the exact date.

Back in the UK

The mystery 24cm video transmissions at Canterbury were identified to a couple of G3's (not club members) who were apparently developing the gear for commercial use. They ought to know better about setting up shop in a busy part of the band and not identifying their transmissions. My informant advises they were using 2.5 watts and an etched printed circuit board 'postcard' antenna: this kind of configuration is popular with law enforcement agencies (and buggists!).

Roy G6OKB has got nimself an Atari ST computer and seems very pleased with it. He is puzzled, though, why he gets line pulling and a ripple running down the

screen when he records captions on a VCR. Can anyone help?

During the past year the East Kent video net crowd have run four special event demonstrations in conjunction with the Dover YMCA radio club. These have aroused a lot of interest, also with the public at large. G7BVH is a new station belonging to Mick, a ham in Sandwich (not my joke, honest). Regular participants in the net are David G0DQI, Brian G8ZYZ, Les G3LCW and Roy G6OKB.

Les and Roy covered last year's Bleriot cross-channel flight for ATV and got themselves press passes to the landing site. They pooled their video gear for the best possible outfit and managed to get good footage of both the crashed attempt and the successful flight an hour later. Afterwards they edited this up for showing on the net.

G0DQI has ben making improvements to his aerial system on 70 and now receives P5 pictures from Roy. They have also been experimenting on 24cm and have had the best results with the panel array designed by G8LES with satellite receivers for the video.

Signoff

And that's it for this time. Please continue to send in your reports ready for the next article and send them to 71 Falcutt Way, Northampton, NN2 8PH. Thanks.

IN RETROSPECT

A PARAMETRIC TRIPLER FOR 24CM, CQ-TV 148

It appears that a section of the text was missing from the Setting Up procedure in the original article, also a mistake appeared in what was included, therefore the entire procedure is listed below:

SETTING UP

Set R1 and C1 near the centre of their range and C3 about 105mm from L4. Set all the links for close coupling, connect a voltmeter (0 to 5V) across R1 and apply the 70cm RF. Resonate L2 by adjusting C1 and the coupling loop L1 for maximum voltage indication. Use an insulated tool to position L1.

The output should be terminated with a 50-ohm load and some form of sensitive indicator, ie: a high impedance voltmeter and Schottky diode probe.

Start the output adjustments with C3 and R1, some output will begin to be indicated. As it is a parametric multiplier the settings will interact. It is satisfying to see the output grow as C3, R1, L3 and L5 are optimised. With the dimensions shown it is impossible to select the wrong harmonic, but the final adjustment could well be made with a wavemeter on the output.

The open top of the cavities can be sealed up if required after the coupling links are set. C1 and C3 will need resetting. Fitting a lid resulted in only a small increase in output. The settings will also vary slightly with a change of input power.

The mechanical construction may seem rather daunting, but it actually only took an afternoon to build, although it was my second version.

Narrow Bandwidth TeleVision Association

The NBTVA, founded in 1975, specialises in the mechanical and low definition aspects of ATV and offers genuine (moving) TV within a basic bandwidth of 6 - 7KHz.

The techniques, basically an updated form of the Baird system, are a unique mixture of mechanics, electronics and optics.

Membership is open world-wide on the basis of a modest yearly subscription (reduced for BATC members) which provides an annual exhibition and quarterly 12-page newsletters, together with other services.

For further details write to: Doug Pitt, 1 Burnwood Drive, Wollaton, Nottingham, NG8 2DJ or telephone Nottingham (0602) 282896.

CAMERA TUBES EXPLAINED

Part-3

Peter Delaney G8KZG

In the first three parts of this series we considered the operation and setting up of the Vidicon tube, its variants and the Image Orthicon tube. To help in identifying tubes there follows a table of the main types of vidicon. Tubes of similar type are grouped together, and in general will be interchangeable. Footnotes identify the more important differences. In some cases there may also be a suffix letter (or more), which indicates the grade of the tube (ie: broadcast, industrial or amateur), or the colour channel it is intended for (ie: red, blue, green or luminance), although 'A' sometimes indicates a more important difference and so is included in the tabulation.

1/2" VIDICONS

Magnetic Focus and Deflection Tubes.

Separate mesh, 90mA heater.
P888(3), 9697(1), 9737(1), 9738(1)

Electrostatic Focus and Magnetic Deflection Tubes.

Separate mesh, 107mA heater.
XQ1600

2/3" VIDICONS

Magnetic Focus and Deflection Tubes.

Integral mesh, 90mA heater.
XQ1270(2), XQ1300, 20PE11

Separate mesh, 90mA heater.
E1170, M7075, P8037, TV8800, XQ1271, XQ1310, XQ1311, 20PE13, 20PE13A, 8823, 8844, 9831

Separate mesh, 90mA heater, short 65mm version.
P8215

Electrostatic Focus and Magnetic Deflection Tubes.

Separate mesh, 90mA heater.
E5045, N513, N887, S4097, S4097A, XQ1272, XQ1590, 4848, 8929, 20PE14, 20PE19, 20PE20

1" VIDICON

Magnetic Focus and Deflection Tubes.

Integral mesh, 95mA heater.
OB2, OB7, P862, P864, TH9806(3), TH9807(3), TH9808(3), TH9808N(3), TH9812(3), TH9815(3), TH9817(3), XQ1030, 7226(3), 9620, 55850

Integral mesh, 300mA heater.
C9132, C9133

Integral mesh, 600mA heater.
BC7735, HS200, HS200A, HS201, HS201A, P810, P826, P860, 4478, 4488, 7038, 7325, 7735, 7735A, 7735B, 8484, 10667

Separate mesh, 90mA or 95mA heater.
BC4809, BC8541, C102B, C103B, C104B, C105B, P831, P863(1), P842, P844, P847, P849, P8034A, P8038, P8203, P8204, P8205, TH9806PA(3), TH9807PA(3), TH808PA(3), TH910(3), TH9812PA(3), TH9815PA(3), TH9817PA(3), TH9818PA(3), XQ1005, XQ1006, XQ1007, XQ1008, XQ1040, XQ1041, XQ1042, XQ1043, XQ1044, XQ1240, XQ1241, XQ1280, XQ1285(3), XQ1290, XQ1291, XQ1292, XQ1293, XQ1294, XQ1295, 2260, 4542(4), 4569(5), 4589(5), 4809, 4846, 8541, 8541A, 8604, 8626, 9677, 55851

Separate mesh, 90mA or 95mA heater, short 5" version.
C23151(6), C23257(6), P863(1), P866, TH9814PA(3), 9706, 9730(1), 8573A

Separate mesh, 300mA heater.
C102A, C103A, C104A, C105A, C9132A, C9133A, C23281(4), P8030, P8031, TH9833, XQ1001, XQ1002, XQ1003, XQ1004, XQ1050, XQ1051, XQ1052, XQ1053, XQ1054, XQ1060, XQ1061, XQ1062, XQ1063, XQ1064, XQ1065, XQ1066, XQ1067, 2255, 9728, 55852

Separate mesh, 300mA heater, short 5" version.
XQ1160(1), XQ1161(1), 4503A

Separate mesh, 600mA heater.
BC8507, P841, P841X, P843, P846, P848, P848D, 4589, 8507, 8507A, 8572, 8572A, 8625

Electrostatic Focus and Magnetic Deflection Tubes

Separate mesh, 90mA or 95mA heater.
BC8134, 4493(7), 4494(7), 4495(7), 4811, 8134

Electrostatic Focus and Deflection Tubes.

Separate mesh, 90mA or 95mA heater.
9745

Separate mesh, 90mA or 95mA heater. short 5" version.
9802

Separate mesh, 300mA heater, short 5" version.
4514

1.5" VIDICONS

Magnetic Focus and Deflection.

Separate mesh, 95mA.
P8207

Separate mesh, 600mA
P8217(8), 8521

Electrostatic Focus and Magnetic Deflection

Separate mesh, 90mA or 95mA heater,
BC8480, 4810, 8480

FOOTNOTES

(1) Mesh connection to ring next to target connector.
(2) 110mA heater.
(3) 150mA heater.
(4) Extended storage target.
(5) Fibre optic faceplate.
(6) 4" long.
(7) Reduced target area.
(8) Mesh connection by flying lead.

An integral mesh tube can be replaced with a separate mesh tube, of otherwise similar specification, by wiring G3 and G4 together on the tube-base socket. Details of replacing tubes with similar types of different heater ratings are covered in part-1 of this series.

Lead Oxide and Image Orthicon tubes will be listed in part-5.

BATC CONVENTION 90

HARLAXTON MANOR

Here is the game plan for the Convention and Biennial General meeting on **SUNDAY MAY 6th** at **HARLAXTON MANOR, HARLAXTON, GRANTHAM.** I have included road maps and directions below, and as you can see the location is very easily accessible from the A1. The village of Harlaxton and the entrance to the Manor lie on the A607 Melton Mowbray to Grantham road. The entrance will be well signposted on the day.

The driveway to the Manor is long and **BE WARNED,** there are speed bumps. The car parking area (free) will be under the first archway on the grass either side of the road, **PLEASE** follow the instructions from the car park marshals, in order to alleviate confusion.

The Convention doors will open at 10am and close at 5pm on. Entrance will be by PROGRAM, a free copy of which will be enclosed in CQ-TV 150, which you will receive mid April. Entrance without a program will cost £1. Each program will be numbered and a free draw will take place at 3.30pm on the Club stand. Check the next issue for details of the prize(s). Full licensed catering will be available and at reasonable prices!

The usual lecture program will take place during the day, please check on the day for full details. If you are interested in giving a lecture (30 mins to 1 hour) please contact Hon. Treasurer Brian Summers for full details on 01 998 4739 (answerphone).

The Bring-and-Buy stall will be in operation as ever, run this year by the GB3ET group. Please support them and bring/buy your bargains. The usual conditions will apply - £1 entry fee and 5% commission. Also, a special area outside the building will be reserved for the Car Boot Sale, a charge of £5 per car will be made for this facility.

An important feature of this year's convention is the Biennial General Meeting to be held at 4pm. The exact location in the building will be advertised on the day. We need a full attendance so please come along. There will be several vacancies on the Committee due to retirements, and many of us are up for re-election under the four year rule. Please give the Committee your support and attend the meeting and voice your opinions. During the meeting the Grant Dixon Award will be presented by yours truly, and I also hear through the grapevine that a CQ-TV Diamond Award is to be made by our Awards Manager Bob Webb.

For those wishing to stay overnight at the Manor the charges will be £17.00 Bed & Breakfast per night per person for a double room, a small surcharge applies for single rooms. Please contact Mrs Frances Watkins, Co-ordinator Special Programmes, Harlaxton Manor on 0476 64541 for full details and bookings. There will be a limited supply of rooms but the quantity available will not be known until early March, so **PLEASE** do not contact Mrs Watkins until then. Alternatively, Mrs Watkins can supply you with details of accommodation in the surrounding area.

The usual get-together will take place on Saturday night in the lounge area adjacent to the dining room at the Manor from around 7pm, anyone wishing to come along and meet us please do, */ drink best bitter!*

Finally, the usual boring bit, don't forget that this is **YOUR** convention, we need your help

and support. This event looks like being the biggest we have held yet and as such we need **VOLUNTEERS** to help with the car park, setting up tables and jobs like this. We do not ask that you devote all day, just an hour or two will help. Please contact Paul Marshall on 0522 703348 if you are willing and able to help, and **DO IT NOW !**

HOW TO GET TO HARLAXTON

TRAVELLING BY ROAD

Harlaxton Manor is situated off the A607 road, some 3 miles west of Grantham. The entrance drive is immediately opposite the 'Gregory Arms' public house (see large scale map below).

The main routes are as follows:

From the North or South ... A1 - turn off onto A607.

From the West ..... A52 - join A1 Southbound near Barrowby Village then turn off onto the A607.

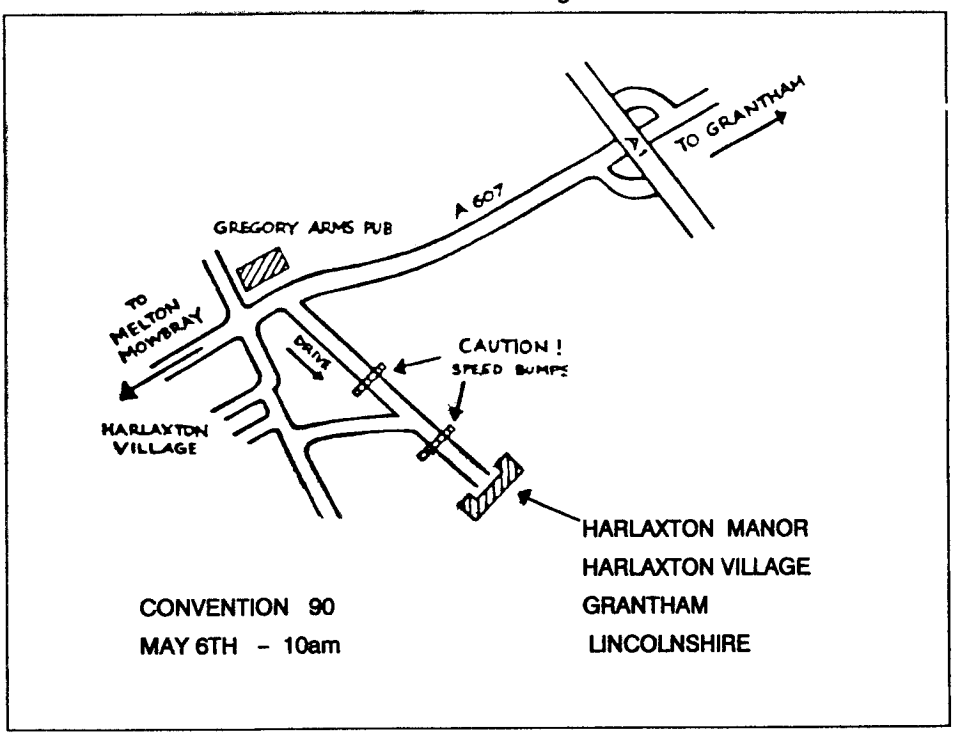
From the East ..... A52 into Grantham then take the A607 towards Melton Mowbray.

TRAVELLING BY COACH

Please follow the directions as above into harlaxton village and then into the Manor via the Tradesmans Drive (signposted HGV).

TRAVELLING BY RAIL

To Grantham - main London/Edinburgh line (Kings Cross to Grantham approximately 1 hour). Good rail connections east and west. Taxi from Grantham station to Harlaxton (3 miles) in the region of £2.



THE BATC GOES TO EIRE

Andy Emmerson G8PTH

Ireland is different! The Republic is of course a component part of the British Isles and has much in common with the rest of Britain. And then again a lot that is not. The differences are subtle but refreshing. If you haven't been there yet, don't wait: I really recommend a visit. You'll love the hospitable welcome, the Guinness, the green letter boxes, the road signs that look familiar but not quite the same ...

The Rally

Amateur radio in Eire is different. For a start there's less of it, simply because there are fewer people in Ireland. Also, there's no amateur licence. Instead people who pass their test get an experimenter's licence, which is subtly different. Experimenters do not have an automatic right to all amateur bands and modes: on the other hand they are not entirely bound by amateur regulations. I f they could put up a good case for operating on a non-amateur frequency (perhaps even a Band IV/V frequency for a TV repeater output) this might well be permitted. Some people are of the opinion that a move to true amateur status would be beneficial.

There are around 1200 experimenter licences in Eire: the original ones had single letter callsigns (!) and some of these are still active. It is estimated that some 250 amateurs are regularly on the air. There is plenty of interest in amateur radio, with field days and a few rallies. Amateur radio equipment, where it is sold, is about twice the UK price (crippling VAT, import duties and so on). As a result many people build their own – or have it sent from England.

The Club Stand with the new Display Panels

There are two amateur radio societies in Ireland, the premier being the IRTS or Irish Radio Transmitters Society. It was founded in 1932 but has its roots in the Dublin Wireless Club, which was founded in 1913. The IRTS is the member society for Ireland of the IARU and represents the amateur fraternity to the Department of Communications (which issues and controls licences). There is another, breakaway group called the Amateur Radio Society of Ireland or ARSI. I was unable to find anyone who could tell me much about this.

G8MJW, G8PTH with EI's: 6EV, 7GM, 7CL, 7CZ , 6GU & 6AS

ATV in EIRE

So much for the background. You want to read about ATV and that's what the rest of this article is about. ATV, it appears, used to be a permitted mode in Eire until some twenty years ago. Then, as now, certain enterprising individuals were relaying British broadcast television signals, and apparently when questioned, some of these people said they were entitled to do this under the terms of their amateur, sorry experimenter's licence. The authorities took a different view, naturally, and withdrew the right to transmit ATV.

This ban did not extend to slow-scan, however, and the video fraternity built up a net of SSTV stations. All the same this was not real ATV, and gradually pressure built up to be allowed to transmit fast-scan amateur television. The political situation in Ireland is somewhat different to Great Britain's and is far too complex to explain here. Suffice to say, direct approaches to politicians are possible and in this case a bit of pressure in the right place brought about the present legalisation of ATV once more.

This happy event came to pass in November 1988, and ATV is now allowed again to Irish experimenters, though only to class A licensees. The permit is provisional and on an annual basis. Portable operation is not allowed, and effectively operation can be on 70cm only. Most ATVers are on 436 or 437 MHz and there is a net every Tuesday at 20.00, with contact on 144.500. The SSTVers meet daily at 1330.

With this renewed interest the BATC thought it would be a good idea to attend one of Ireland's major rallies and give the ATV community a bit of support. At the same time the club could display its wares and perhaps recruit a few more members. Thus it came about that three of the BATC's top team (and Paul's wife Jill!) made a visit to Dublin at the end of September.

The rally is held in the Grand Hotel at

Malahide, a seaside spot close to Dublin. Grand is the word for the large ballroom used for the rally: lots of room around the tables and no crowding at all. They were expecting around 400 visitors, so this was not on the same scale as your average UK rally; all the same, any shortage of visitors was made up by enthusiasm. Most people stayed to the end of the show, when much of the unsold items were auctioned to the the highest bidder. The Fingal Radio Club EI2FRC is the organiser of the rally, by the way, Fingal being the name given to a district north of Dublin.

The BATC occupied two tables and showed a large selection of books as well as our smart new pictorial display boards. Business was good: we recruited eight new members, signed up three renewals and did a brisk trade in books. In addition we were able to make new friends, renew old acquaintances and learn all about ATV in Ireland.

Here then is a list of ATVers in Eire:

EI2EM Charlie, Swords, Co. Dublin.

EI3CZ Rod, Dublin

EI3DM Bill, Dublin.

EI3FW Craig, Co. Wicklow.

EI4BB Brendan, Dublin.

EI4N4 James, Dublin.

EI5GG/GI0CJP Michael, Dundalk.

EI6AS Albert, Clondalkin, Co. Dublin.

EI6EV Donal, Co. Dublin.

EI6GU Edward, Dublin.

EI7CL Mike, Dublin.

EI7CZ Tom, Dublin.

EI7DF Rod, Swords, Co. Dublin.

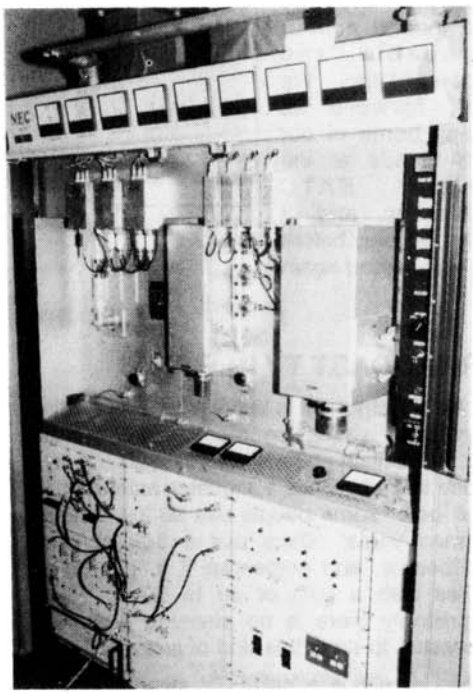
EI7GM Paul, Dublin.

EI8GB Ben, Dublin.

EI9GL Paul, Dublin.

EI9P4 Phil, Trim, Co. Meath.

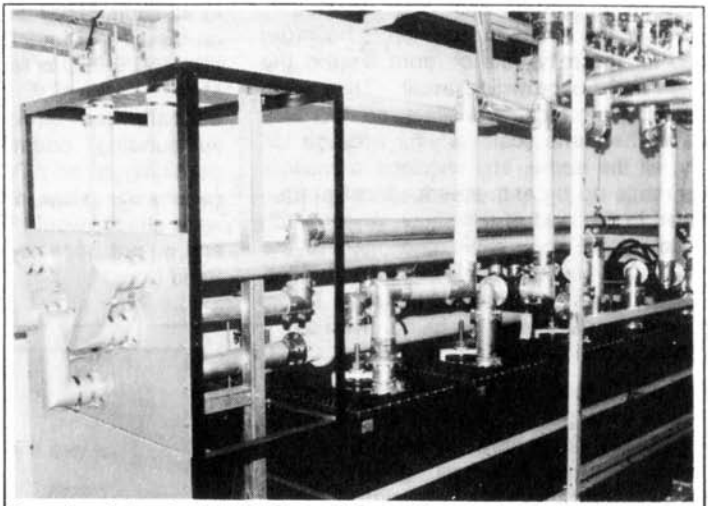
In addition EI7GT and EI9CJ expect to be on the air in Dundalk by the time you read this, and EI9ED is receive-only in Kells, Co. Meath. All ATV activity is therefore concentrated around Dublin and the surrounding counties, but there is a possibility of an ATV repeater in Waterford (*where the glass comes from!*). This, if it went ahead, would have its input on 70cm and output hopefully on a spare channel in Band IV or V.



A 10kW VHF Channel-J TV Transmitter

The day following the rally our team had to wend its way home, but not before we had visited the TV transmitter on Mount Kippure high up in the Wicklow Mountains and the studios at Donnybrook (thanks to Radio Telefis Eireann and the kind people who showed us around). Kippure is a really

isolated spot, with a snowcat used for emergency escape. If this fails there is a set of skis and, finally, a week's food rations. Not the place to get stuck in winter, though our visit was on the most glorious of days. A most pleasant memory and indeed a most agreeable and successful trip. We look forward to seeing some of our Irish friends at the next BATC convention and it won't be long before we visit Ireland again.



Not plumbing ! A VHF Sound Combiner using 3" solid co-ax!

BROADCAST TV IN EIRE

As a footnote, it is interesting to note the lengths to which people in Eire go to receive British television. Virtually every house in Dublin has a monster antenna on a tall pole: some people use 96 X-element German yagis, others use a box of four multibeams, and some use 7 ft. parabolic dishes with a gain of up to 20dB. Not surprisingly there is no planning authority necessary to erect this kind of array.

Dublin now has a cable TV system which relays BBC, ITV and satellite channels but other parts of the country will be without these until the 2.5GHz MMDS (multipoint microwave distribution service) is installed. In the interim unlicensed rebroadcast systems are allowed to proliferate, on the understanding they will be closed down once MMDS comes along.

One of these rebroadcast systems at Dunmore East, near Waterford, uses a 30ft parabolic aerial to pick up signals from across the Irish Sea. Frequency changers and AGC circuits then feed these signals to Band IV/V transmitters, using 40 watts per channel.

There are several of these systems, mostly with powers of between 10 and 40 watts per channel; some also relay satellite television. Simpler systems pick up Preseli, pass it through a distribution amplifier and relay it on the same channels but with vertical polarisation. The operators recoup their costs by supplying subscribers with a Colour King antenna and a preamp: the charge is £50 a year and some systems have subscriber bases of several thousand. Amazing!

The committee wish again to thank the Fingal Radio Club for accomodating the Club at their rally, at relatively short notice. We also wish to extend our thanks to all those friends, old and new, who made our visitors feel so welcome and helped to make the visit a success. Go mbeimis le ceile aris.

COLOUR CORRECTION

Part-1

John Goode

Previous designs published in CQ-TV for colour correction have always required the colour subcarrier to be separated from the luminance. When dealing with signals having a wide luminance bandwidth (implying a properly interleaved subcarrier) such as are produced from 3-tube and 3-chip cameras, this technique effectively restricts the luminance bandwidth to around 3MHz. Although any luminance components that get separated and processed with the chrominance should be re-introduced with the corrected chrominance, in practice there are phasing problems that prevent this happening nicely. Whenever the signal is filtered as well as the loss of bandwidth, other problems such as 'pre-shoot' and 'ringing' on vertical edges can occur, making a clean signal appear 'muddy' in some areas.

The answer is to devise a system that acts upon the composite signal, avoiding the process of separating the colour subcarrier. As far as saturation control is concerned, if some method of keeping the burst amplitude constant were devised, it would seem that the colour content of a PAL signal could be varied by simply boosting or cutting the HF part of the signal where the colour subcarrier resides. However, the key word here is 'simply', as simple HF boost/cut networks introduce variable phase shifts according to the amount of correction applied, and this is not admissible as the chroma phase relationship with the burst must be unchanged for all settings of the saturation control.

The method chosen is that of phase addition and cancellation. The chrominance is extracted from the composite signal, and then passed through a phase adjusting circuit. The burst is removed from this signal and then antiphase versions of it are applied to opposite ends of of the saturation control. This is then added to the composite signal (see Fig.1 - block diaagram).

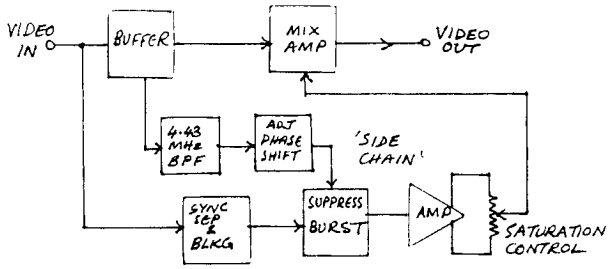


Fig.1 Block Diagram.

When the saturation control control is centred no output appears at the slider and the composite signal passes unaffected. Moving the slider away from the centre causes the separated chrominance to either phase-add or subtract from the composite signal chrominance, because the burst has been removed from the separated signal the composite signal's burst is unaffected, and so saturation is varied. Provided that the phasing pre-sets have been correctly set in the separated side-chain no relative phase-shift between output chrominance and burst will occur.

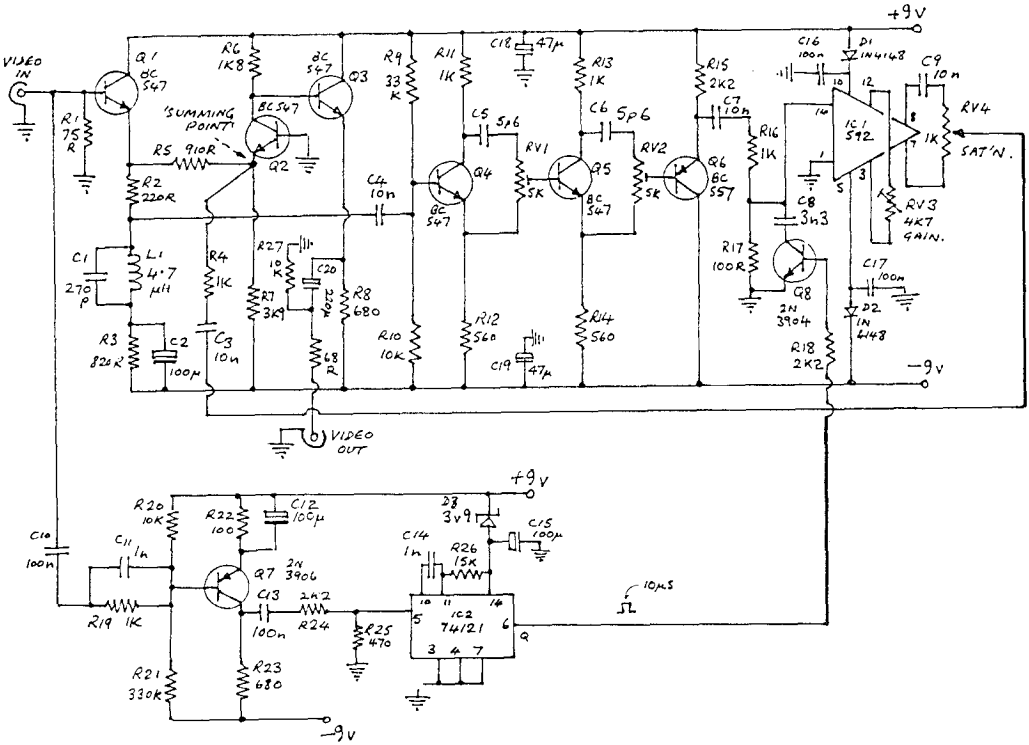


Fig.2 Circuit Diagram.

Fig.2 shows a practical realisation of the above idea. Video is fed to Q1 and Q7, Q7 being a sync separator that triggers IC2, a line-blanking generator that is used to suppress the burst in the side-chain. The chrominance side-chain is fed from the 4.43MHz tank circuit at Q1 emitter, whilst the direct composite signal goes straight to Q2 emitter, the 'summing' point. Q4 to 6 form the side-chain phasing circuit, Q8 suppressing the burst. IC1 provides gain setting and gives antiphase outputs for the saturation control RV4. The slider of this control is returned via C3 and R4 to the summing' point. Q3 provides the drive for the 75-ohm output.

Setting up consists of adjusting RV1, RV2 and 3. Start with all centred. Apply colour bars to the input and, with RV4 set centrally, check on an oscilloscope that the signal appears at the output (1V p-p into 75-ohms). Now move RV4 off centre and verify that the burst remains constant, indicating that the side-chain burst suppression is working. Now set RV4 to minimum and adjust RV1 and RV2 to minimise the chrominance level. If this is impossible, reverse the end connections to RV4. Then use RV3 to get complete cancellation of the chrominance. If the phasing (RV1 and RV2) and gain (RV3) are correct, RV4 should then allow the output chrominance to be adjusted from zero to double its uncorrected value. Several attempts may be necessary, as RV1, RV2 and RV3 all interact. (Adjustment is much easier if a vectorscope is available).

CONTEST NEWS

Bob Platts G8OZP

Since June, here in IO93EU (East Staffordshire), we have only had two days of rain, yet as I look out of the shack window into the darkness, I see snowflakes drifting by. What has this got to do with contest news you may ask. Well...nothing really.

Right down to business, the International results.

IARU ATV CONTEST 1989

70CM Section 1 (TX/RX)

Callsign	Pts	QSO's	Best DX	@km
PE1HXD	12283	56	?	544
PA3BJC	11971	49	?	350
GW7ATG/P	9928	30	ON7MB	580
ON7MB	9012	32	GW7ATG/P	580
G1COI/P	8133	23	GW7ATG/P	350
G8MNY/P	7957	35	ON7YZ	411
PA3DLS	7857	51	?	368
G7ATV/P	7641	42	G8EQZ/P	319
ON5OF	7138	45	DJ7JG	355
G4DVN/P	7112	37	PE1HXD	544
PA0ERW	6797	38	?	294
PA3EXV	6570	37	?	343
PA1LZZ	6218	46	?	298
PA3DCP	6145	39	?	321
ON7GG	5980	33	G1COI/P	340
PE1BZM	4987	28	?	298
PE1MCM	4711	40	?	282
G8EQZ/P	4424	17	G7ATV/P	319
DL2KBH	3979	37	?	246
PA3CVM	3851	21	?	259
G4WRA/P	3736	22	G7EQZ/P	221
DJ6JG	3398	13	?	356
PA0BOJ	3208	20	?	200
G8OZP/P	3187	19	G4VTD	220
G4VTD	3005	14	ON7MB	296
PA0DLJ	2777	18	?	260
ON5ID	2730	21	F8MM	217
ON1ANK	2600	19	PA3BJC	227
G8VOI/P	2428	17	GW7ATG/P	273
DH8YAL	2359	25	?	189
PE1MQC	2260	17	?	251
ON5VL	1939	16	ON5ID	159
G1XRC/P	1842	9	G4DVN/P	311
G6IQM	1708	14	GW7ATG/P	168
DA3UM/P	1530	5	?	285
G8ONX	1444	13	GW7ATG/P	150
PE1LRS	1323	13	?	201
G8GKQ	1203	8	GW7ATG/P	235
G6WLM	866	11	G8MNY/P	90
PA3DVI	808	6	?	144
PE1JRX	802	7	?	161
G4EIX	801	9	G8MNY/P	137
E13FW	612	2	?	272
PA3CHH	563	11	?	186
DL6SL	501	10	?	122
DL3NE	430	9	?	99
G4EAB	382	7	G4WRA/P	75
DF1SM	360	6	?	116
DG9RAO	341	3	?	70
G4LXC	333	7	G8VOI/P	111
G1NQM	284	5	G4DBG	55
G4TEP	191	3	G8VOI/P	87
PA3CMT	98	3	?	25
G6XDY	38	1	G8VOI/P	19

IARU ATV CONTEST 1989

70CM Section 2 (RX only)

Callsign	Pts	QSO's	Best DX	@km
ON4YZ	5586	34	G8MNY/P	470
NL8722	5325	34	?	342
DL6KI	2867	19	?	315
NL5184	2498	21	?	253
PE1AFJ	2121	16	?	190
NL8506	1804	14	?	249
PE1JRX	1232	15	?	194

Callsign	Pts	QSO's	Best DX	@km
PD0PPA	1214	17	?	235
PE1FOC	1001	8	?	153
ON2KBA	536	10	PE1HXD	277
DG2YDZ	242	3	?	189
PA3ESB	267	5	?	122

IARU ATV CONTEST 1989

24CMs Section 1

Callsign	Pts	QSO's	Best DX	@km
G7ATV/P	2521	22	G4DVN/P	213
G4DVN/P	2074	12	G7ATV/P	213
G4WGZ/P	1561	11	G4DVN/P	178
G4WRA/P	1526	12	G4DVN/P	126
PA3DLS	1200	11	?	179
DJ7JG	1186	10	?	162
G8VOI/P	919	14	G7ATV/P	121
DH8YAL	870	12	?	179
G6IQM	634	6	G4DVN/P	105
PA3DEE	589	9	?	141
ON7GG	539	11	DH8YAL	146
ON7MB	491	4	PA3DLS	158
PE1MQC	475	6	?	105
ON5ID	375	4	ON7MB	217
G8EQZ/P	363	3	G4DVN/P	117
PE1LRS	357	8	?	132
G8GKQ	354	4	G7ATV/P	72
G8ONX	326	4	G4DVN/P	90
DL3NE	297	7	?	34
PA3BOJ	275	4	?	57
DL0RO	223	9	?	27
G4VTD	162	2	G4WGZ/P	66
G6XDY	134	3	G8GKQ	52
DF1SM	98	2	?	31
DL6SL	94	2	?	28
G1NQM	30	1	G4VTD	30
PA3CMT	25	1	?	25
G4LXC	10	1	G4DVG	1

24CMs Section 2

Callsign	Pts	QSO's	Best DX	@km
NL5184	376	3	?	186
PE1MVM	141	4	?	175
ON4YZ	116	2	ON5NK	67
PE1JAM	89	3	?	32
DG2YDZ	75	3	?	34

13CMs Section 1

Callsign	Pts	QSO's	Best DX	@km
DG2YDZ	19	1	?	19
PA3CRX	14	1	?	7
PA3CWS	14	1	?	7

A very good standard and number of entries this this year, and thanks for getting them in to me. Although there were a few cases where scores had to be adjusted. By the time you read this, those of you who sent an A4 sae with your entry should have received your certificates.

The Dutch have done it again and congratulations go to PE1HXD for his excellent score and 1st place on 70, together with PA3BJC who managed to relegate GW7ATG to 3rd spot.

Some very high scores were achieved in the 70Cms section 2 (RX only) with first place and congratulations to ON4YZ. Judging by the number of entries from Holland TV DX is quite popular there. Could we see some from the UK next year?

The top four spots on 24 go to the UK with congratulations to the All Take Viv Portable group. Again Viv asks me to say thanks to all concerned via these pages. Activity on 24 is increasing rapidly, with Dutch and German stations well up in the first ten.

A fine achievement by NL5184 for a best DX of 186Klm in the 24Cms section 2. This is not far short of that achieved in section 1.

I was pleased to receive 3 entries for the 13Cms band, unfortunately though, none of them from the UK. congratulations to DG2YDZ.

Tim G6XDY has been setting new operating standards. He worked the Inter dressed in a suit, bow tie and smelling of champagne (Tims daughter chose the same day for her wedding).

I imagine that John, Andy and Peter of

G8MNY/P fame worked up a thirst judging by the points, especially after the rotator failed and armstrong techniques had to be adopted.

The Pompey group, G8VOI/P (Bob, Chris, Dave and Pete (sounds like a pop group from the sixties)) had trouble keeping their 10 foot dish in the air, due to the wind. The mast gave up the struggle first. Better luck next year. They reported working Tim G6XDY. At first they thought he had an unfortunate speech impediment.

Peter G1COI/P complained about the horizontal rain. It is free Peter.

John G4EAB only runs 250mW and I quote from his comments "I found the other contestants very well mannered and pleasant in displaying the utmost patience in trying to receive my QRP signal. These ATV contests are certainly not the rat-races of the other modes". John, it's a pleasure to have you on the band. Keep up the good work.

As for G8OZP/P the Rolleston group of myself, Dave and Phil. Saturday evening was a disaster. The TX was TXing but the antenna would not radiate. This was traced to a very severe case of ferrous weevil in the antenna. Left the antenna on site hopping someone would steal it and returned to the pub to discus what next. Returned to site in the morning with Phil's spare J Beam. This gave much improved results.

All in all despite the flat conditions an blustery weather the 1989 Inter was considered by all entrants as being another good success.

AUTUMN VISION 1989

As you can see by the results, at last I have managed to organise a contest and a lift for the same day.

Once again congrats to the Go West, A Top Great Peaks group for their win on 70 and to G8LES for his DX of 307Km and first place on 24.

AUTUMN VISION 88

Results 70cm

Callsign	Pts	QSO's	Best DX	@km
GW7ATG/P	11427	37	G4DVG	327
G8EQZ/P	8818	30	G8LES	307
G8MNY	5604	28	G4SHC	284
G4WGZ	3362	16	GW7ATG/P	294
G4SHC	3300	17	G8MNY	286
G8ONX	2626	16	G8EQZ/P	174
G6IQM	2239	17	G8EQZ/P	179
G6WLM	1002	9	G8EQZ/P	175
G0JNK	909	6	G1COI	161

Results 24cm

Callsign	Pts	QSO's	Best DX	@km
G8LES	4406	16	G8LES	307
G4WGZ	1020	7	G6YKC	194
G6IQM	866	9	G8EQZ/P	179
G8ONX	858	9	G8EQZ/P	174
G6WLM	54	4	G6IQM	24

I was pleased to receive an entry from Craig, EI3FW. ATV operation in Ireland is far more restricted than here. Craig and the small group of ATV'ers there are doing a champion job and we wish them all the best for the future. As they are a small group, in future Irish stations will be eligible to enter all BATC contests on an equal footing with the UK. So next contest don't forget to point your antennas at EI land. Craig is also active on 20m slow scan (when the faulty feeder has been sorted).

Judging by their comments Clive and Richard G8EQZ, appeared to be on a natural history field day rather than an ATV contest, what with bees, spiders, sheep and mud. Well it's all part of the fun.

Ron, G4SHC, did the sensible thing and stopped at home. He comments that isn't it about time a certain group which operates from GW land changed their numbers. You know, the one's that add up to six.

John of the Always Thesame Graphics group asks "What has happened to G8OZP and the All Very Good group. Well John, not a lot, just missed a contest, no excuses. I agree with the comments that it's good to see some new stations active.

Also thanks to Mike (G6IQM) for his comments, I think they have already been said.

G6WLM contacted me after publication of CQ-TV 148 concerned by the fact that his 70Cms log for the Summer Fun 89 contest was not included in the results. This was

CONTEST CALENDAR

SPRING VISION JOINT EUROPEAN

Sat March 10th - Sun March 11th

1800 GMT Sat - 1200 GMT Sun

Fast scan TV all bands.

MAYDAY MICROWAVE

00,01 - 23,59 local

All modes. 24Cms and above.

SUMMER FUN JOINT EUROPEAN

Saturday June 9th - Sunday June 10th.

800 GMT Saturday - 1200 GMT Sunday.

Fast scan TV all bands.

A NEW HAM TV MAGAZINE

FROM THE HAM THAT BROUGHT YOU ATV DX VIA BALLOON: WB8ELK

AND

FROM THE HAM THAT GOT ATV IN THE AUG. 27 ISSUE OF **TV GUIDE**: KB9FO

Amateur Television Quarterly. A high quality technically oriented ham TV magazine.

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In the tradition of the BATC, CQ-TV, Ham TV in the US needs a technically oriented ATV magazine. Amateur Television Quarterly is being started to fill this need. Each issue will cover technical subjects, build-it projects, equipment reviews, theory articles and operating news. Each issue will have virtually **no** editorial content except for FCC and operating news. Each edition will be edited by a professional staff of technical and journalistic experts. Not every item submitted will get published unless it passes our editorial and technical staff.

VALUABLE CONTENT

The first issue is expected to be out in January of 1989. Each issue should be at least 48 easy to read pages. That's 48 pages of useful information not 12 pages of ads for in house products and promotions.! Areas covered will be FSTV, SSTV, video and related subjects. Our internal text paste up is done on daisy wheel and laserjet printers . . . no hard to read dot matrix fonts!

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In order to succeed we encourage your input. This can be in the form of articles, operating news, subscription or comments. Amateur TV Quarterly will PAY for your technical articles. You won't get rich but it will keep you in typewriter ribbons. Our initial distribution of 4,000 copies will make you famous! This may mean even more issues per year if response is large enough! Well known ATV'ers have already submitted prime material for the debut issue.

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- ☐ promotion of subscriptions in my area.
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LOGIC CIRCUITS

Part-4

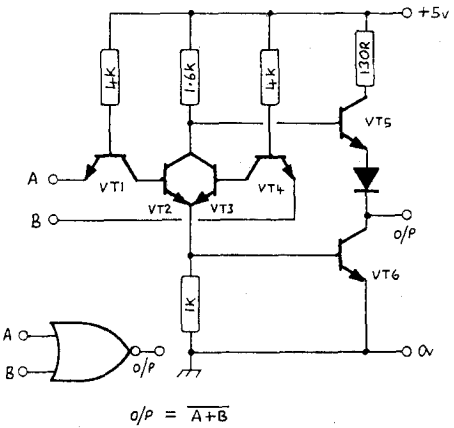
John Wood G3YQC

T.T.L. ODDS AND ENDS

The NOR-gate

All gates mentioned in this series up to now have been positive logic NAND-gates which could be used for the NOR function with negative logic signals. However the 7402 has four, two input, positive logic NOR-gates in the package.

The basic arrangement is shown in Fig.1. and as can be seen is the same as a NAND-gate but for the extra transistors VT3 & 4 which duplicate VT1 & 2. VT2 & 3 form the actual NOR-gate part since, if the base of either one is taken high, then the gate output goes low. Whereas both must be taken low to make the gate output go high. See Fig.2. This then is the exact opposite to the 7400 NAND-gate. It follows then that anything the 7400 can do, can be done by the 7402 if the signals are inverted. For example a R-S bistable latch is shown in Fig.3. for NAND and Fig.4. shows the same arrangement for NOR. Note that the symbol for the NOR-gate is different from the NAND.



$o/p = \overline{A+B}$

Fig.1 TTL NOR-gate

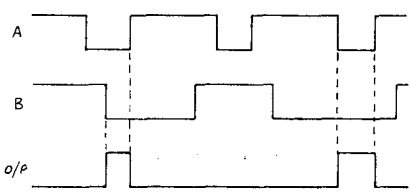


Fig.2 Waveforms for NOR-gate

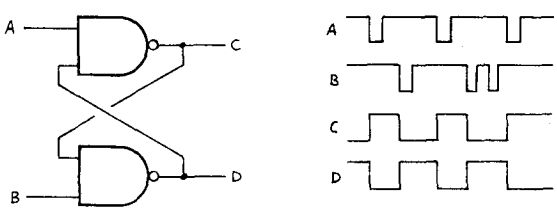


Fig.3 R-S bistable using NAND gates

A good use for the NOR-gate is in the following circuits for generating short pulses. (Fig`s 5 to 8). R should be about 200-ohms to 1k in all cases and C may be up to 1000uF.

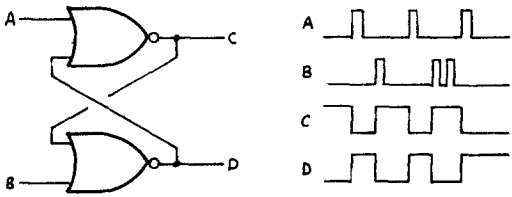


Fig.4 R-S bistable using NOR gates

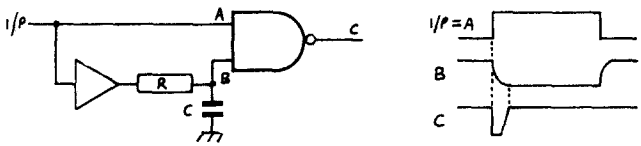


Fig.5 Generating short pulses - neg' pulse from pos' edge

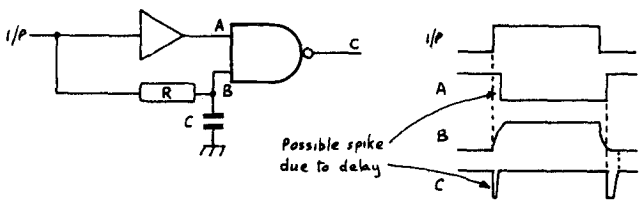


Fig.6 Neg' pulse from neg' edge

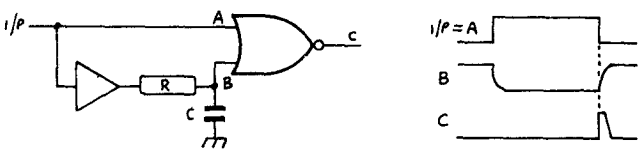


Fig.7 Pos' pulse from neg' edge

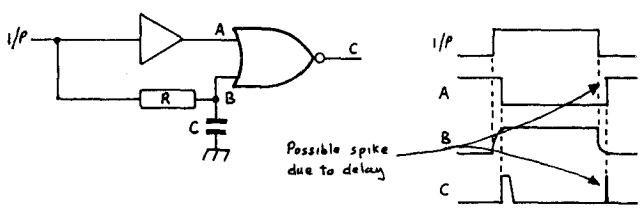


Fig.8 Pos' pulse from pos' edge

Note that integration is used rather than differentiation since there are no overshoots from the unwanted edges and therefore no risk of damage to the gates.

Fig's 9 & 10 show a means of generating very short pulses by using the delays of gates in series. There are no other components! Such a pulse is sufficiently long to clock or clear a bistable.

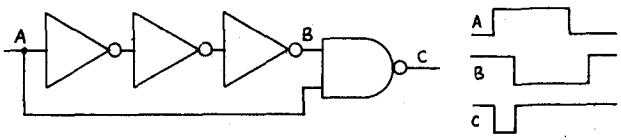


Fig.9 Producing short pulses without R-C networks

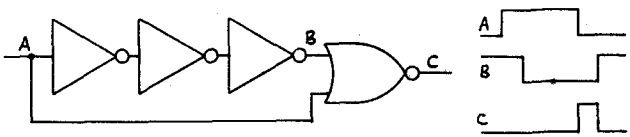


Fig.10 Using NOR-gates

Fig's 11 & 12 show the use of NAND and NOR-gates in pulse edge delaying (or pulse widening - or narrowing - depending on how you view it).

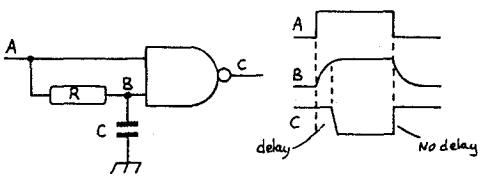


Fig.11 Pulse stretching - using NAND gate

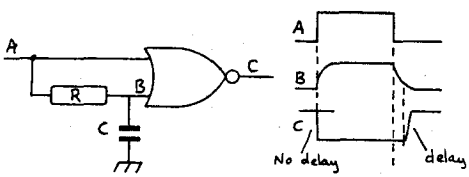


Fig.12 Using NOR-gate

The Exclusive OR gate 7486

This impressive title describes the system shown in Fig.13. Four such systems are put inside one package. This device is usually classed with arithmetic units in the TTL families but is occasionally useful, for example in a `window` generator where a border can be obtained from two `windows`. It may also be useful in counter feedback logic where the number of ic`s may be reduced by the more economical packaging.

A good use for the 7486 is as a switchable waveform inverter for example in a binary up/down counter as Fig.14 shows. The truth table for the Exclusive-OR gate is shown here, and it can be seen that the output is a 1 only if A & B are different. Looked at in another way, if B is Ø then the output is A, or if B is 1 the output is $\overline{A}$. So using one of these gates between a bistable will invert, or not, the waveforms at will from a control switch.

A	B	O/P
Ø	Ø	Ø
1	Ø	1
Ø	1	1
1	1	Ø

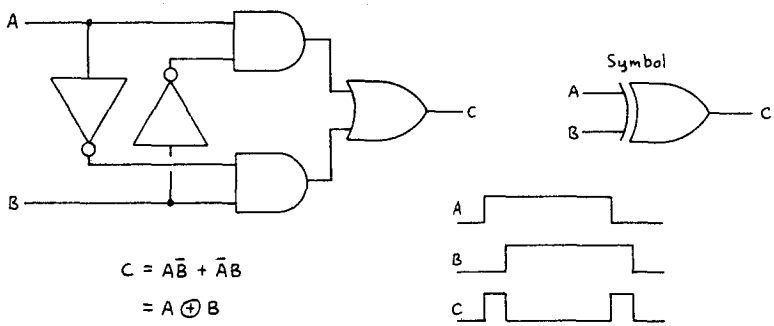


Fig.13 Exclusive-OR gate 7486

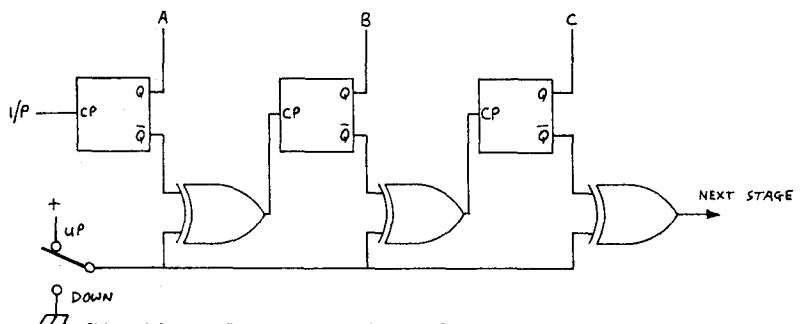


Fig.14 3-stage up/down binary counter

Fig.15 shows the waveforms for such a counter. Note that changing the control switch will falsely clock the counters.

Fig.15 Counter waveforms

The AND-OR-NOT gate 7451

This is another strangely-titled device consisting of several gates within the same unit. Two complete systems are included in the same package. Fig.16 shows the details. The waveform diagram looks formidable but in fact shows all the 16 possible variations of input conditions. The output waveform still seems to be strange even so. However the gate can be used as a change-over switch as Fig.17 shows or as a 2-way 2 pole change-over switch as Fig.18 shows. Compare this with Fig.19 which shows the same system made from NAND gates. Note that the output is inverted from the AND-OR-NOR arrangement.

Simple Schmitt Trigger

Fig.20 shows how this can be made from two inverters. The output has the same phase as the input and so the feedback is positive causing a rapid change of state with a slowly changing input.

The Gated Multivibrator

This arrangement consists of a multivibrator which is forced to stop and start by means of an external pulse - e.g. Mixed Blanking. It will always start with the same phase and since it should have the same frequency all the time it can be used as a source of vertical lines for grille generators, colour bars, etc.

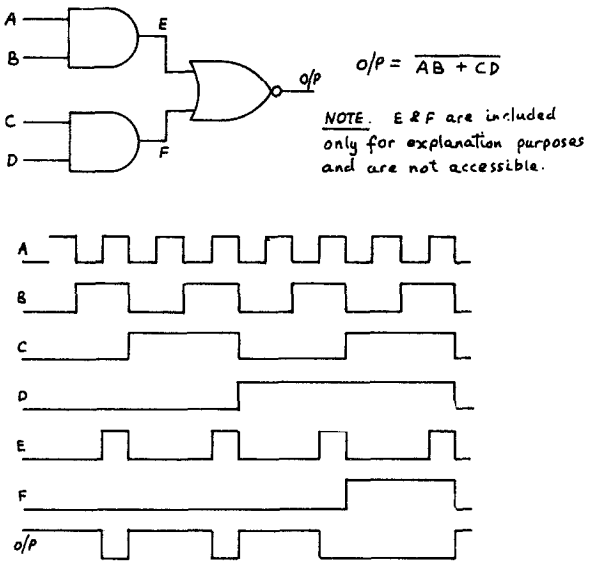


Fig.16 AND-OR-NOT gate 7450 or 7451

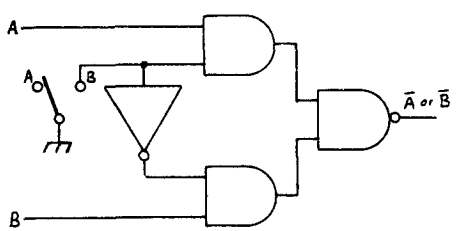


Fig.17 Change-over gate using 7451

The two 470-ohm resistors are effectively in parallel during oscillation, hence the increased value of the associated capacitor. When the input is high, however, the 470-ohm resistors make a potential divider and the inverter half of the multivibrator is turned permanently 'ON'. This prevents further oscillation. The two-input gate is used to help the stopping and starting and tends to keep the starting-up cycles snorter than they would otherwise be. Even so, the first pulse is about 30% wider than the rest. Juggling the values can minimise it. Frequency control is about 3 to 1 with the 1k variable resistance. It is possible to replace the first 470-ohm by a diode in which case the 2.5C becomes C.

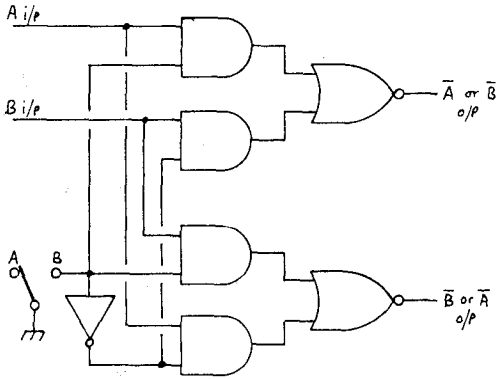


Fig. 18 Change-over gate - double pole - using 7451

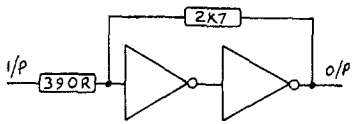


Fig. 20 Simple Schmitt trigger

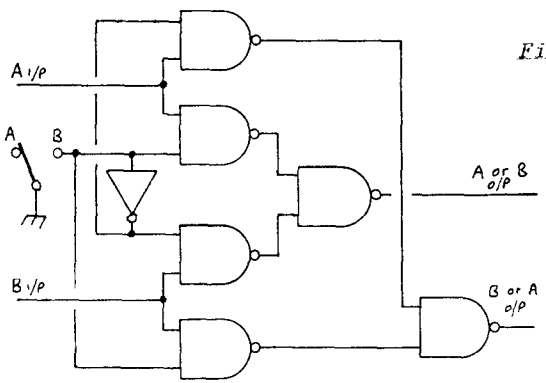


Fig. 19 Change-over gates - double pole

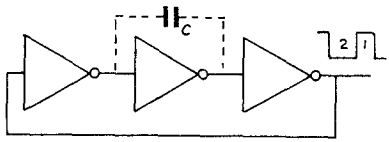


Fig. 22

The simplest multivibrator

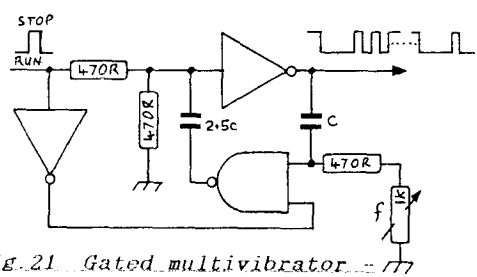


Fig. 21 Gated multivibrator - using simple gates

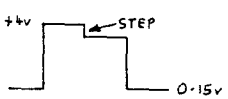


Fig. 23

Typical counter waveform

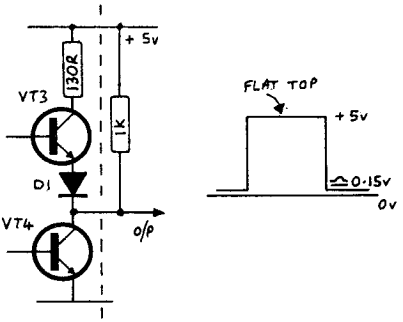


Fig.24 Removing the step

This must surely be the simplest oscillator of all! with no capacitor the frequency is about 30MHz which is approximately 3 delays (each about 12nS).

i.e. 1/36nS ≃ 30MHz

Adding a capacitor lowers the frequency. e.g. 220nF gives 50KHz with a 2:1 mark/space ratio. If a squarewave is required, 220-ohms should be put in parallel with the capacitor.

Steps in Counter Waveforms

Fig.23 shows the usual effect observed in counters using multistage i.c's. This is due to changes in internal currents causing different voltage drops on the internal connecting leads.

For normal use this does not matter at all, but if the counter output are to be summed together, to form a step waveform, for example, then the steps in the waveforms cause unequal intervals. This can be overcome if the counter outputs are 'pulled up to +5v by 1k resistors as Fig.24 shows. The effect of this is to put +5v on the output when the output is high - i.e. when VT3 is 'ON' and VT4 is 'OFF' this reverse biasses the diode and turns it off (VT3 is 'ON' and therefore holds the diode anode to +4.5v or so). There is therefore nothing to prevent the output being at +5v. Changing the conditions to VT3 'OFF' and VT4 'ON' does not effect matters greatly - the 1k merely acts as a collector resistor for VT4 and increases the dissipation somewhat. The output voltage swing is now 5v pp.

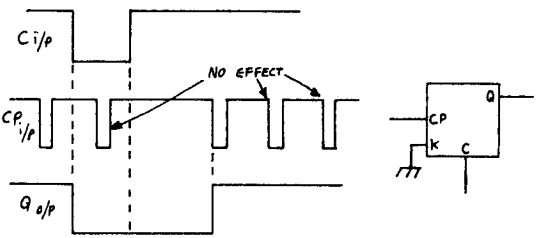


Fig.25 J-K bistable as a latch

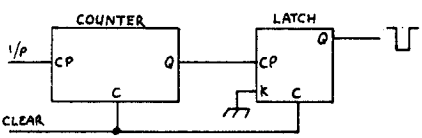


Fig.26 Using the latch

J-K Bistables as a Latch

The J-K bistable, if both J & K are taken high, acts as a straightforward binary bistable. If the K input is earthed, though, the bistable can change in one direction

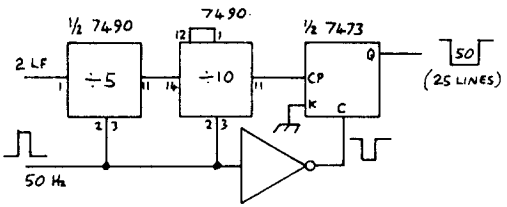


Fig.27 Forming field blanking

only - from Q low to Q high. This can be put to use in the form of a latch, or memory, which cannot be upset by further pulses. Fig.25 shows the details. The bistable is cleared Q low by the clear pulse which overrides all other conditions. The clock pulse during clear is ignored but the first pulse after the trailing-edge of the clear pulse clocks the bistable Q high. Subsequent clock pulses have no effect until the bistable is again cleared.

A cross-coupled R-S bistable behaves in the same way but has the disadvantage of giving signal out from one half during the clear pulse - it also needs voltage triggering and not negative edges as the bistable does.

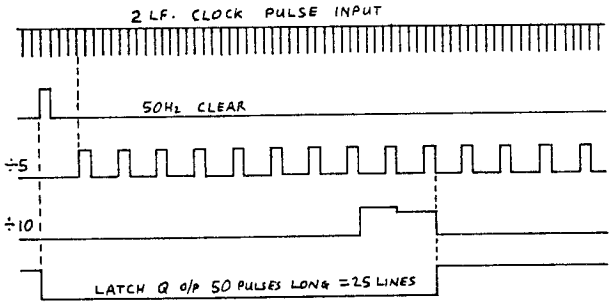


Fig.28 Waveforms for Fig.27

The bistable latch also enables longer pulses to be obtained from inputs by running off the trailing edges. This gives a convenient way of counting pulses with the aid of a counter.

Counting Clock Pulses for Timing Signals

If the input to a bistable latch is taken from a counter then the latch output corresponds to the number of pulses counted - if both latch and counter are cleared together. Fig.16 shows the basic system. In Fig.27 a practical arrangement for generating field blanking is shown.

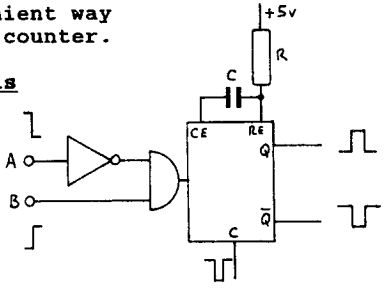


Fig.29 Dual retriggerable monostable 74123

The counters trigger off negative-going edges as does the latch so if twice-line frequency pulses are used it takes 50 pulses (or 25 lines) to generate a negative-edge into the latch after the clear pulse is removed. The clear pulse has to be inverted between the latch and the counter since the counter requires positive pulses and the latch negative pulses.

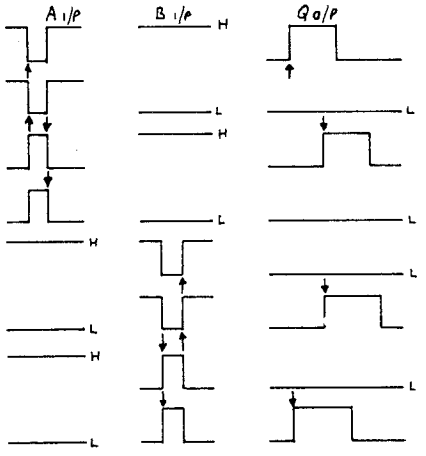


Fig.30 Input & output waveforms

Retriggering Monostable

Another device in the TTL range is the retriggerable monostable 74123. This is a useful device in many ways, but it is not as stable with voltage or temperature as a 74121, nor has it the twin A input or the Schmitt facility, but then you

get two in one package (16 pins). It can also be cleared, or stopped during its output pulse by a negative clearing pulse.

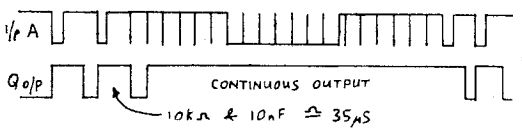


Fig.31 Example of retriggering action

The A & B inputs enable positive or negative input pulse edges to be used as the trigger. Fig.30 shows the results from the various input combinations. The timing pins cater for delays of up to 40 seconds. The resistor range is 300-ohms to 100k. Typical figures are R 10k, C 10nF, pulse = 35uS, R 22k, C 1uF, pulse = 3mS.

Fig.31 shows an example of the use of the retriggerable facility. This facility in effect OR's together several such monostable pulses into one long one.

If the delay is to be greater than half a line, then the twice line pulses during sync retrigger into a long pulse.

Simple Colour Bar Generator

This generator consists of only two ic's and produces bars in order of descending luminance - the normal sort. Fig.33 shows the required waveforms, for the three colours. These waveforms have to occur only during the picture time and so mixed blanking is used as the drive signal.

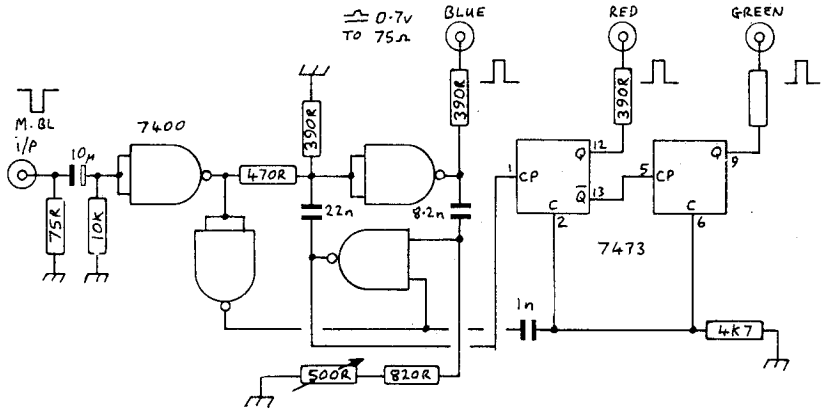


Fig.32 Simple colour bar generator

It will be seen that the three waveforms can be derived from simple binary stages in cascade and that eight bars are required. So for a cascaded counter the clock frequency must be 8 times line frequency unless a squarewave generator is used when 4 times is sufficient.

A simple multivibrator is used for this and consists of two NAND gates cross-coupled. The other two NAND gates are used as buffer inverters to drive the multivibrator to force it to have the same phase on every line by preventing it from oscillating during the blanking period. Blanking is also used to reset the counter bistables. The signal

level during blanking must, of course be black, but the first bar must be white which means that all counters must clock together after blanking. The simplest way of ensuring this is to use a bistable requiring positive clocking edges - the 7474 for instance, but a 7473 J-K bistable can be used if the $\overline{Q}$ feed is used to clock the next bistable, and the Q feed to provide the output.

Changing the oscillator frequency changes the widths of the bars and a repeat pattern can occur if the frequency is too high. The frequency control changes only one time-constant and hence only alternate bar widths.

This does not really matter for amateur use but can easily be overcome by a second pot on the other time constant. (or by tweaking the supply voltage).

The frequency stability of this oscillator is very poor with changing voltage so a well regulated 5v supply should be used.

The outputs are arranged to give R.G.B. feeds and to give 0.7v non-composite signals into 75-ohms.

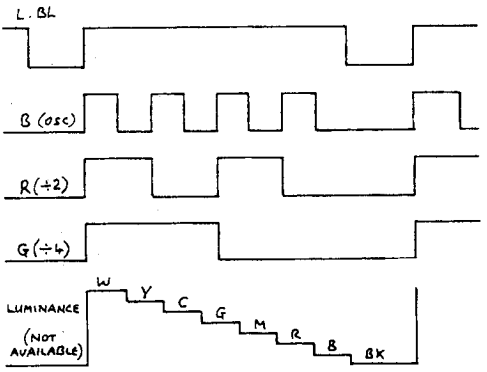


Fig.33 Colour bar waveforms

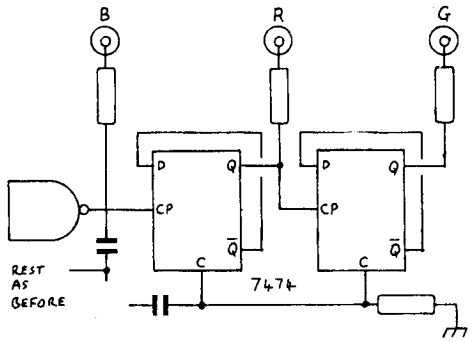


Fig.34 Using 7474 instead of 7473

Colour Bar Generator for Phase Bars

This is more difficult to make as the pulse sequence is not regular. See Fig.35. The reason for phase bars is that the Vectorscope display is clearer than for luminance bars because the stray lines joining the colours now travel clockwise round the display (in a hexagon) rather than across the display as for luminance bars. See Fig.36.

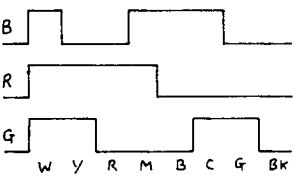


Fig.35 Phase bars

The system is not common but is shown to give an example of a synchronous 8-bit counter with odd waveforms. The same counter can be switched to give luminance bars. Note that the G & R outputs then interchange. Also that the third bistable is a 7472 which has triple J & K inputs. These form NAND gates and all three must be high together in order not to inhibit the toggling - or conversely, any one taken low will stop the action. A fourth bistable is shown so that a white only pulse may be generated if required. This could then be the basis for a generator to make the various types of bars where the white and the colours have different amplitudes.

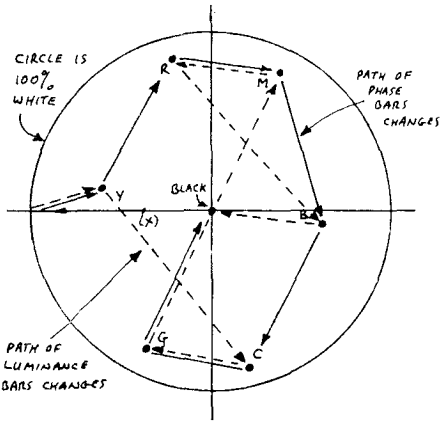


Fig.36 Vectorscope display

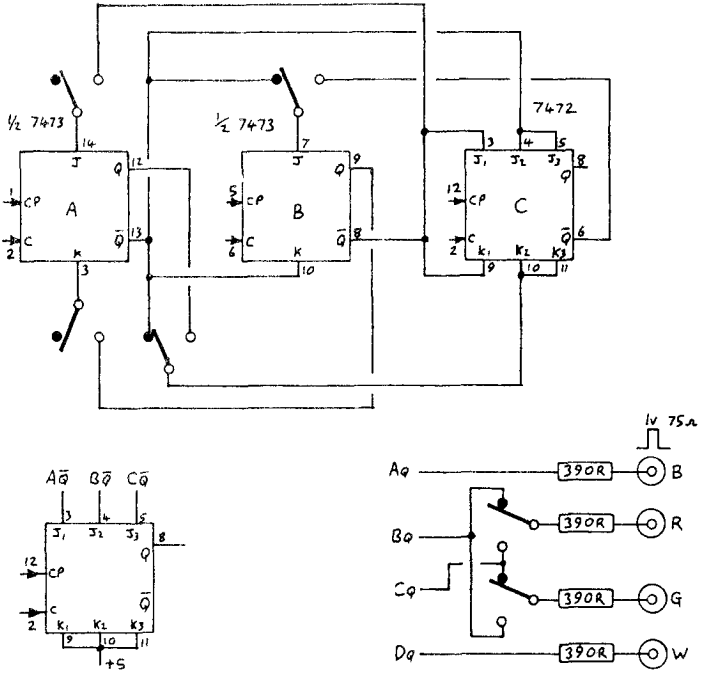
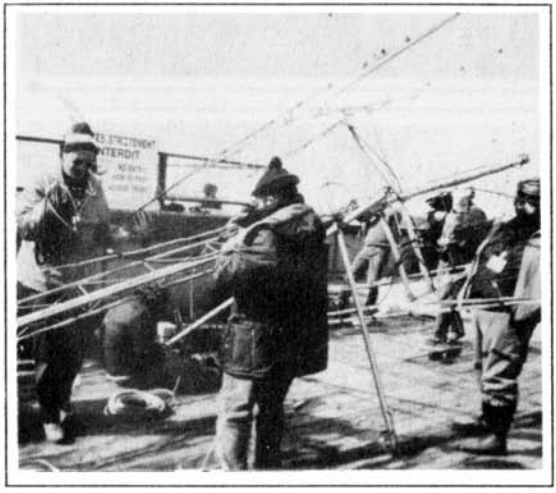


Fig.37 Colour bar generator - luminance or phase bars

Rest of circuit as for Fig.32 (CP & C pulses). 4.7k may need to be reduced. 22n and 8.2n should be halved.
2-way 6-pole switch shown in lum. position.
Bistable D required only if single white bar required.

ATV ATOP MONT BLANC

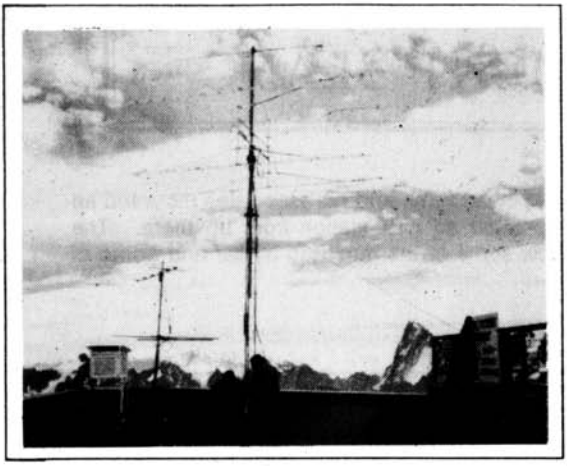
As reported in CQ-TV 147 on page-86, our old friend F3YX and his associates mounted an expedition to the top of Mont Blanc and operated an ATV station from up there. The photographs on the following two pages show some of the 'fun' had by all! and some of the equipment used.



Above: Fitting the 23cm aerial array to the mast.

Top right: Assembling the 4 x 21 element 70cm and 9 element 2m aerials on the terrace of the Aiguille du Midi.

Right: F3YX with the array of 4 x 23 element 23cm aerials.



Above: F6BXC with his potable setup!

Top left: The assembled aerial mast erected on the Aiguille du Midi.

Left: Laying the coax cables.

Bottom left: Exhibition vehicle and control centre.

SSTV - THE AVT SYSTEM SECRETS REVEALED

John Langer WB2OSZ

The world of SSTV standards is a tower of Babel. Robot, Microcraft, Suding, Wraase, Martin, Scottie, and all with different speeds.

With dozens of SSTV modes available do we really need more to add to the confusion? Do the newer modes really offer significant improvements over their predecessors, or are they just the result of the 'not invented here' syndrome.

COLOUR SSTV EVOLUTION

The early colour SSTV pictures used the Frame Sequential method, red, green and blue components were transmitted as separate black and white frames.

The next breakthrough was in the use of the Line Sequential method. By placing the RGB components of a line together, it was easier to maintain correct alignment, and the pictures could be seen in full colour as they were received.

The Robot modes added digital information to the vertical sync pulse, identifying the format of the following image. This allowed the receiving station to select the proper mode automatically.

The Martin and Scottie modes made a significant departure from the past. Rather than using horizontal sync pulses they relied on very accurate oscillators at both ends to keep everything lined up correctly. Once the two stations were synchronised interference could wipe out part of the picture, but the rest would be in the right place with the correct colours. If one oscillator is a little off in frequency the image is slanted. (The same problem arises when trying to store pictures using an audio tape recorder). There is still a very vulnerable time during picture transmission and synchronisation can only be achieved if the vertical sync (about 1/3 second) is received correctly. The AVT modes have a much longer sync signal (about 5 seconds) with a lot of redundant information, it is only necessary to obtain synchronisation.

SOME DETECTIVE WORK

After months os asking people on the air, writing letters and making phone calls, I was able to obtain only a small amount of information about the AVT modes. There are three basic formats with a couple of variations:

Lines	Pixels/Line	Time (secs)
128	128	24
240	256	90
200	320	94

The so-called 'QRM' mode is just another name for interlace; first the odd numbered lines are sent, then the even numbered lines. This prevents a burst of noise from destroying adjacent scan lines. In 'narrow mode', tones in the range of 1700 to 2100Hz are used instead of the usual 1500 to 2300Hz. This allows the use of a narrower pass-band on receive.

However, the above gleaned information was still not enough detail to actually implement it. The next step was to write a short program to capture the output of an SSTV demodulator and plot it on a dot-matrix printer - a hard copy oscilloscope.

A MYSTERY IS SOLVED

A picture is composed of two distinct parts:

1) the image

2) a header with digital information.

Figuring out the image encoding was easy by examining a signal with known vertical colour bars. Each line is sent in RGB order with no horizontal sync or other separation. Black and white are the usual 1500 and 2300Hz, except in narrow mode as mentioned earlier. In 90 second mode each group of 256 pixels took 125 milliseconds. This is a rate of 2048 pixels per second - a nice round number if you count in Binary! The same pixel rate is used for all the modes.

The digital header took much longer to figure out. It uses only the black and white range of frequencies, not 1200Hz as in earlier SSTV modes. The bit rate was exactly 1/20th of the rate calculated earlier. I arbitrarily called the black tone '0' and the white tone '1', and copied some of the bits to another piece of paper. Occasionally there was a medium grey bit which I initially thought was caused by noise. I wrote these as a question mark

After rearranging the long string of bits into groups of various sizes a pattern emerged:

?1010000001011111

?1010000101011110

?1010001001011101

" " "

?1011111001000001

?1011111101000000

Each group had the pattern:

? mmm sssss mmm sssss

where:

mmm represents the mode

010 = 24 second

011 = 94 second

101 = 90 second

There does not seem to be any difference with 'QRM' mode turned on.

sssss is a sequence number varying from 00000 to 11111.

CONCLUSION

Whilst homebrewing an SSTV system my biggest problem was obtaining enough detailed information about the various transmission modes to implement them. I hope this short article will help other experimenters avoid some of the same frustration.

PLEASE NOTE: The information concerning the AVT system was not obtained by disassembling, or otherwise directly examining the AVT software from Black Belt Systems. I have never seen the program in operation. I do not have a copy of the AVT software. I do not have an Amiga computer. All I used was the publicly available information mentioned above and signals heard on the air.

If you have any information regarding SSTV systems, the latest state-of-the-art conversion systems or just plain SSTV news, please let me know. I am pleased to have been able to include some SSTV material in the last couple of magazines. I can only do so if you send it in! ..... Ed

SEVERNSIDE TELEVISION GROUP

NEW 24cm FM TV TRANSMITTER

Severnside Television Group are proud to announce G4BVK's superb new "state of the art" FM TV Transmitter. This unit will be setting the benchmark for 1990 and beyond. Featuring a phase locked loop oscillator running at output frequency, two channels are available (1249 and 1255 Mhz standard - others to order). RF output is 3 W from the SC1043 amplifier module, providing clean and stable power. The RF circuitry is in a separate die-cast box, and uses surface mount components throughout. Of course, 6 MHz inter-carrier sound is provided with mic and line level inputs. Front panel control of video and sound levels is featured. Standard video pre-emphasis is included, along with some clever video clamping circuitry which eliminates much of the distortion some designs produce, and hence allows this transmitter to provide particularly good colour performance. The power requirement is 13.5 V dc at 1.25/1.5 A, and the complete unit is housed in a die cast box size 188 x 120 x 57 mm. Like all STG products, this unit is a fully built and tested item, ready for you to just plug in a camera, mic and aerial before putting your own ATV station on air !. The cost is £220 plus £2.50 postage.

24 cm PRE-AMP

Also from G4BVK's stable, our 24 cm high performance GaAsFET pre-amp is now well established in ATV circles as the hottest design around !. But whilst it is very sensitive, it is also quite docile and stable, unlike some other types. This is achieved by meticulous attention to construction detail, employing internal screening partitions and SMD components. Hence you get around 17 dB gain with a noise figure of 1 dB, all from a 12 V dc powered box size 110 x 60 x 30 mm. One of the prototypes is up the masthead on GB3ZZ, where it has survived over a years battering from the transmit signal radiating only 2 m away, night and day ! Our G7ATV/P contest team have won many contests using one aswell. The cost is still only £52.00 plus £1.50 postage. NB ; this pre-amp does not contain RF change-over circuitry.

24 cm AERIALS

Our ever popular 18 element aerials continue to sell like hot cakes, with over 200 now in use. Besides being such good value for money, the reason is that this is one of the few genuine wideband designs around, suitable for both the repeater input AND output channels. The unobtrusive design looks like an ordinary TV aerial to the neighbours, but it packs a solid 10 dB gain into its 900 mm length. A mast clamp suitable for masts up to 55 mm o/d is provided, and the price is still just £14.00 plus £2.50 postage.

COME AND MEET US

STG will be at the BATC Convention on 6th May, Longleat Rally on 24th June and the Bristol Rally on 16th September.

ORDERING INFORMATION

Please make cheques payable to SEVERNSIDE TELEVISION GROUP, and send to us at 15,Witney Close, Saltford, Bristol BS18 3DX. Please allow 28 days delivery. Telephone queries on 0225 873 098, evenings and weekends only please !.

THE WORTHING AND DISTRICT VIDEO REPEATER GROUP

GB3VR ATV REPEATER BRIGHTON

1W FM-TV 24cm TRANSMITTER THIS TRANSMITTER GENERATES ITS SIGNAL DIRECTLY AT THE WANTED FREQUENCY WHICH MAY BE SET ANYWHERE IN THE BAND. ON-BOARD INTERCARRIER SOUND AND FIXED PRE-EMPHASIS ARE STANDARD FEATURES. THE KIT INCLUDES THE DIECAST BOX AND COSTS £70.00

23/24cm ATV CONVERTER THIS UNIT BLOCK CONVERTS THE 1.3GHz TO THE DOMESTIC UHF TV BAND. USE THIS KIT WITH A STANDARD TV TUNER AND BATC IF PCB, FOR A COMPLETE FM RX SYSTEM. APPLICATION NOTES INCLUDED. £40.00 INC DI-CAST BOX.

TWO CHANNEL PLL THIS NEWLY DESIGNED TWO CHANNEL PHASE LOCKED LOOP WILL IMPROVE THE OVERALL STABILITY OF THE SOLENT 1WATT TRANSMITTER. TWO CRYSTAL LOCKED CHANNELS, AND A THIRD FREE RUNNING TUNING POSITION ARE AVAILABLE. KIT PRICE ONLY £30.00. CRYSTALS FOR THE PLL ON CHANNELS RMT1, 2, 3 OR SIMPLEX 1255MHz £7.00 EACH. OTHER FREQUENCIES TO ORDER.

VIDEO AGC KIT. THIS UNIT ACCEPTS A COMPOSITE VIDEO SIGNAL IN THE RANGE 0.15 TO 2V p-p AND OUTPUTS A CONSTANT 1V p-p ACROSS 75-OHMS. THIS UNIQUE AMATEUR DESIGN IS A MUST FOR TV STATIONS AND REPEATERS. £16.00 EACH.

EXPANSION BOARDS FOR THE CIRKIT CROPREADY TEST CARD GENERATOR. BOTH 2 AND 8-WAY EXPANSION BOARDS ARE AVAILABLE ENABLING THE SELECTION, BY S/POLE SWITCH OR BCD, OF EXTRA EPROM PATTERNS. PRICE: 2-WAY £7 & 8-WAY £18.

AUTO BOARD FOR THE 8-WAY EXPANSION BOARD. THIS BOARD HAS BEEN DESIGNED TO PLUG INTO THE 8-WAY BOARD TO PROVIDE AUTO SELECTION OF ANY NUMBER OF EPROMS FITTED AND TO DISPLAY THEM IN TURN. A VARIABLE SCAN RATE FROM 5 TO 90 SECONDS PER TESTCARD IS POSSIBLE, AS WELL AS HOLD. PRICE £10.00.

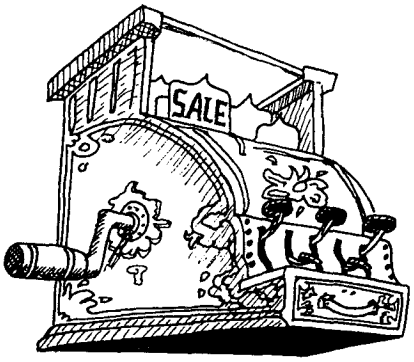
EPROM SERVICE FOR THE CIRKIT TEST CARD GENERATOR. A FAST RELIABLE SERVICE WITH A RANGE OF DESIGNS INCLUDING BATC, IBA LOOK-ALIKE, EBU TYPES 1 & 2 TEST CARDS, CONTEST NUMBERS, TEXT, GREY SCALE PLUS MANY MORE. THESE EPROMS ARE TO THE FULL SYSTEM I STANDARD. SAE FOR FURTHER DETAILS OR TEL. GEOFF ON (0903) 32161 (7 TO 8pm). PRICE: £6.50 PER CHIP. PLEASE STATE B/W OR COLOUR WHEN ORDERING.

COLOURISER KIT FOR THE CIRKIT TEST CARD GENERATOR. BY THE ADDITION OF THIS KIT, THIS POPULAR ELECTRONIC TEST CARD CAN BE UPGRADED TO PRODUCE COLOUR IN ANY GREY SCALE AREA, ON EXISTING OR NEW EPROMS. AN IMPROVED DESIGN TO THE CIRCUIT DESCRIBED IN CQ-TV 139. PRICE £20.00.

THE "NEW ATV" PROGRAM FOR THE 48K SPECTRUM. THIS VERSION HAS OVER 60 COMMANDS, WHICH INCLUDE 7 TESTCARDS, MEMOPAD, CLOCK WITH ALARM, MAPS, TONES, LOCATOR CALC (OLD & NEW), FLAG, X-HATCH, VARIOUS SIZE TEXT PRINTING PLUS A DISK TRANSFER COMMAND AND MUCH MUCH MORE. ALL THIS FOR ONLY £6.00. OPUS DISK VERSION £8.00. A MUST FOR ALL SPECTRUM OWNERS.

BBC AMATEUR TELEVISION PROGRAM FOR THE BBC MODEL 'B' AND MASTER. PROGRAM INCLUDES 8 TESTCARDS, MAIDENHEAD LOCATOR SYSTEM, VARIOUS MESSAGE PADS, PLUS MANY MORE FEATURES. AVAILABLE ON 80 TRACK DISC OR 40 TRACK D/SIDED DISC, FOR ONLY £8.50. SEND NAME LOCATOR AND CALLSIGN WHEN ORDERING.

ORDERS TO THE TREASURER OF GB3VR,:-
R.STEPHENS G8XEU, TOFTWOOD, MILL LANE, HIGH SALVINGTON, WORTHING, SUSSEX, BN13 2SX



MARKET PLACE

ADVERTISING RATES:

Market place ads - Free*
Full page - cover - £35.00
Full page - inside - £30.00
Smaller displays - proportional

*Advertisements are placed in this column free of charge to paid up members only, please quote your membership number. Addresses will be included unless otherwise requested. All paid advertisements are subject to standard rate VAT.

Copy should be sent to the Editor at 5 Ware Orchard, Barby, Nr.Rugby, CV23 8UF before 20th March. Tel: 0788 890365.

FOR SALE

PYE SUPER LYNX CAMERAS, two off in perfect working order with C-mounts ... £55 each plus carriage. One COSMICAR TV lens 12.5mm f1:1.9 C-mount ... £35 plus carriage. One VARIFOCAL TV Lens 16 to 32mm f1:1.6 ... £35 plus carriage. Both lenses suit above cameras or any 2/3" tube camera with C-mount. Mike Wooding G6IQM, 5 Ware Orchard, Barby, Nr.Rugby. Tel: Day 0788 76125 x35, Night 0788 890365.

EME POWER METER c/w DIRECTIONAL COUPLER, 144MHz to 2.4GHz (yes 2M to 13cm!) 0.5W to 2kW on 2M, 200W on 70 and above; plus automatic VSWR measurements. As new, less than 1 year old ... £200 (new £290+). Mike Wooding G6IQM, 5 Ware Orchard, Barby, Nr.Rugby. Tel: Day 0788 76125 x35, Night 0788 890365.

AMSTRAD DMP2000 9-PIN DOT MATRIX PRINTER. Standard parallel Centronics interface. Plain and tractor feed. Usual features -control structure identical to Epson. As new hardly used ... £125 ono Mike Wooding G6IQM, 5 Ware Orchard, Barby, Nr.Rugby. Tel: Day 0788 76125 x35, Night 0788 890365.

IC4E 70CM HANDHELD c/w case and charger...£140. MINI TV TX, similar to Solent mini, will swap...W.H.Y. D100 TV RX CONVERTER (cost new £90) unused...£50. Microwave Modules 100W am amplifier, needs attention...£30. Have lots of other items. Prefer swaps on above for anything 24CM ATV. Ken G8VDP, Barnsley. Tel: 0226 299082.

26" COLOUR MONITOR - 1v p-p composite PAL video and audio inputs....£20. Dual 5.25" disc drives in case with p.s.u. - 2 sets -£25 each. Monochrome processing amplifier, complete with power supply, in smart 19" rack mount case...£10. Marconi TF1330 oscilloscope...£30. 74150 IC's Brand new. Maplin price is £1.80 each. Stock up now at sensible prices. £5 for a tube of 15, or 10 tubes for £40 (i.e less than a sixth of list price!). Carriage extra at cost -larger items are best collected. Peter Delaney G8KZG, 6 East View Close, Wargrave, Berks. Tel 073522 3121.

24CM RECEIVER, 24CM FM TRANSMITTER, 15W LINEAR (M57762) and 5" B&W MONITOR Intercarrier sound on TX and RX, pre-emphasis, variable 10mW to 10W RF output. Currently in use on GB3UD (Stoke). All working off 13.8V DC. All homebrew and can be seen working ... £230 buyer collect. Or swap for FT290R or FT790R or W.H.Y. Chris Barker G1ELJ. Tel: 0782 465670

3 off PYE PF8 UHF HANDHELD TRANSCEIVERS with charger. One on RB0. one on RB11 and on on a PMR frequency around 450MHz ... £100 the lot. Pye Westminster 70.260MHz AM with base PSU ... £40. Aplab 500W+ continuous rated 24V DC to 115/240V stabilised AC sine wave invertor, would suit muscular solar or wind energy freak ... £200. Newbury computer terminal RS232 ... £15. Ferguson tuner/timer 3V03 ... £15. B&W television camera 2/3" Vidicon type with lens ... £40. Mains transformer 540-0-540 @ 250mA + 250-0-250 @ 50mA + 6.3 @ 3A, suit 4CX amplifier ... £5. Buyer collect or pay carriage. A Jefford G8GON, 37 Marions Way, Exmouth, Devon. Tel: 0395 264872.

SONY HVS-2000p VIDEO MIXER, as new with original packing and instructions. This is the one to have! ... £80 ovno. 10 Metre mobile SSB transceiver, 10W output. Covers 28 to 29.5MHz in three 500kHz ranges. Synthesised VFO, RIT, squelch, RF gain and low-level outputs for driving a transverter ... £65. 70cm Microwave Modules 432/28s Transverter, 10W output, 10 metre 'IF'. Ideal for using with last item, or for packet on 70cm ... £80. Tel: Mike Lockwood 0505 813713

EX-BBC, EX-IBA AND OTHER TV EQUIPMENT. Huge quantity must be sold. Especially cheap prices to BATC members. Come to the warehouse in Birmingham and see what we have got, or telephone to discuss your requirements. Willing to post/deliver anywhere in the world. Items include: Video amplifiers, video distribution amplifiers, pulse distribution amplifiers, musa plugs and sockets, audio equalisers, send amplifiers, line receive amplifiers, lots of audio jackfields, several NEW 19" mono video monitors, monitor spares (Prowest), 19" racks and hardware, blanking and ventilation panels. TRANSMITTER UNIT, band 3 & 4 (ex-IBA) with EHT PSU, valve PA and tunable cavity (complete manuals), spares for EMI 2001 colour cameras, vision mixer and effects unit, 2C39 valves (NEW) and thousands of valves for all kinds of equipment. Co-axial cable (URM70 and heavy duty 75-ohm), audio cables, multicore cables, connectors (all sorts). THOUSANDS MORE ITEMS TOO NUMEROUS TO LIST. Fantastic bargains for callers. Telephone Ken Bailey on 021 446 4346 to arrange a visit to KENZEN'S Birmingham Warehouse.

KAGA RGG-VISION III COLOUR MONITOR (RGB analogue, RGB digital RGBI digital so it suits most computers). Well used but OK, with leads and manual ... £75 buyer must collect. Compact outboard audio speaker-amps for Amiga computer, as new ... £12 posted (cost £20). Andy Emmerson, 71 Falcutt Way, Northampton, NN2 8PH. Tel: 0604 844130

EQUIPMENT FOR DISPOSAL: Telequipment D54 Oscilloscope, fitted with amplifiers type 'A' and 'C'. Clean, with manual ... £100. Telequipment S32A Oscilloscope, clean, with manual ... £40. Hazeltine Executive VDU with manual, ideal for Packet ... £35. Dacoll VDU with manual, ideal for Packet ... £25. J-Beam 46e Multibeam 70cm Aerial, contest use only ... £25. J-Beam 18e XY crossed 70cm Yagi Aerial, contest use only ... £25. J-Beam 8/8 slot 70cm Aerial, contest use only ... £25. 50-500MHz Discone Aerial, used inside only ... £30. J-Beam 10e XY crossed 2M Aerial, little used ... £25. 50M Andrews LDF4-50A coax with 2 off N-type jacks and 2 off N-type plugs. Cable unused, connectors in original packing ... £100. Wavemeter, ex WD heterodyne type W1191 0.1-20MHz ... £20. Wavemeter, VHF heterodyne type T74 20-280MHz ... £30. Crotech high-resolution 14" B&W video monitor ... £30. Icom R70 Communications Receiver fitted with FM option. Little used, in absolutely mint condition, with instruction book and service manual ... £450. Racal RA17 Communications Receiver, ex MOD, 100kHz-30MHz ... £125. Metrix 430 Multimeter, 50k/V, with AC current adaptor. This is a French version of the Model 8 ... £25. Prefer buyer collect York area, otherwise carriage at cost extra. Alan Strong G3WXI. Tel: 075 95 8172.

I HAVE A NUMBER of very nicely made Green Screen monitors, 9" screen size made in U.K. with standard video input (MDA), metal case, with circuit but with slight faults..from ... £5. 14" RGB high res monitor 31Khz. line speed suit VGA card needs fixing but tube OK. No case or circuit ... £35. Electrocraft half line delay unit modern small case ... £12. PYE UHF PMR RX 1 U high type R412 inc circuits ... £25. Four push button intercom type telephones not BT type ... £4. Audio analyser portable batt op unit cal in dB's ... £25. Please contact Brian Summers G8GQS. Tel: 01 998 4739.

DONATED EQUIPMENT, TO BE SOLD PROCEEDS TO CLUB FUNDS:

1: "FOR-@" TG 160 Title generator/inserter. This is 1U rack-mounting and inserts up to 16 ASCII characters with or without a surrounding black or white box. Connections are :- video in and out, video out with characters, and key signal. Connectors are also provided for selection of the characters. The unit is very nice, about 5 years old has operating instructions and seems to be in working order.

2: Sony U-Matic VP1210 play only.

3: Sony B+W 19" monitor.

4: Sony Rotary shutter camera RSC1110, 2/3" tube C mount, nice carry case, monochrome.

5: Sony DXC1600P colour camera kit comprising, mains PSU, camera control unit/battery box, cables, zoom lens and viewfinder camera.

6: Sony B+W camera modified with light intensified vidicon (9777C2H tube) including CG3CE sync gen and camera adapter.

7: Hitachi B+W V/F camera with zoom lens (poor condition).

8: Hitachi vertical enhancer VE102.

9: Aston 625 mono genlock spg model SPG5.

10: UHER 4000 report reel to reel portable tape recorder with some tapes and accessories (poor condition).

11: Shibaden video D.A. 3 outputs, self-contained small unit.

12: Philips 12" mono monitor.

13: Sanyo Betamax video recorder VTC9300PN.

14: Twelve U-Matic tapes.

15: Electrocraft Camera Aperture and Gamma corrector, nice modern unit seems unused! model CAGP.

16: Electrocraft Vert and Horz. aperture & video level corrector model 278P, nice modern unit very good condition but as yet untested.

17: EMI 2113/1 Vertical aperture corrector 1/2 rack-width

18: Ali. Flight case 18*20*27.5"

Items 2 to 18 are untested as they have only just arrived, by the time this is printed I shall have had chance to examine (play) them. In the past I have had a lot of flack about the way we dispose of donations to members, so I thought I would try a "Best Offer" tender. The best offer received from a Non Professional paid-up member by the 'Ides of March will secure the desired item(s). Offers in writing to Hon. Treasurer B. Summers 29 Perivale Grange, Perivale Lane, Greenford, UB6 8TN, or telephone for more details 01 998 4739. I wonder how much Flack this will generate?

EXCHANGE & WANTED

DOES ANYONE KNOW where I can obtain 6.6MHz and 6.6MHz CERAMIC CRYSTAL FILTERS required to complete a satellite TV project. Ian Taylor G6VJA Tel: 0472 693874.

OLD CAMERA TUBES, (and similar imaging devices) of various type and age, and related data etc, for historic (!) collection. Particularly welcome would be an Orthicon, a stripe filter vidicon, an Image Isocon or a 1.5" vidicon. Tubes that are not operable, are suitable, so if you replace tubes in cameras, don't throw the old ones away, but please contact Peter Delaney G8KZG, 6 East View Close, Wargrave Berks. Tel 073522 3121.

UHF HANDHELD IC4E, IC04E, TH41 or similar synthesised rig, must fit in a handbag (for the XYL not me!!!). Snail blower for 4CX250 Coax cavity linear. Good 4CX250 valve. Swop/borrow and amateur utility software for the BBC B computer, disc/Eprom, will return promptly. A Jefford G8GON, 37 Marions Way, Exmouth, Devon. Tel: 0395 264872.

CRT TUBE - ELECTROSTATIC D14-306H-93, Mullard ref: 56817 or 56806. Please contact Chris. Tel: 0354 51289 (daytime).

FOR EXCHANGE: Having just bought even more old magazines, I still have loads of Practical Televisions to dispose of. I have many issues of PT for the years between 1950 and 1960. It's worth sending me your wants lists (plus a SAE please); I can sell you these mags at 25p each (plus post) or, preferably, swap them for issues I am missing. Act now, while I still have them! In the meantime I am looking for PT April, November 1950; March, April, November 1956; July 1960; February-December 1961; February 1962; March 1965. Andy Emmerson, 71 Falcutt Way, Northampton, NN2 8PH. Tel: 0604 844130.

WANTED 'DRAINPIPE' SHAPE CCTV CAMERA, e.g. Marconi BD871 or EMI. Sony CVM-306UMP quad-system 9" monitor 405 line SPG (and other 405 stuff!) Bush industrial TV camera (the one with a fibreglass case!) Sony camera switcher (passive); Band I set-top antenna, the type with a large loop and a walnut bakelite base. All old TV literature, especially CCTV sales leaflets and catalogues. Odhams Television Annuals of the 50s and 60s. 2" x 2" slides of test cards and captions to borrow and copy or buy. Callsign generator or similar using real diodes in a matrix. Andy Emmerson, 71 Falcutt Way, Northampton, NN2 8PH. 0604-844130.

WANTED: TRIPOD (AND DOLLY IF POSSIBLE) FOR SONY DXC1200P STUDIO CAMERA. Camera weighs 36lbs/16kgs. Three required. Black and White monitors about 10" (diagonal) screens. Redheads or similar lights (500W to 1kW). Jeremy Power G1WVK, Berkhamstead. Tel: 0442 871386.

WANTED: CIRCUIT DIAGRAM/MANUAL/ANY INFO on Microwave Power Generator. This is a piece of electro-medical equipment operating around the 2.4GHz area, which could well be made into a TV transmitter operating in the amateur band. The equipment is labelled 'Microtron 200 microwave Power Generator, Mk.3'. It was manufactured by Electro Medical Supplies (Greenham) Ltd., Wantage, Berkshire. All expenses paid for any information. Bob Webb G8VBA, 78 Station Road, Rolleston-on-Dove, Burton-on-Trent, Staffs., DE13 9AB. Tel: 0283 814582.

PORTABLE ATV !

CAMTECH ELECTRONICS CE

NEW.. 24cm COLOUR TV TRANSMITTER

This product uses the very latest surface mount component technology to give a unique small size and highly reliable product. The transmitter may be used with colour or mono video signals and an audio sub carrier input is provided.

Specification

R.F. Output	0.5 Watts
Frequency	1240 - 1320 MHz
Modulation	FM with CCIR Pre-emphasis
Video input	75 Ohm 1v pk-pk composite video
A.S.C. input *	75 Ohm 800mV pk-pk intercarrier sound
Power Supply	12v DC @ 350mA
Size (WxHxD)	64 x 32 x 84 mm

Composite video and Audio Sub Carrier inputs are via phono sockets, RF output is via an SMB socket. Power supply is via a 2.5mm DC power socket. All plugs/leads available P.O.A.
* We recommend the use of our Audio Sub Carrier + Vogad board for intercarrier sound.

£80.50 P&P £2.00

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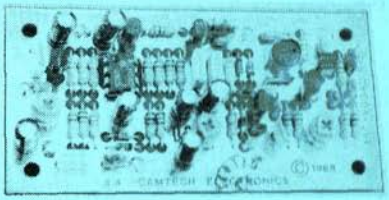
NEW.. AUDIO SUB CARRIER + VOGAD

Our Audio sub carrier + vogad unit is a complete audio modulation system designed for amateur television. The circuit consists of a microphone amplifier with speech compressor, audio filtering and a 6MHz oscillator / FM modulator.

Specification

RF Frequency	6MHz Adg.+- 500KHz
RF Output	0 to 1v pk-pk
Deviation	+- 50 kHz
Microphone Input Sensitivity	4mV RMS
Power Supply	12v DC @ 16mA
Size of PCB	85 x 43 mm



Kit £23.00 P&P £1.00
Built & Tested £30.59 P&P £2.00

Prices shown include VAT at 15%. Please add Post and packing at rates shown. For Details of these and our other products, orders and enquiries to;

Camtech Electronics, 21 Goldings Close,
Havehill, Suffolk, CB9 0EQ
Tel: 0440 62779