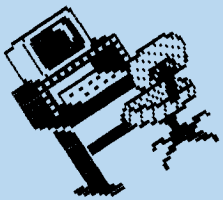
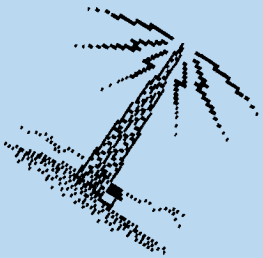
CQ-TV MAGAZINE No.145

BRITISH AMATEUR TELEVISION CLUB

FEBRUARY 1989





UNITED KINGDOM

NEW ZEALAND

ATV THE

WORLD

OVER

AUSTRALIA

UNITED STATES

UNDER NEW MANAGEMENT!

COMMITTEE

ROGER APPLETON - President

TREVOR BROWN G8CJS - Chairman

PAUL MARSHALL G8MJW - Secretary

BRIAN SUMMERS G8GQS - Treasurer

DAVE LAWTON GØANO - Membership

IAN PAWSON G8IQU - Publications

GRAHAM SHIRVILLE G3VZV - Liaison

PAUL MARSHALL G8MJW - Librarian

MIKE WOODING G6IQM - CQ-TV Editor

BOB PLATTS G8OZP - Contests

PETER DELANEY G8KZG - Member's Services

JOHN WOOD G3YQC - CQ-TV Assistant Editor

ORDINARY MEMBERS

Cyril Chivers, Andy Emmerson G8PTH, John Lawrence GW3JGA, Mike Crampton G8DLX, Tony Marsden G6JAT, George Mayo G4EUF, Bob Robson GW8AGI, Alan Watson, Philip Harding, Roy Humphreys G4WTV, Gary Shipton G4CRJ.

MEMBERSHIP

FULL YEAR: Subscription to the club is £6 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 Ø1.

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.

Articles contained in CQ-TV magazine may be quoted by non profit-making organisations without prior permission of the Editors, provided both the source and author are credited. Other organisations may obtain permission in writing from the Editor

The BATC maintains many pages of news and information associated with amateur television on the Prestel Information Service. Club pages may be found within the ClubSpot section and full details were last published in CQ-TV 134. Copies of the article (two pages) may be obtained from the Publications department.

CONTENTS

CLOSE FOR PRESS DATE FOR THE NEXT ISSUE.....20th March 1989

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.

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: (07352) 23121

MEMBERSHIP - Anything to do with membership including new applications; queries and information about new and existing membership; change of address; non-receipt of CQ-TV; subscriptions; membership records; data protection; Prestel: DAVE LAWTON GØANO, '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: SITUATIONS VACANT - any volunteers are asked to contact Paul Marshall.

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

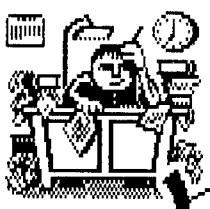
TVI & RADIO INTERFERENCE - problems of this nature to: Les Robotham G8KLH, 38 Ennerdale Avenue, Stanmore, Middx. HA7 2LD. Tel:(01 907) 4219 (not committee).

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.

CQ-TV ASSISTANT EDITOR - Alternative destination for CQ-TV material and queries on the content of past issues. JOHN WOOD G3YQC, 47 Crick Road, Hillmorton, Rugby CV21 4DU. Tel: (0788) 69447

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

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.



WE WISH YOU A HAPPY YEAR

EDITORS POSTBAG

HULL VIDEO REPEATER GROUP

Dear Ed,
just a quick note to say that 24cms ATV still exists in Hull! A temporary site for the proposed repeater has been found at the premisses of BCD Electronic Services and much of the equipment has been built.
The main problem at present is the availability of the appropriate sort of test equipment required to carry out the alignment and necessary checks required under the terms of a repeater licence.
If there is any member who can help with test equipment, or if anyone knows of any organisation in our area who could offer assistance we would be most grateful. Replies to Andy Goy G4HJD, 352 Chanterlands Avenue, Hull, HU5 4ED.

SONY HVC2000 CAMERA

Dear Ed,
I need information on how to connect a Sony HVC2000 camera to a Ferguson 3V23 VCR. I know the connections of both the 14-pin and 10-pin plugs, and I can obtain video record and playback (the latter through the viewfinder) only by changing the video leads from the camera. Secondly, the trigger pulse from the camera to initiate recording is either wrong polarity, or of inadequate amplitude. The camera worked perfectly satisfactorily on a Beta VCR before the plugs were changed. Can anyone offer any advice? W.Timms G3BWI, 22 Padway, Penwortham, Preston, Lancs, PR1 9EL.

BATC BOOKS FOR SALE IN THE ANTIPODES

Dear Ed,
I still have some BATC books to sell that were passed on to me by Andy Emmerson and Trevor Brown during our visit to Dayton. Any members in New Zealand and Australia are advised that 'TV for Amateurs' at NZ $5, 'Best of CQ-TV' at NZ $9 and the 'Slow Scan Companion' at NZ $9 are available direct from me at the address shown below. Please allow NZ $1 extra for postage. NZ cheques OK if made out to M.Sheffield. Please contact Mike Sheffield, Albany Highway, 4RD Albany, Auckland, New Zealand.

SSTV SOFTWARE

Dear Ed,
I see from CQ-TV 144 that you need info about SSTV software.
Our RX-4 program is still going strong on the Spectrum, BBC, CBM-64 and VIC-20. The program gives operation in four modes: rtty, cw, amtor and SSTV.
For further details on this and our other amateur radio software please contact:

Technical Software,
Fron,
Upper Llandwrog,
Caernarfon,
Gwynedd,
LL54 7RF.

BBC SSTV PROGRAM?

Dear Ed,
I would be glad if any of the readers is able to tell me if I can obtain an SSTV transmit and receive program for use on the BBC-B, preferably disc based. I would be grateful of any assistance and can supply a disc or cassette as required. Due to an infirmity any construction projects would not be easy. Dennis Landin GW6ZHQ, 26 Elm Grove, Rhyl, Clwyd, LL18 3PE.

TVRO IN ROMANIA

I am grateful to receive news from YØ3-2285/BU in the Romanian 'Technium' newsletter that he sends concerning the first TVRO article ever published in that country. Unfortunately, not being able to read/write/speak Romanian I haven't the faintest idea what it is about! However, many thanks to the above station for keeping us informed of the progress in his country. We hope that amateur activities are also allowed to progress towards the freedoms that we are used to.

Due to exchange currency problems with Romania the club sends a copy of CQ-TV free-of-charge to this station.

NEWS ROUNDUP

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 most the various pcbs and components can be found, in CQ-TV 140 onwards. 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.

3SK97 GaAsFET's

Having problems locating the 3SK97 GaAsFET's used in the 24cm converter described in CQ-TV 144? These devices are available off the shelf at a very reasonable price from the following supplier: Universal Semiconductor Devices Ltd, Unit 4, Springfield Road, Chesham, Bucks, HP5 1PW.

NEW BOARDS AND COMPONENTS

Some new boards are now available from Members Services - the PAL coder from CQ-TV 134 is accomodated on a single board the same size as the previous coder design, and the video level indicator (142), FLEX prom blower (143), GaAs FET 24cm converter (144), Gunn diode modulator (141) have also been added to stock.

Also now available from Members' Services are the video switch IC's TEA2014 and TEA5114. Details are on the order form with this issue of CQ-TV

MORE COPY FOR CQ-TV

CQ-TV has been maintaining it's large page-count for many issues now, but, this can only be maintained as long as material comes in. Please keep the projects, ideas, news, in fact anything of interest coming in. Without your support the magazine will become much thinner as John and myself can only generate so much in the time available. So COME ON THEN,keep the articles coming in.

Whilst on the subject of CQ-TV, I am now able to accept articles etc. as ASCII format files, 'First Word' files, 'Wordwriter' files or 'Timeworks DTP' files on ATARI ST format discs. This is as an extra to being able to accept data in BBC 'Wordwise' format. If you are able to supply your articles on disc it helps me a great deal by saving valuable time by not having to type them in.

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.

ASTEC MODULES

For those of you having difficulty in obtaining the popular Astec AT1020 and AT3010 modules for use in the TVRO/24cm receiver described in CQ-TV 135, we are pleased to advise of a supplier who is happy to deal in one-offs. The address and telephone number is shown below, please contact them for prices etc. Thame Systems Ltd, Thame Park Road, Thame, Oxon, Ox9 3XD. Tel: 0844 217676.

BFG34's

If you are having difficulty obtaining the above transistor for use in G4DDK's 1.3GHZ POWER AMPLIFIER, CQ-TV 141, you may like to contact: Evert de Danschutter PE1FEW, Luther Kingstreet 17, 6191 bw Beek, Holland. Tel: 4490 73812. He informs me that these devices are very cheap on the continent and easily available. He is also available via packet thus: PE1FEW @ PI8ZAA.

Alternatively, supplies of this device may be obtained from Piper Communications (Didcot, Oxon) or LMW Electronics (Leicester).

THORNBURY ARC

The editors wish to offer their apologies to the Thornbury & District ARC for mis-spelling their name in the article reporting on their exhibition which appeared on page-16 of CQ-TV 144.

MEMBERSHIP NUMBERS

Please note that your membership number listed on the address label affixed to the magazine supplement may have changed. This is due to updating and compacting the club's database, which happens at the beginning of each year. Thus, due to changes caused by the removal of non paid-up members etc., your membership number, which is in reality the database number, may change.

The more important aspect of your number will not be changed by this up-dating, and this comprises the first two figures, which indicate the end of the year to which your current subscription is paid.

SKY TRIMMERS?

If you are having problems obtaining the appropriate 'Sky' type of trimmer capacitors for the 24cm GaAsFET Converter project in CQ-TV 144, and for other projects utilising this type of capacitor then read on!

Available from both Farnell Electronic Components and BCD Electronic Services (see advert elsewhere in this magazine) are the Thorn 809 series of trimmers, which will suffice as a direct replacement in this type of circuit.

W9PRD AWARD!

Bob Webb, our trusty Awards manager, has informed us that Bob McAuliffe, W9PRD has just been presented with the Gold award. The necessary points were gained from ONE flight of Bob's helium filled balloon, the pictures from which were identified by 28 stations in 9 states.

I see in a recent article by Andy Emmerson in a national magazine that he asks why don't we in the UK do something like this. The answer Andy, as you probably know, is that the powers-that-be will not allow it!

MMIC SWITCHES

Anadigics' first series of SPDT MMIC switches feature operation up to 12GHz.

The ASW40010 and ASW12010 SPDT switches have been designed for DC to 4GHz and DC to 12GHz respectively. Both feature less than 2ns switching times, input/output VSWR's of 1.6:1 and a third order intercept of +25dBm. Input power for 1Db compression is in excess of +25dBm.

The ASW40010 version features an insertion loss of 0.8dB at 500MHz and 1.0dB at 4GHz; isolation is 65dB and 45dB at these frequencies respectively.

The flag waving club stand at the Leicester Rally last October. From left to right are Bob Platts G8OZP our contest manager, Viv G1IXE (yes HER!) of the Severnside Group and yours truly G6IQM.

EDITORIAL

Firstly I would like to say hello, good evening and welcome! This is my first magazine as editor, and although I have already made one or two very minor changes, I hope that you will find it upholds the high-standard that John maintained throughout his rain (or should that be reign?). However, IF you do have any complaints please refer them to the following address: The Large Black Dustbin, adjacent 5 Ware Orchard, Barby. Alternatively, compliments should wrapped up in a ten pound note to the usual address please.

ATV IN EIRE

The latest news from Eire is that the Irish government has started issuing licences for ATV again. The conditions being imposed at present are quite strict as you can see below in the extract from the statement, but we all hope that in the fullness of time a more relaxed attitude will prevail.

"The Department of Communications is now prepared to consider applications from radio Experimenters (Class A) licences to operate fast scan television.
The following conditions apply...
A) emissions must be confined within the band 434 - 440MHz.
B) maximum power: carrier 16dBW EIRP.
C) authorisations will be for a maximum period of twelve months or as otherwise specified by the department.
D) fast scan TV is permitted on a secondary basis only.
E) Operation shall be confined to the station address listed on the operator's licence.

Applications will be considered from Class A licencees who submit full details of their proposed experiments and equipment to the department. Applications already with the department will now be examined and the applicants notified in due course."

Stations licenced at 13/12/88 are EI6AS, EI7CL, EI9GL, EI5EM, EI6EV and EI7CZ.

My 'informant' Paul EI7GM was still awaiting his licence when the news was passed to me, and, incidentally, he signed off his message thus "Slan Agus Beannacht". I wonder what it means?

UK WHITE PAPER ON TELEVISION

The Government's White paper on the future of TV in the UK suggests that within a few years the present licence fee system will be abolished to make way for subscription TV. The expression "pay as you view TV" sounds nice to the gullible viewing public, but could subscription TV actually work like that? In France there is a monthly sub' payable for Canal Plus, but that is not exactly pay as you view. the viewer pays in advance, so it is more of a take it or leave it system.

It would seem at the outset that the Government is still considering to 'cable' the entire country and do away with the standard terrestial television network. Then the system would be a pay as you view one,

with the overall network controlled by computers. This may sound a little far fetched to some, but I can assure you that this method is exactly as is used in the modern cable systems operating in the UK. Locallised microcontrollers and head-end computers switching the paid for channels to the appropriate consumers.

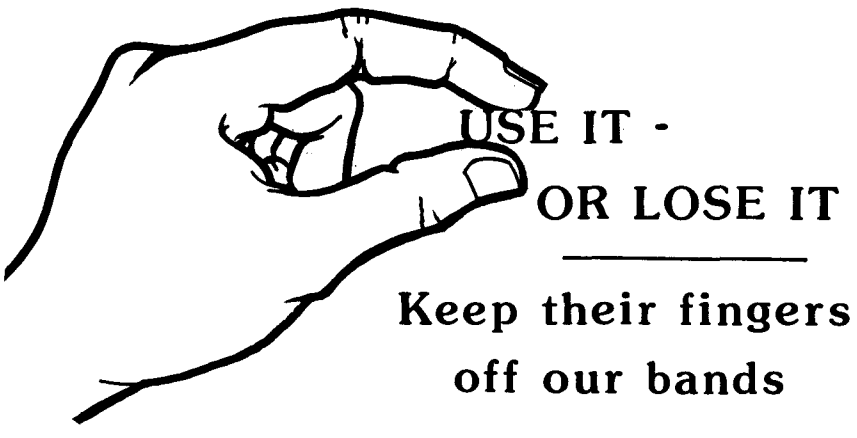
Another method of operating a pay as you view system would be to encode the broadcasts so that a decoder is required at the receiver. This decoder would be rented and the software fitted for the stations paid for, much the same as is used for some satellite broadcasts now and will be for the majority before long.

As for the fifth TV channel, the plans afoot for that seem somewhat negative. Channel-5 (startling choice of name what!) is intended to be the UK's 'Popular One', whatever that means. Inconsistently though, (perhaps not so inconsistent in retrospect, we are talking of the powers-that-be after all) due to probable interference with continental stations none of channel-5's transmitters will be sited near the south-east coast. Thus, the people's popular channel will only reach about seventy per-cent of the population!

All this lends fuel to the fires of suspicion burning in the press and around the country, as to why is the Government fiddling around with our telly! After all, the television companies have a proven successful track record. Any new TV services, including the proposed 5th would be better confined to satellite broadcasting, where the viewer could then decide whether or not to purchase the necessary equipment and fund the additional services by subscription.

Here endeth my first sermon. I hope that you found it suitably boring, watch this space for more in the next issue.

I wish to thank Keith Hamer for permission to pinch some of the information from his 'Newsdesk' in 'Teleradio News'.



BATC CONVENTION 1989

☆☆ NEW VENUE ☆☆

The BATC Convention will be held on Sunday April 30th between **10am** and **4pm** at the **COVENTRY CREST HOTEL, COVENTRY.** The hotel is located adjacent to **JUNCTION 2** of the **M6** (Coventry South), as shown on the map on the next page. The club has booked the entire **FOUNDERS SUITE**, which is a custom built conference centre. One advantage of this venue is that the suite is separate from the main concourse of the hotel, thus our 'activities' will not cause any disruption to the normal running of the hotel (at least that's the theory!). Another advantage is that there is a great deal more parking space, which should help alleviate some of the problems we have had at Crick. Due to the nature and size of the venue we shall not be using a marquee this year. The hotel management have agreed that the usual impromptu car boot sale may take place in the car park. A full lecture program is intended and this will be held in a separate room within the hotel. Please note that the doors will not open until 10am.

Owing to problems with the Sunday trading laws that have been looming over the club in the past, we are having to introduce entrance by program only this year. The programs will only be available at the door and will cost the vast price of 50p. This will allow us to ensure that all attending the rally are members for the day at least, thus any sales/purchases are then classed as 'mutual trading', which is allowable on Sundays. Families will only need to purchase one program, as will adults accompanied by children under fourteen. Consequently, this change will mean that people will be required to man the doors throughout the day, so all volunteers will be gratefully welcomed.

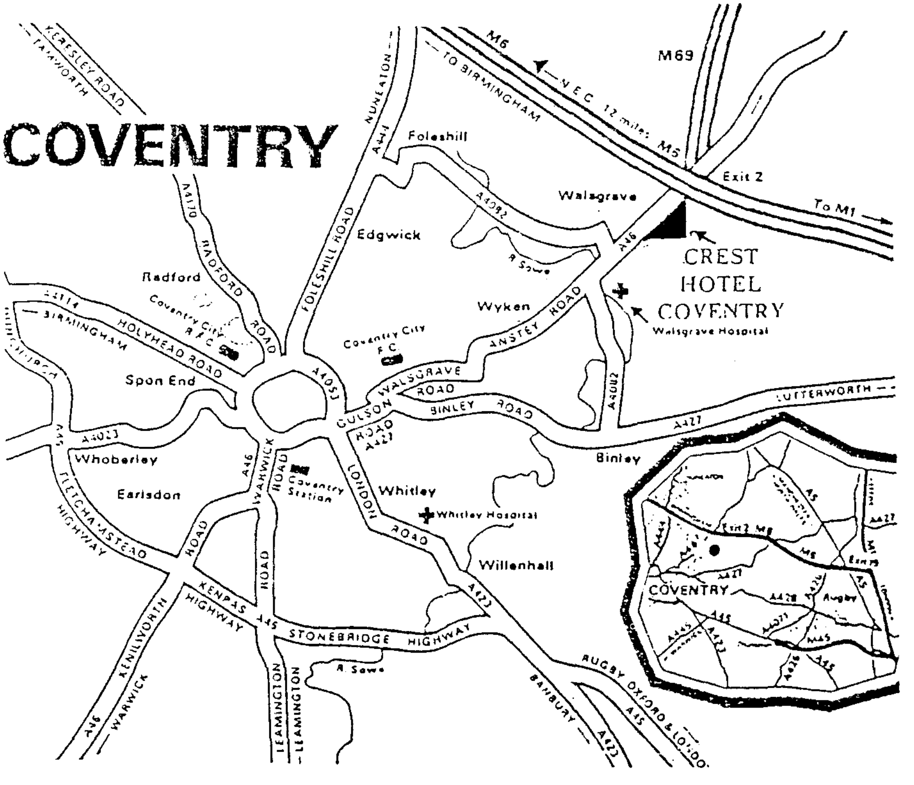
The now standard feature of the 'Bring-and-Buy' stall run by the GB3RT Repeater group will again be present, creating the usual state of mayhem around the stall. There will be a slight change to the B&B this year, in as much that there will be a nominal registration fee of 50p per item, refundable upon sale. This is due to the amount of abandoned equipment that the group has had to contend with after the show in the past! The commission will remain the same at 5% or 50p, whichever is the greater.

Another new feature, or at least a revival of an old one, is that we would like an exhibition of home-brew equipment. If you have anything associated with amateur TV which you would like the rest of the club to see please bring it along. The club shall award a prize for the best exhibit, and this shall be judged by two members of the committee.

A 'surgery' will be held where technically qualified members will be on hand to answer your questions and help with any problems. Again, volunteers will be welcome.

Finally, and I offer no apologies for repeating myself, please don't leave it all to the committee, there are only twenty two of us! Organising and running a convention the size of ours requires a great deal of forward planning, and a great deal of work on the day. We

need **VOLUNTEERS** to help man the doors and generally assist wherever necessary. We don't expect anyone to offer a whole day (unlike the committee does of course!) but a couple of hours would be ideal. **PLEASE** do not leave it to the other guy, offer a little help, your committee will be forever grateful.



If travelling to the convention by rail journey to Coventry station, from there a regular bus service to the central terminus operates. Then take a bus to the Walsgrave area.

If travelling by boat, the Oxford Canal (Northern section) passes through Ansty three miles out of Coventry on the A46.

If arriving by air, Birmingham International Airport is 12 miles away to the north on the M6.

A talk-in station will again be operating, provided this year by the Coventry Amateur Radio Society, to whom we offer our grateful thanks. The station will be operating on S22 (2m) and possibly SU8 (70cm) and will be using the special call sign **GB0TV**.

CHEQUERBOARD PATTERN GENERATOR

Richard Carden VK4XRL,

The idea for this project extended from an evening when 70cm and 2m were opened to our New Zealand amateurs. When looking for DX ATV signals the normal colour bars, staircase or grating signals are useless. What's required is large areas of black and white, such as in a chequerboard pattern. The unit described here can interface to any circuit which uses the ZNA234 Sync Pulse Generator and pattern generator integrated circuit. An example of this type of circuit can be found in Micro and Television Projects by Trevor Brown G8CJS, published by the BATC.

CHEQUERBOARD CIRCUIT DESCRIPTION

This add-on circuit provides a separate output from the ZNA234 using the gates of a 7400 to sum together the various signals taken from the SPG chip. The circuit is shown in Fig.1. Negative going sync pulses are taken from pin-3 of the ZNA234 and blanking from pin-4. After inversion by gate-A of the 7400, positive going sync is routed to pins-6 and 7 of the 7492 Vertical Counter IC. This signal provides the necessary reset pulse for the counter during the sync period. The vertical counter is clocked by the vertical lines output of the ZNA234 at pin-11. The output (divide by 6) from the vertical counter feeds one input of an exclusive OR gate (gate-E 7486). The other input of this gate is fed from the 7493 Horizontal Counter IC (divide by 8).

The horizontal counter is clocked by the Horizontal Lines output of the ZNA234 at pin-16. The reset for this counter is provided by producing a vertical drive pulse from the circuitry comprising the 1k resistor, a 0.022uF capacitor and an exclusive OR gate (gate-F 7486) from the blanking output of the ZNA234. The output of gate-E is blanked and inverted in gates-C and D of the 7400 and then summed with the sync pulses via the 180-ohm and 390-ohm resistors.

The different count ratios for the vertical and horizontal counters provide a reasonably square output. Whilst not being perfect it is more than satisfactory for our purposes.

EXTERNAL CLOCK GENERATOR FOR THE ZNA234

The circuit shown in Fig.2 is for an external clock for the ZNA234, and is derived using a 5MHz oscillator and a divide by two counter. The 5MHz oscillator is formed by two gates of a 7404 Hex Inverter IC and a 5MHz crystal. The output from the oscillator is squared up by another hex buffer gate before being fed to a 74LS74 Dual Edge triggered Flip Flop. The output from the flip flop is then fed into pin-8 of the ZNA234. Pin-9 of the SPG chip should be connected to the positive rail via a 10k resistor.

REFERENCES

'Micro and Television Projects' by Trevor Brown G8CJSD.
'A TV Colour Bar and Pattern Generator' by G.W.Black. (Electronics Australia - October 1987).

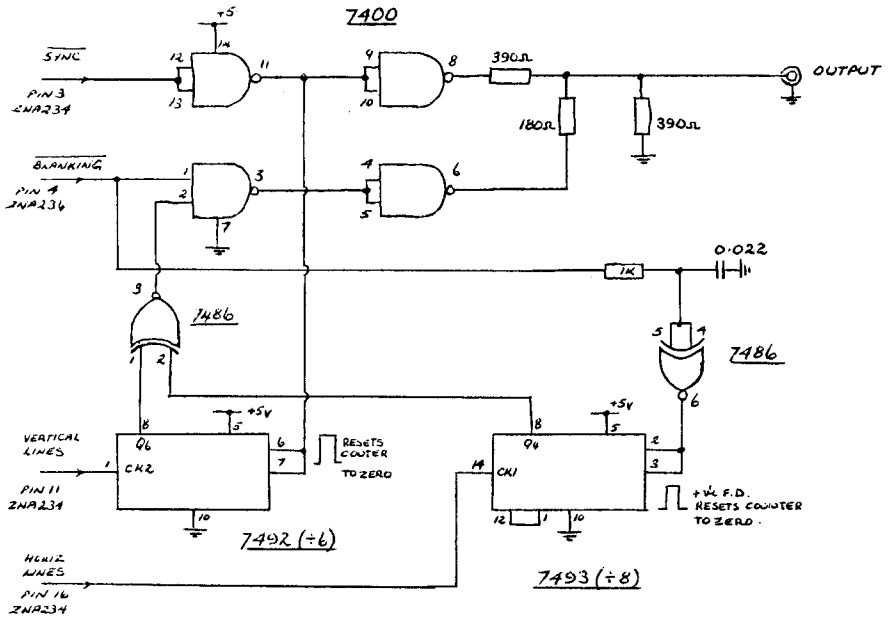


Fig.1 Chequerboard Pattern Generator.

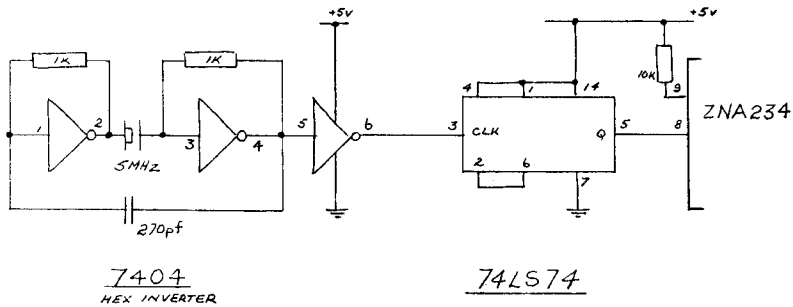


Fig.2 5MHz Clock for ZNA234.

TV ON THE AIR

Andy Emmerson G8PTH,

Time flies if you're busy and here is a rundown of the busy activity in the world of amateur television during the past three months.

Good old 70

That's what a lot of people are saying, so why isn't there more activity on this band? I don't know, but Roy G6OKB (Isle of Thanet) says things are starting to look up again after a period of inactivity. More news next time if the progress is sustained. He also thanks David Wilson, who managed to turn out a manual for a colour TV camera which the manufacturers could not provide. This reminds me that finding data can be quite a problem these days: many manufacturers are no longer prepared to keep stocks of old literature. You want a manual for a Pye Lynx? Well, Philips can't help you. Sometimes the BATC's reference library can assist, which is one of the benefits of joining a club.

Clive G8EQZ left his native Kent for the attractions of Hull a few years back and has set himself up for both 70 and 24 cm TV there. The only problem is that no-one comes back to his calls; is nobody else QRV up there?

News from Ireland now, where it is hoped that normal fast-scan ATV will be made legal during 1989. Applications are being considered on 70 cm and 10 GHZ; operation on 24 cm will not be permitted because of fears of interference with airport radar systems. Two keen ATVers who intend to be among the first to exploit any new opportunities are Rod EI3CZ and Bob EI7GM, both in Dublin.

SSTV

The Danish SSTV Group has sent us details of their Danish SSTV Contest for 1989. This starts at 00.00 UTC on May 6th and finishes at 2400 on May 7th. The SSTV frequencies recommended by the IARU for Region 1 must be used, on the following bands: 80, 40, 20, 15, 10 and 2 metres. I have full details and a logging form, which I will be happy to copy and send to anyone who sends me a SSAE care of the editor.

In Ireland Michael North EI7CL is having trouble with a Wraase SC-422 scan converter. If anyone can send him a circuit diagram and description he'd appreciate this - his address is 135 Downpatrick Road, Dublin 12.

One of the pioneers of SSTV in Britain, Grant Dixon G8CGK is very active receiving video from weather satellites, both NOAA and the more difficult to predict Russian Metsats. He says they have a slow-scan TV net in the Herefordshire/Severn Valley/Malvern/Worcester area every Friday. And on Monday evening is given over to what they call Spec-Com night, when Spectrum computer screen images and programs are exchanged over the air. Grant has devised a program which loads in a picture from the weather satellite scan converter to the Spectrum. This represents pixels by 4 x 4 dot blocks and thus shows just a portion of a

weather picture on the TV screen, but the viewer can scroll up, down and across to explore the whole picture. Alternatively you can reduce picture definition to make it an inset inside the full screen, giving a complete picture but with reduced definition. You can also make screen dumps on a dot-matrix printer. To achieve all this you need an interface board between the scan converter and the computer's I/O port and Grant has prepared a printed circuit board for this. You can get this, together with the program SCRL-TV for just £7: write to Grant at Kyrles Cross, Peterstow, Ross on Wye, Herefordshire, HR9 6LD.

Last time round G1AIB was asking if anyone had a transmit/receive SSTV program for the Commodore 64 micro; well Brian G3KJX has! If you want one, though, you will have to get it from the author, I2CAB, who has written no-interface programs on disk for the 64 covering SSTV, Meteosat and RTTY. These give quite reasonable results, says Brian, and I2CAB also provides similar for the IBM PC. Brian resides in Northallerton and has been involved in ATV since the 405 line days. Together with G3ILD/T he received his first ATV pictures in the late 1950s (remember /T licences? I got into ATV just too late for one of those!). Anyway Brian hasn't got bored with it yet and is now thinking of moving to 23 cm.

News from further away

BATC member Michael Sheffield ZL1ABS attended last year's Dayton convention and appreciated the report in this magazine. He says he is looking forward to his next visit and to attending a BATC convention some day. (Surely the latter takes priority?). He is promoting the BATC down under and has lots of the club's books to sell there. The national radio club's magazine Break-In had an all ATV issue last August and this has stimulated more interest in the subject. Michael says the next all-ATV issue will have more about 24 cm and wonders if the RSGB would agree to something similar. Pigs will probably sprout wings first, but the RSGB does now promote ATV with Mike G8LES's excellent column in RadCom. Television repeaters in New Zealand are making slow progress, says Michael; airport radar is due to QSY from 602 to 1300 MHz, relieving the QRM felt by the ZL 610-622 MHz ATV band.

A couple of years back the Youth Electronics Centre in Basel, Switzerland joined the BATC and has enjoyed reading CQ-TV since then. Some of the material has been useful to the students there and the founder HB9DO sent the BATC a very nice letter of appre ciation. The club has a 5 watt ATV transmitter and all the neces sary materials for transmitting TV but activity is somewhat seldom. The students seem to prefer building new electronic projects (building a Meteosat receiver) to making video films and transmitting ATV.

A further problem is a new city regulation banning external radio and TV antennas: they want all existing aerials removed and that people watch cable TV. This is a bit too much to swallow in a country that calls itself the oldest democracy in the world, so we must keep our fingers crossed that amateur transmitting anten nas are exempted from this legislation. Otherwise they will need plenty of money to fight this violation of human rights.

Software news

Proof that CQ-TV is read in the Netherlands! I recently sent off to Elektor magazine for a RTTY program for my MSX computer and with it came greetings from J. Buiting PE1CSI. A nice touch, and we must see if there's other software we can exchange. The MSX-2 computer is particularly suitable for video applications and I have several disks of ATV and amateur radio software for MSX (and the latter for the IBM PC). Send me an SAE for details.

Until yesterday I thought that the Philips VG-8280 was the ulti mate video computer, now I'm not so sure! Suffice to say that an Amiga with genlock looks a pretty powerful beast too, and there is a superb-looking software package for it called Video Studio. This provides PM5544-style test signal, VTR clock, 20 fonts for titling, nine wipe patterns and fades, a copyright notice and loads more. The price is £79 plus VAT but this would certainly be worth it to anyone using the computer for profit-earning pur poses. Details from Probe Marketing on 0621-783504.

Higher things

Of the 23/24 cm repeaters GB3UD is temporarily off the air, while GB3RT is moving to Corley (a superb location overlooking Coventry and Birmingham). A little while back F3LP was seen trying to pass through the GB3HV repeater, but his frequency crystal locked on 1255 MHz was too far off the 1249 MHz required.

Things are starting to move on Britain's first ATV gateway, GB3TG (ten gigahertz!). Dave G4NJU, its project manager and conceiver, says that it now has the RSGB Microwave Committee's blessing and a licence application has been submitted to the DTI. The aim of this gateway, you will recall, is to provide an alternative input on 10 GHz to an existing ATV repeater, in this case GB3TV on Dunstable Downs. The proposed location, at Bow Brickhill, would serve the Bletchley, Fenny Stratford and Central Milton Keynes areas, which are in hill-shadow of Dunstable.

The channel RT4 has been allocated provisionally, with input to the gateway on 10.250 GHz (retransmitted on 1249 MHz) and output on 10.150 GHz (relaying the 1318 MHz output of GB3TV). Obviously we await the result of the licence application with great inter est; if it goes ahead, will it reach Northampton? If so, I think I shall be tempted to try 3 cm ATV!

Incidentally, interference, albeit directional, from Mercury broadband telephony transmissions has been noted in the Midlands between 10.30 and 10.35 GHz. While ATVers should not cause delib erate QRM in return we must assert our right to remain on this (shared) band! Unattended beacons with an output of up to 14 dBW become legal in 1989, so who will be first with an ATV one?

- and back down to baseband

We shouldn't forget that not all ATVers go on the air: quite a few use the hobby for recording amateur dramatics, local history and the like or just for the fun of playing with TV and making things work. This can be designing new video accessories or

renovating older equipment. Recently I have heard from several people interested in the latter, specifically keeping old 405 line receivers and cameras in working order. BATC member Jeffrey Borin had a couple of articles published recently in Television magazine (November and December 1988 issues) on "How to run your vintage TV sets". At first I was worried because I thought it said "How to ruin your vintage TV sets", but no, the advice is very practical. A couple of people even have 625 to 405 line standards converters, so there is still some material to display on these receivers. We hope to have a display of 405 line tech nology at this year's amateur television convention (remember, it's at Coventry, not Crick now!).

TVRO à la SINCLAIR

A little snippet of trade news that you may find of interest.

Sir Clive Sinclair plans to undercut Amstrad's prices for Astra-compatible satellite dishes by using 'revolutionary technology' that allows it to start prices at £149.95. The basic price will include the dish and tuning unit, with Amstrad's comparable package costing about £199.

Amstrad spokesman Nick Hewer said the firm would not be dropping its prices: 'Our dishes will have a wide distribution, and we are pleased to see other manufacturers supporting the PAL standard'.

While Amstrad's dish is circular and has a 50cm diameter, Sir Clive's offering was developed by his computer firm (!) Cambridge Computer, and is a flat square measuring 60cm across. Cambridge claims that its design will prevent snow collecting in the receiver, which can hamper its performance. (*I'm glad to see that a rational technical explanation for superior performance is being put forward!*).

The Astra satellite will be launched in December *(Arianne willing!)* and will broadcast up to fourteen channels using the PAL standard.

As you are all well aware by now, Arainne made a successful launch, delayed by twenty four hours, during the early hours of Sunday 11th December. At the time of going to press there was no news of the operational tests on Astra itself.

Contrary to popular belief...

there is life in the East after all!

3CM ACTIVITY

This news item first appeared in the 'Microwave Newsletter' and we thank the editors for their permission to reproduce it here.

Bob Platts G8OZP (*the new BATC contest manager*), whose home station is located in Burton upon Trent, is a keen exponent of ATV on the 3cm band. The following details of his successes might serve to spur on those wideband operators who have become a little bored with the monthly contest days and who feel, for various reasons, that they do not wish to take up narrow band work.

The list below shows most of the 10GHz ATV paths worked by Bob. All the sites are accessible by car, a necessary requirement at present due to the bulky nature of the equipment used.

It is believed that the 142 kilometre contact from Exmoor to Nottingham hill is a record for this mode on this band. Has anyone bettered it?

The equipment used is as follows:

TX: 12mW Gunn Oscillator. 3MHz deviation, CCIR pre-emphasis
RX: Mitsubishi Schottky mixer. DRO local oscillator.
First IF 450-850MHz. Second IF 35MHz. PLL detector.

PATH	DISTANCE	TYPE	CONTACT
Maltby to Blakey Ridge	102km	2-way	G8NND
Maltby to Bishops Wilton	68km	2-way	G8NND
Retford to Bishops Wilton	75km	1-way RX only	G8NND
Clent Hill to Gunn Hill	79km	2-way	G8NND
Weaver Hill to Tutbury Castle	20km	2-way	G8VBA
Weaver Hill to Formark Reservoir	32km	2-way	G8NND
Weaver Hill to Beacon Hill	50km	2-way	G8NND
Barr Beacon to Drum Hill	54km	2-way	G8NND
Broadway to Edge Hill	25km	1-way RX only	G8VBA
Dunkerly Beacon to Nottingham Hill	138km	2-way	G8NND
Exmoor to Nottingham Hill	142km	1-way RX only	G8NND
Weaver Hill to Black Mixen	123km	1-way RX only	G8VZT

EDITORS NOTE: So! there you are. That's what can be achieved on this exciting band, so let's have a few more of you budding portable experts on 10cm. I am sure that if you need any help or advice then a chat with Bob will put you on the road to success.

Concerning the 142km contact with G8NND, this is, as far as the records show, the present record for an ATV contact on this band Something for you to attempt to better?

In the forthcoming new BATC handbook at present under compilation many of the latest innovations will be published, along with a complete transceiver design. Then all you will need is a power supply, a portable TV, a car and a good pair of climbing boots!

AN AM ATV MODULATOR

B.I.Riding

This AM ATV modulator accepts a standard 1v p-p composite video signal, and produces an output signal of correct polarity and amplitude. It has a current capability of up to 300mA which is suitable to drive the RF stages of small transistorised transmitters such as the BATC design. In addition the circuit clamps the incoming video, has the ability to alter the video/sync ratio (useful for 'pre-distorting' the signal to overcome any non-linearity in the RF amplifier). It can apply white clipping if required and can accept a 5.5 or 6MHz sound subcarrier (see article elsewhere in this issue).

CIRCUIT DESCRIPTION

A block diagram is presented in Fig.1 which shows how the modulator is made up of several sub-blocks, each performing a specific function associated with the processing of the video signal. The blocks are:

(i) SYNC SEPARATOR. This extracts sync pulses from the incoming video.

(ii) SYNC SQUARER AND BACK PORCH CLAMP. This takes the sync signal, squares it to remove noise and develops a bandwidth limited pulse, so timed that it occurs during the back porch period of the video signal.

(iii) VIDEO AMPLIFIER. Accepts incoming video, amplifies and inverts it and produces sufficient current drive to modulate the exciter.

(iv) BACK PORCH SAMPLE GATE. Driven by the back porch clamp pulse it samples the instantaneous DC level of the back porch in the output video signal.

(v) DC FEEDBACK AMPLIFIER.This uses the DC level developed by the sample gate to control the back porch level of the output video signal.

The complete circuit diagram is shown in Fig.2. The standard 75-ohm video input impedance is defined by R1 and the characteristic input impedance of the circuit. The output stages are capable of driving loads including capacitive elements up to 2,000pF. Capacitive loads greater than this will adversely effect the high-frequency response of the modulator. The modulator is designed to operate from a 12v DC regulated supply and may require over 300mA of supply current.

SYNC SEPARATOR

This circuit samples the video signal via C3 and R5. U1c is biassed into its linear region by R6, forming a high-gain inverting amplifier. The output at U1c pin 6 will be a signal with greatly enhanced sync but with some video content still present. The enhanced (stretched) sync is created by the rather non-linear amplification in U1c. The signal will be seen to be inverted, have its white level at approximately zero volts, and sync tip at approximately half the supply voltage. C4 couples the signal to the input of U1b, while voltage divider R7/R8 applies a small positive offset to the signal

such that the tip of the sync pulse slightly exceeds half supply voltage. U1b then detects this as a logic-1 input producing a logic-0 pulse out, thus the signal at U1 b pin 4 is pure composite sync with a peak-to-peak amplitude equal to the supply voltage, and a polarity equal to the incoming video.

C5, RV2 and R4 allow a small measured amount of composite sync to be 'added' to the video signal applied to the video amplifier, altering the video/sync ratio as desired.

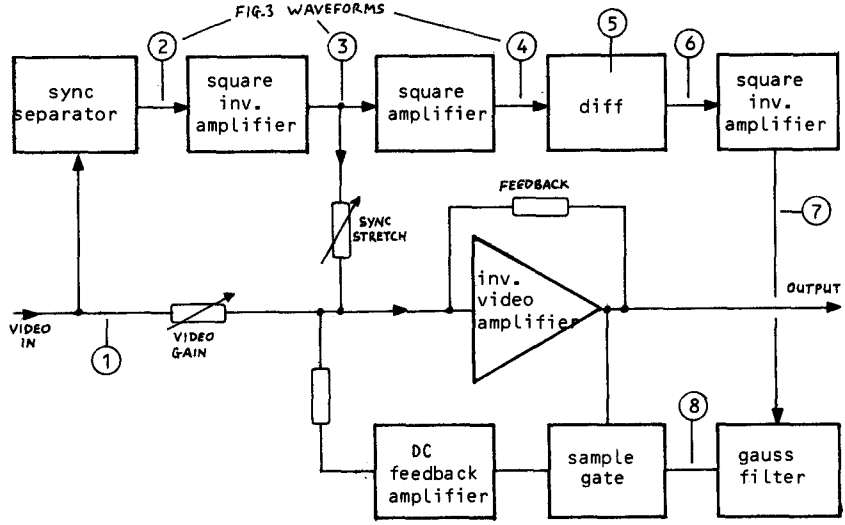


Fig.1 ATV modulator - block diagram

SYNC SQUARER AND BACK PORCH CLAMP PULSE GENERATOR

U1d and U1e further square the composite sync signal produced by the sync separator circuit, removing any remaining noise. A test point is provided at U1e pin 12 which is suitable for driving high-impedance loads such as the external trigger input of an oscilloscope.

C6, R9, R10 and D2 form a differentiator. This delays the signal which is subsequently squared by U1f. The resulting output pulse is a squarewave with an amplitude equal to the supply voltage. This begins at the trailing edge of the sync pulse and has a width set by the time-constant differentiator. (ie: the pulse sits over the back porch period of the video signal). The pulse at U1 pin 15 is bandwidth limited by R11 and C14. If this was not done spikes would most likely be introduced onto the back porch of the output video signal by the back porch sample gate.

VIDEO AMPLIFIER

The video amplifier formed by Q2, Q3 and Q4 is a high-gain inverting circuit with a push-pull, high current output stage. To

stabilise the gain and performance of the amplifier several forms of feedback are applied. Negative overall feedback is supplied via R14 and L1. The gain can be approximated by dividing the value of R14 by the input impedance of the input signal source, thus the gain can be varied by RV1 as it in effect alters the input source impedance seen by the amplifier. R2 sets the minimum value of this impedance placing a ceiling on system gain. L1 in the feedback path slightly increases the gain at high frequencies, improving the amount of chroma signal output to the exciter. This makes for the usual losses in high-frequency response encountered in the exciter itself. R3 sets the gain of the amplifier for the sound subcarrier. The value of this resistor may be adjusted to achieve the correct amount of injection, but should not be reduced below about 2.7k or the frequency response will be adversely effected.

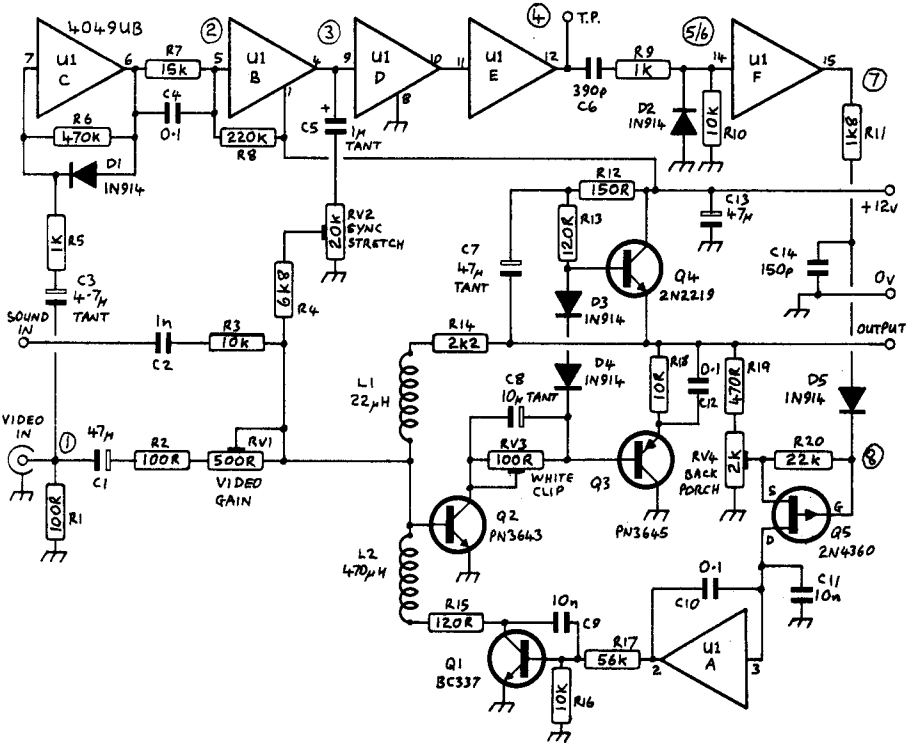


Fig.2 ATV modulator circuit diagram

Since the output load of the modulator is from the output terminal to earth, Q4 supplies most of the output power, and as such requires a heatsink for safe operation. Q3 is only required to conduct large amounts of current during sudden negative transitions of the output signal (eg: the trailing edge of the sync pulse), at which time it is discharging stored energy from the capacitive component of the output load.

RV3 sets the minimum voltage to which the base of Q3 can be taken, thus setting a minimum value for peak white in the signal. If this control is set to minimum resistance, the minimum voltage value is then set by the saturation point of the output stages.

BACK PORCH SAMPLE GATE

Q5 is an FET sample gate used to sample the instantaneous DC voltage present on the back porch of the output video signal. The gate is opened by the back porch sample pulse generated by U1f. R19 and RV4 form a voltage divider that allows the back porch voltage to be set.

DC FEEDBACK AMPLIFIER

U1a is a high-gain inverting amplifier which supplies base control for Q1. This transistor controls the DC voltage present at the input of the video amplifier. The input to U1a is a DC voltage proportional to the instantaneous DC voltage of the back porch of the video output signal, (as explained above). Thus the back porch DC level is controlled by this DC feedback path and is independant of the incoming video level. L2 is used to prevent the high-frequency components of applied video signal from being shunted away by the low impedance path offered by the feedback amplifier. The net result of the above actions is that the video signal is effectively back-porch clamped and totally independant of input video signal level.

PERFORMANCE TESTS AND ADJUSTMENT

Once the modulator has been constructed and checked for wiring errors, the following tests are recommended to confirm correct operation. Fig.3 shows some typical waveforms taken from a working modulator. The circled numbers correspond to those shown in Fig.1

1. Terminate the output with a 100-ohm 2W resistor connected between the output and ground. Supply a 1v p-p video signal to the input. Apply power to the unit via a current meter (>500mA) and check for some output using an oscilloscope.

2. Temporarily disconnect the video input and note the current drawn, it should lie between 50 and 150mA. If more than 150mA is drawn switch off and check for assembly errors or faulty components.

3. Re-connect the video signal and set the preset controls as follows:

RV1	minimum
RV2	minimum
RV3	minimum
RV4	halfway

Monitor the input video signal on one channel of a dual channel oscilloscope set to 0.5v/div and 20uS/div, use a TV trigger (if available). Now connect the other channel to the output and set the 'scope to 1v/div sensitivity. An inverse video waveform of approximately 6v p-p should be observed.

4. If all is well up to now then it is fairly certain that the modulator is functioning correctly. Check the composite sync test point (TP) where around 12v of sync should be observed. Check the junction of R11 and D5 where a gausian pulse should be observed, positioned over the back porch of the video still being displayed on the 'scope (see Fig.3 waveform 8)

5. Monitoring the output of the modulator, slowly advance the SYNC STRETCH control (RV2) where the sync pulse should be seen to become greater in amplitude, the back porch should NOT move. Continue to advance the control until sync tip is clipped (it doesn't increase further in amplitude). If this cannot be achieved advance RV1 until sync clipping occurs. After checking the zero volts reference point on your 'scope, measure the voltage at the tip of the sync pulse at the onset of clipping. It should be around 0.8v less than the supply voltage.

6. Turn the SYNC STRETCH control to minimum, set the GAIN control to centre and adjust BACK PORCH slowly where the voltage should start to drop. Continue turning until the peaks of the video signal start to clip (white clipping). Note the voltage at which white clipping occurs - it should be around 1v.

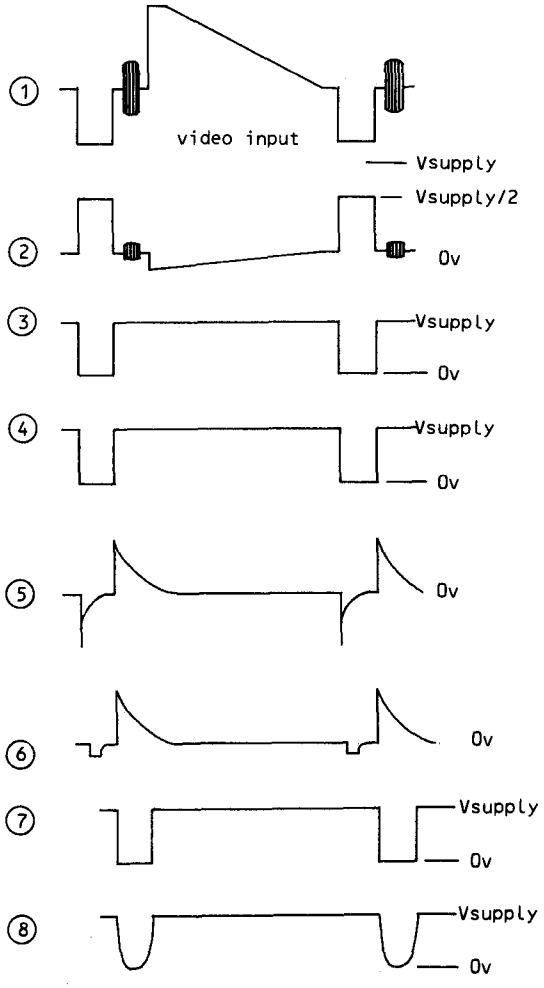


Fig.3 Waveform diagrams

7. Turn the WHITE CLIP control until the degree of clipping increases. Now turn the control back to minimum.

This completes the operational checks. If all is well the unit may now be connected to an RF exciter. For the BATC board this simply involves removing the following components: TR5, TR6 together with all their associated components plus the 100uF and 1n capacitors on the supply rail. Feed the output of the modulator to the board at the point that was previously the emitter of TR6. Use a short length of wire and preferably slip a ferrite bead over this wire as well to stop RF flowing back into the modulator.

Grateful acknowledgement to the South East Queensland ATV Group.

CONTEST NEWS

Mike Wooding G6IQM,

A sad time this, the end of an era. Well perhaps not so grand, more akin to a time for breathing sighs of relief. What on earth am I talking about? - I'm darned if I know either!

The reason for this prevarication as some of you may have guessed is that this is my last contest news....pause to let the cheers subside. From this issue hence Bob 'Gunn Diode' Platts will be in the hot seat, dis-organising the contests and writing the column.

PLEASE REMEMBER all future correspondence, contests entries, requests for log sheets etc. to: Bob Platts G8OZP, 8 Station Road, Rolleston-on-Dove, Burton-on-Trent, DE13 9AA.

I have to admit to enjoying my three years as contest manager, but never fear I shall still be there! I hope to be just as active in the contests as before. I would like to take this opportunity to thank all those stations who have been contest-active during my reign of terror, and I hope you will be just as liberal with your insults in Bob's direction!

Finally, there are one or two folk in particular I wish to mention. The various Andies, Bill & Co.of the G4WRA group who have tried to keep me on the straight and narrow after a ropey start (have you seen Bill!). Andy, Ron and Fred of the G8LIR team for their efforts in keeping the UK on top. Last but not least Kim, my lady who, it has to be said, has probably drawn the short straw again, for as you probably know by now I am not disappearing from the scene but moving to greater things. Yes I have been given the coveted red pen, you might be losing a contest manager but you are gaining a new magazine editor, so you can wipe the smiles off your faces cos' I'm here to stay!

INTERNATIONAL 88

Well I managed it! - I actually got it right for once. As Andy G8LIR put it:

> 'What a lift! Conditions more than made up for the postal strike affecting our pre-contest mail-shot - we've waited years for a big lift when portable.'

And it was, conditions were up as soon as the contest started and for many stations stayed so for well into Sunday morning. Here at Barby the bands noticeably lifted at about 1830, and by 1900 I started to hear continental stations, and that is unusual at this location as I am screened towards the east. The icing on the cake for me was a one way from Belgium, only a P1 received but nevertheless a useful 500 odd points.

From the entries it appears that many of you worked into Europe exchanging some good strength pictures. The G8LIR team managed the furthest DX with a one way into the far depths of Germany at 889km. I am still not sure if this breaks the record (we are still trying to verify this) but a hell of a distance nevertheless.

Conditions on the Sunday were back to normal however, with quite a lot of activity. Once again a contest with the usual amount of insults and light-hearted banter. Probably the most unusual station was G1WRA/P, in the words of Andy G4TGM:

> '...the only true portable (hand portable) station. Operating for an hour from the top of Broadway Tower ("El Fresco")!.'

One wonders what they will try next!

My last batch of your anecdotes etc. as usual, gleaned from the entry forms and also heard on the air during the contest:

Alec G1XRC commented to me during our failed exchange attempt that he had purchased some 24cm gear but...'I mustn't tell anyone!'...*OK Alec, mum's the word.*

Bob G8OZP when I realised that he had been using the wrong locator on the Saturday...'Well it was a bit hectic and we had been fortified'...*Not too good a start for your new leader what!.*

Peter G1COI...1) The weather was too good to go portable.
2) couldn't go /P, not enough wind to raise the aerials!
3) /P or not /P, that is the question.
I reckon all this contest stuff has sent him over the top.

Peter G8MMF...At last a dry one! At last a lift!

John G4MNY...Well done Mike, a good contest at last.

Ian G4VTD...In hindsight, more attention when at school during my German lessons would have been useful!

RESULTS

The results for the International published here are of course the UK results only. Bob will be publishing the full list in CQ-TV 146 (hopefully!)

Congratulations to Viv & Co. the 'ATV team' down there in the west country for their success on 24cm.

INTERNATIONAL 88 UK RESULTS 24cm

Pos'n	Call	Points	QSO'S	Best Dx	@	Km
1	G7ATV/P	3371	24	G6YKC		215
2	G6YKC	2980	16	G6XDY/P		236
3	G4WRA/P	2936	18	G4DVG		179
4	G4DVN/P	2740	16	G8LES		231
5	G8MMF/P	1906	12	G4DVN/P		178
6	G4CRJ	1164	9	G6YKC		155
7	G6XDY/P	1098	11	G6YKC		236
8	G1COI	695	6	G6YKC		151
9	G4VTD	682	5	G4WRA/P		278
10	G8ONX	532	6	G4DVN/P		90
11	G6IQM	427	16	G4DVN/P		105
12	G0HOV	376	5	G7ATV/P		148

Congratulations, as usual, to Andy, Ron and Fred - the G8LIR team - for their resounding win on 70cm. Can they score more!

INTERNATIONAL 88 UK RESULTS 70cm

Pos'n	Call	Points	QSO'S	Best Dx	@	Km
1	G8LIR/P	25325	57	DK1PZ		889
2	GW7ATG/P	20241	53	PA2ENG		666
3	G4DVN/P	15302	50	DL3EBG/P		628
4	G8MNY/P	12745	39	DC7JD		671
5	G4CRJ	9267	29	PA3BJC		493
6	G1COI	9066	31	FC1AJD		642
7	G7ATV/P	7188	38	G4MBN		249
8	G1XRC/P	6120	18	F5BV		556
9	G4VTD	5965	20	PA3BJC		458
10	G6XDY/P	3436	17	ON4YZ		400
11	G0AVG/P	2868	12	G4VTD		220
12	G6IQM	2624	20	ON5VL		533
13	G4UAM	2366	5	PE1HXD		327
14	G8ONX	2194	15	G7ATV/P		149
15	G0HOV	2068	13	G7ATV/P		148
16	G4VBS	1468	3	GW8LIR/P		269
17	G1WRA/P	1411	8	GW8LIR/P		143
18	G4TEP	545	5	GW8LIR/P		245

If only to make up for his error on the saturday our new leader has established himself as the winner on 3cm. How about this then, his Tx power was a staggering 10mW!

INTERNATIONAL 88 UK RESULTS 3cm

Pos'n	Call	Points	QSO'S	Best Dx	@	Km
1	G8OZP/P	167	3	GW8VZT/P		123
2	G8VBA/P	22	1	G8OZP/P		22

That's about it then, my last one over and done. Bye for now...Mike

The address for information, entry forms, log sheets and contest entries is shown below. Please remember to enclose an A4 size SAE when requesting the above, or if wanting contest certificates. Remember, every contest entry is awarded a BATC certificate if you send an A4 SAE.
BOB PLATTS, 8 STATION ROAD, ROLLESTON-ON-DOVE, BURTON-ON-TRENT, DE13 9AA.

FORTHCOMING CONTESTS:

SPRING VISION
SAT 11th to SUN 12th MARCH
1800 SAT to 1200 SUN
FSTV ALL BANDS

MAYDAY MICROWAVE
MON MAY 1st
0001 to 2359
24CM and ABOVE

CONTEST CALENDER

SPRING VISION (JOINT EUROPEAN)	Sat Mar 11th Sun Mar 12th	1800 Sat to 1200 Sun GMT	FSTV All bands
MAYDAY MICROWAVE	Mon May 1st	0001 to 2359 local	24cm and above
SUMMER FUN (JOINT EUROPEAN)	Sat June 10th Sun June 11th	1800 Sat to 1200 Sun GMT	FSTV All bands
IARU ATV (INTERNATIONAL)	Sat Sept 9th Sun Sept 10th	1800 Sat to 1200 Sun GMT	FSTV All bands
SLOW SCAN TV AUTUMN VISION COMBINED	Sun Nov 12th	0001 to 2359 local	Slow Scan FSTV All bands
WINTER ATV (JOINT EUROPEAN)	Sat Dec 9th Sun Dec 10th	1800 Sat to 1200 Sun GMT	FSTV All bands

REFLECTIONS OF A COLLECTOR

Andy Emmerson G8PTH,

At one of the club's Leicester conventions a fellow member of the BATC committee asked me why I didn't write an article about some of the old video equipment I had collected. I am not sure what excuse I gave at the time but nothing was written. A couple of chance purchases of virtual museum pieces during the past summer aroused my interest again and I realised that nearly ten years must have passed in the meanwhile.

The technology of amateur television has a rich history but even careful research in old issues of 'CQ-TV' won't tell you a great deal about the equipment in the average TV amateur's shack at any given time. Recording history is not something that most BATC people are prone to, we are too busy trying out new techniques. Since I have more than a passing affection for 'the old stuff' I thought I would jot down a few lines to get established members' memories going again and perhaps interest some more recent members.

Of course, when I first got involved with ATV a little over ten years ago I never set out to acquire 'old junk'. I wanted modern equipment but since I could not afford it, I had to make do with cast-offs. In the process I got a feel for the outdated technology I have now preserved. It is easy to forget how rapidly things have changed in the television industry - and in our amateur television hobby - during those last ten years. (Some people might not think so looking at the composition of the club's committee!)

Joking apart, it is easy to forget how very different things were then. There was no home video market of course, and even surplus gear was difficult to come by unless you had 'connections'. Video tape recorders were open reel affairs and out of the reach of most amateurs. Cameras were also a problem, at least for an impecunious beginner. The choice lay between buying a second-hand surveillance camera or building something similar either from a kit or from raw materials. You were probably looking at an expenditure of at least £100 (and you can at least double that figure in today's money). Colour was out of the question - even a colour receiver in the shack was a luxury!

So how did the ATVer of 10 or 15 years ago generate a picture if not with a vidicon camera? Well, many people made do with electronic test patterns, while others produced equally still images from a flying-spot slide scanner (FSS) or a monoscope camera. None of these gave real moving pictures, though, and I set my sights on getting hold of a vidicon camera. I soon found out that although it cost £100 to build a new camera of so-so performance from a kit you could buy a commercial-quality one, albeit elderly and second-hand, for just £50. Thus I started on a trail of buying old cameras, refurbishing them and then selling them to get hold of something newer or better. In the process I stumbled across an amazing range of British and Japanese CCTV equipment - and noted the extinction of the former by the latter.

Ten years on the monoscope and FSS devices which were already old hat back in 1978 have nearly all been scrapped now, while those same cameras I once admired (and could not afford) are now turning up at rallies for pocket-money prices. All these are more or less museum pieces now and a modest collector's market has built up. Mainly for the benefit of these enthusiasts, then, here is a brief survey of some of the equipment I would consider collectable.

SMALL 1" VIDICON CAMERAS

One of the oldest and most desirable models is the Sony CVC-2000B. It is extremely compact and was made to accompany the CV-2000 video recorder (imported by EMI Ltd in those days, remember?). It is for the 405 line system (though heretics can easily re-tune it to 625 lines). I picked one up at the Old Warden boot sale this past summer for £5, quite a bargain.

Another adjustable 405/625 line camera is the Pye Lynx, so well known that it doesn't require further description. Very common at rallies for around £20, it comes in several versions. I have one with a four-lens turret on the front. Beware of HT on the remote control socket below - cover this with several layers of insulation tape!

Incidentally, industrial TV used 625 lines from the early 1960s, even before BBC-2 started. The 405 line options were mainly for educational establishments who could not afford to ditch their existing receivers.

A very compact (and heavy) camera is one made by Epsylon Industries: it has a nuvistor head amplifier and the reason it is so compact is that the power supply and camera control unit are in a separate box! Much of Epsylon's early output seems to have been badged for EMI Ltd.

The same organisation redesigned the camera into a much better machine with the Aztec badge. A high performance version, with an alleged 800 lines horizontal definition, was sold by Dixons Technical (remember them?) as the Mirage HD800. I always wanted to find one of these but never succeeded! On the other hand I did trach down the designer, Dennis Beesley, who confessed doubt if the camera could manage 800 lines! The Aztec was generously built, with convenient back panel test points and an ingenious system enabling the camera to genlock to another video source looped through it.

A very stylish little camera is the Beulah D80S, with wrap-round case and silver script metal badges on the sides. It gives quite a good picture and I was delighted to pick one up for just £7.50 at the Cranfield boot sale last September. This one has two nuvistors in the head-amp plus a whole bunch of 'flower-power' geranium transistors. Checking up in Practical Television, I was amazed to find that in 1962 this camera cost £220, abeit with a small monitor. Yes, that's £220 at a time when the magazine it was reviewed in cost just two shillings (10p). The price of the

magazine has gone up something like 15-fold, yet a CCTV camera and moonitor (of much better quality) can be had for well under £220 now. How times (and values) change.

As well as making industrial cameras the company sold a kit for construction by amateurs. The Beukit was advertised in Practical Television during 1963 for £48 (or 69 guineas assembled and tested). A gallon of petrol cost 5s (25p) then and you'll rapidly gather this was pretty expensive for hobbyists, though ideal as a technical college project. I did once have one of these and its performance was very poor, even after it had been rebuilt with NPN (instead of PNP) transistors; the D80S was a much better animal. George Hammond's Beulah Electronics was a member of the DTV (Direct TV Components) group of companies and had a connection with Derek Pattinson's Crofton Electronics, who also prepared kits of parts for cameras to designs of their own and by Mullard. The company was an early supporter of the BATC and advertised these kits on the back of "CQ-TV" around issue 100. I never owned one of these but Clive G8EQZ was pleased with his (it cost enough, so he had to be!).

Probably one of the strangest types of camera were the separate-head models made by EMI and Marconi. Looking very similar, these were not dissimilar to a piece of drainpipe 9 inches long with a lens one end and a cable the other! This camera head contained just the vidicon or staticon tube and a head amplifier plus a small motor for controlling the lens. The remaining electronics were in a camera control unit (CCU) the size of a suitcase, which could be installed remotely.

MONITORS

Old monitors tend to be very heavy for their size and less desirable to collectors. I would make a couple of exceptions, though. Sony made an interesting transistorised 9" one (in moulded plastic case) to go with their 2100 VTR outfit. Also attractive (in a weird way) is the PM8 8" valve monitor made by Epsylon. This has a round topped steel case in austere grey hammer finish paint, glass implosion screen across the picture tube and little anodised aluminium labels, all very characteristic for the period. It is also very compact or would seem so, until you see that the power supply is in a separate case almost as large as the monitor itself!

STATIC PICTURE DEVICES

At one time or another I think I have owned every model of studio and mobile monoscope camera made by Marconi and Pye, but I have passed these on to other collectors. The only monoscope I have retained is a French one made by Ondyne and formerly owned by Rediffusion. It uses miniature valves and manages 800 lines resolution with ease. A few of these have sold in recent years for around £50. More versatile, but very hard to find, are diascopes or self-illuminated test-slide projectors which replace

the lens of a normal camera. I have one by Philips (imported by Pye) which takes normal 2 x 2" slides and a French Monital item which uses special round transparencies. The prime purpose of these was for testing vidicon cameras.

RESTORATION

Having acquired gems like these, the first priority is to get them going and to make them look smart. Most of the items I have bought have worked when switched on, with little more than the odd tweak of a preset. Finding documentation may present a problem, though the BATC has many service manuals in its library. It is worth running up old equipment every few months: this seems to help keep capacitors in trim particularly.

Cosmetic restoration should be simple. Painted cabinets generally need cleaning with car paintwork restorer and little more. Panel knobs benefit from cleaning with soapy water or meths and an old toothbrush, and if the mains cable is scruffy I replace this (with brown or black cable, not white!) and attach an authentic brown bakelite mains plug (from the 10p boxes at rallies!). Cameras are often missing their lenses and for complete authenticity you should replace these with the British-made Dallmeyer ones which were normally fitted. These are still commonplace at rallies and are generally ignored in favour of Japanese ones!

I hope that this article has portrayed some of the old junk in a more favourable light, though if I am too successful I may price myself out of the market. At the moment you can still build up a collection at pocket-money prices, so start now while stocks last! Oh yes, if anyone has circuit diagrams for the Sony CVC-2000 or any Beulah or Crofton cameras please get in touch with me: I'll be eternally grateful.

ARTICLES ON DISC

Just to show you some of the problems we encounter here in the editorial office. The 'TV On The Air' article as received from Andy came on a 3.5" disc supposedly configured as an ASCII file for my Atari. As it turned out it wasn't quite that straightforward as you can see below. Much hair pulling and nail biting later the article was printed out as can be seen elsewhere in the magazine.

news - for radio amateurs at least - is that although the number
01 eht no eb lliw seno wen eht ,esaercni ot si sradar yramirp fo

cm band. This takes the heat off 23 cm where existing high-power
ohw sruetama emos ot ecnerefretni elbaredisnoc esuac snoitats

share this band. It should also bring about the retirement of the
ot denut sVT no senil etihw elttil eht esuac hcihw sradar mc 05

LOGIC CIRCUITS

Part-1

Mike Wooding G6IQM and John Wood G3YQC

Many years ago in the pages of CQ-TV there appeared a long series of articles, written by Arthur Critchley, entitled simply 'INTEGRATED CIRCUITS'. This fifteen-part series dealt mainly with logic circuits - then in their infancy - although later parts did include some early operational amplifiers as well.

In response to many requests from members to repeat these articles we intend to reproduce them, in much the same format as they originally appeared, over the next few issues. Where some circuits are obsolete (such as DTL) these will be omitted, and where modifications and additions to the original are necessary to embrace modern TTL circuits, these will be included.

This series is intended not only as a basic introduction to logical circuits, but, by the use of illustrative examples, will provide many 'building blocks' which can be incorporated into your own designs.

By way of introduction this first part will deal with general principles and will explain the operation of basic logic gates.

INTRODUCTION

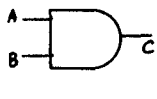
Many control systems rely on decisions that can only be in one of two states. A contact can be open or closed for example, or a valve can be on or off. The electronic version of this type of circuit is known as a digital circuit, and signals inside this circuit can generally only be at one of two voltages. These two voltages are known as LOGIC-1 and LOGIC-Ø, alternatively they are referred to as HIGH and LOW respectively. In circuits employing Transistor-Transistor-Logic (TTL) devices the voltage levels for these two states are +3.5V (minimum) for a HIGH and ØV for a LOW condition.

Digital circuits can be classified into two main groups. The first group is concerned with the control of devices such as machinery, lights, valves etc. The second group is concerned with numbers, and digital circuits are used for arithmetic and counting purposes.

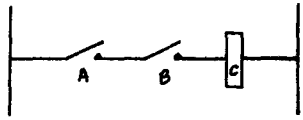
BASIC LOGIC GATES

In the explanations of the various gates I shall use as an analogy comparisons with relay circuits in order to simplify matters. In order to classify all the possible conditions at the various inputs and the corresponding output conditions a TRUTH table is used, where all these possible permutations are listed for easy and quick reference.

AND - The AND gate is represented by the circuit symbol in Fig.1a, and the equivalent relay circuit is shown in Fig.1b with the truth table in Fig.1c. The output at C will be high only when both A and B are high. Thus, as can be seen from the truth table, any other condition than this will result in output C being low.



(a)



(b)

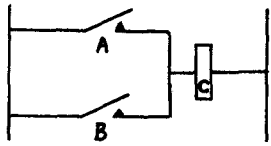
A	B	C
0	0	0
0	1	0
1	0	0
1	1	1

(c)

Fig.1 The AND gate.

OR - The OR gate is shown in Fig.2a with the equivalent relay circuit and the truth table in Fig's.2b and 2c. In this gate the output conditions are reversed to that of the And gate. Thus, only if both inputs A and B are at logic low then the output C will be low. Under any other combination of input conditions the output state at C will be high.

(a)



(b)

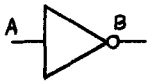
A	B	C
0	0	0
0	1	1
1	0	1
1	1	1

(c)

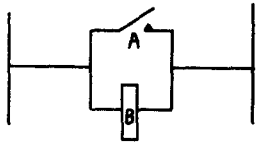
Fig.2 The OR gate.

Although the AND and OR gates are shown with two inputs they can have any number of inputs. A four input AND gate for example will have its output high only if all four inputs are high.

INVERTER - This next gate is the INVERTER, shown in Fig.3. This gate has only one input and one output. As can be seen form the equivalent circuit and truth table , the output is always the opposite state to the input. Thus a high on the input gives a low at the output, and vice versa.



(a)



(b)

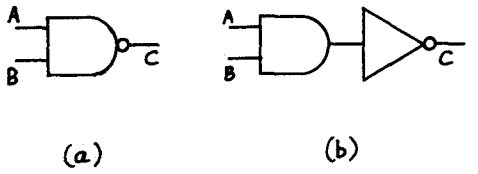
A	B
0	1
1	0

(c)

Fig.3 The INVERTER.

Generally speaking the next two gates are the most widely used due to their versatility, and many logic designers tend to build logic schemes around them

NAND - Fig.4a shows the symbol for the NAND gate. In Fig.4b we can see that the equivalent logic shows that this gate is simply an AND gate followed by an INVERTER. So it can be seen from the truth table in Fig.4c that the resultant output conditions are exactly the opposite of those from an AND gate. With a NAND gate C will only be low if A and B are high, and under all other conditions C will be high.



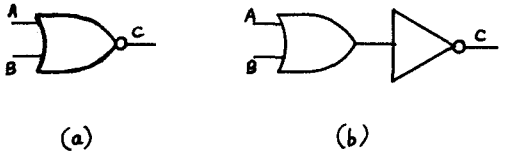
(a) (b)

Fig.4 The NAND gate.

A	B	C
0	0	1
0	1	1
1	0	1
1	1	0

(c)

NOR - The NOR gate is depicted in Fig.5a with the equivalent logic and truth table in FiG's.5b and 5c. Once again the equivalent logic shows the addition of an INVERTER, this time following an OR gate. Thus, the output conditions of a NOR gate are the opposite of those of an OR gate. The output C will be high only when both inputs A and B are low, at all other times C will be low.



(a) (b)

Fig.5 The NOR gate.

A	B	C
0	0	1
0	1	0
1	0	0
0	0	0

(c)

STORAGE

Using these basic gates most logic circuits and control schemes are built. However, an important aspect of most such circuits is the ability to remember that an event has, or has not, taken place. To fulfill this need we must have a device that can store this information until it is required. The simplest form of store (or memory) used in logic circuits is called an S-R MEMORY, 'S' and 'R' standing for set and reset.

S-R MEMORY - The logic circuit for an S-R MEMORY is shown in Fig.6a. To explain the operation of this device we need to assume a starting position. Suppose both inputs A and B are at logic-Ø and output X is at logic-1. Output X is also connected to an input of NOR gate 2, thus output Y must be at logic-Ø. Output Y is also connected to an input of NOR gate 1 and as its other input we decided is also at logic-Ø then output X is as we supposed. Thus, the circuit is stable and all the conditions are known. Summarising:

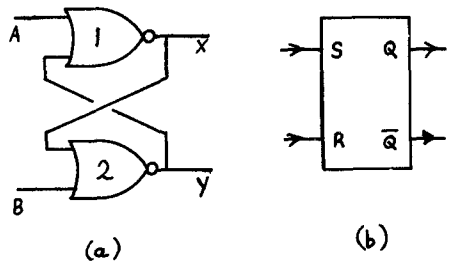


Fig.6 S-R MEMORY.

A is LOW, B is LOW, X is HIGH and Y is LOW.

If input A is now taken to logic-1, output X will go to logic-Ø (a High on any input of a NOR gate forces the output LOW). This in turn will cause output Y to logic-1 (a LOW on both inputs of a NOR gate force the output HIGH). The net result is that the output states have changed over.

If input A now goes back to logic-Ø there will be no change to the output conditions, because one input to gate 1 is still held high from output Y. However, if input B now goes to logic-1, output Y will go to logic-Ø forcing gate 1's output X to go to logic-1, thus the output states will change over again.

Hence this circuit 'memorises' which input last went high. If it was input A, then output X will be low and output Y will be high. If it was input B, then output X will be high and output Y will be low. Under no conditions can both outputs be high.

The circuit symbol for the S-R MEMORY is shown in Fig.6b. The output X is usually denoted by Q and the output Y by $\overline{Q}$ (pronounced 'bar-Q').

D-TYPE FLIP-FLOP - This next type of memory is the D-TYPE FLIP-FLOP. This device has two inputs labelled D and CK (ie:clock), and the two outputs are Q and bar-Q. The difference with this type of store is that the output Q will take up the state of the input D, but only when a logic-1 'CLOCK' pulse is applied to the CK input. In other words, assume input D is logic-Ø and output Q is logic-Ø, output bar-Q must be at logic-1 (the same rule applies to this device as the last, the outputs cannot be at the same state).

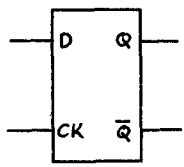


Fig.7 D-TYPE

If input D now goes to logic-1 there will be no change to the output conditions. However, if a logic-1 pulse is applied to the CK input, output Q becomes logic-1 the same as input D, and output bar-Q becomes logic-Ø. This type of memory is useful because not only will the device remember an event happening, the actual time when it stores that information can also be controlled. The circuit symbol for the D-Type is shown in Fig.7.

JK-TYPE FLIP-FLOP - In most respects the JK FLIP-FLOP is similar to a combination of an S-R type and a D-type. The outputs Q and bar-Q change over when the J and K inputs do exactly the same as in the S-R type, but only when a logic-1 clock pulse appears on the CK input. However, there is one difference, when both inputs J and K are at logic-1 the outputs will change over with a clock pulse. Both inputs at logic-1 is not a change condition for the S-R type. The circuit symbol for the JK-type is shown in Fig.8.

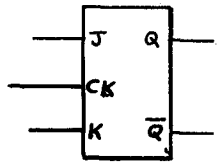


Fig.8 J-K TYPE

Although the three memory circuits described above consist of two or more gates, they are available as complete units, several of them being packaged in one IC. There is no need to string the separate gates together, unless of course that is easier in a particular application.

This concludes the first part in this series. In the second part I intend to show how these various gates can be added together to form fundamental blocks of digital circuitry with specific tasks.

D.B.S. NEWS

This article first appeared in the September 1988 edition of the IBA Engineering bulletin, and we thank the editors for their permission to reproduce it here.

Following our news item on page-50 of CQ-TV 143 concerning direct broadcasting by satellite (DBS) we have since had an update on the progress so far.

The first D-MAC test transmissions have been successfully transmitted from the IBA's engineering headquarters at Crawley Court, using an Intelsat satellite. This was achieved with the co-operation of Intelsat and its signitories in Norway, the Norwegian Telecom Administration, and in the United Kingdom, British Telecom International. These transmissions are intended to help receiver manufacturers and will consist of a series of special test signals designed to explore the full range of the flexibility of D-MAC systems. The intention is that the signals will be transmitted regularly until the start of the DBS service, in August/September 1989.

When the satellite is launched, next year, its orbital position will be at 31 degrees west, putting it just off the east coast of Brazil, where the mid-point equinoctal eclipse occurs at 2 hours 4 minutes after midnight GMT. This will put the satellite position, with respect to the ground, in about the same position as the sun at about 2.45 to 3.15 pm between the 9th and 17th of October.

The IBA's contractor, British Satellite Broadcasting (BSB), has recently demonstrated improvements in picture quality obtainable with the use of D-MAC.

SOLENT 24CM TRANSMITTER

THE EPILOGUE

Barry Trigger G6IKQ

After reading my 'mates' article on the 24cm transmitter in CQ-TV 142, I thought I would give it a go and build one for myself. I had already spent two years trying to get some thing to work and the latest system was going to be a lot more expensive than first expected. So, a kit was purchased from the Worthing Group, which arrived minus two components. No problem it says, phone between 7 and 8 pm weekdays. Ok, so I phone. No response from either number during the stated times for a week. So I started phoning on saturday morning. In the end I managed to get a reply and was told 'OK we will send them on.' Three months on and I am still waiting!

Anyway to get on with the story: The instructions are insistent that if you do not feel confident about building the kit then send it back, and they will build it for you.

This feller can do it if 'IQM can!! If I get stuck he can bail me out anyway.

Getting back to the instructions: First make a check of all the bits and identify them, then put them in separates plastic bags.

Who can tell the difference between a BB105 and a BB204?

The next problem was that the photo-copy sheet of the resistor values had no circuit component numbers on it, but logic prevailed and No.1 was at the top in descending numeric order. Then check the board for missing tracks and holes, it would be nice to have a track layout to check against!

The first assembly operation was to fit the printed circuit board into the diecast box as instructed. Trim the board to a nice snug fit, then drill and mount the 'ally' heat-sink to the board. Remember to drill the box before mounting or fixing anything, use the circuit board as a template.

Now we follow the instruction sheet and start loading the board with components. Do not forget to keep the component leads as short as possible, the instructions and 'IQM say so. There is no hang up in this bit and it all goes smoothly. Now it's assembled mark the box for all the extras and get the holes drilled ready for final assembly.

Testing the unit before it's installed in the box is a sensible precaution. Connect 12v and check for 8v on the regulator. OK. The book says "adjust the voltage on the tune pin untill the 23cm TV signal is received on shack monitor". Eureka! It was there! The only problem was that it was the 70cm monitor and the shack TV! Oh hell, Wot now! Get out the frequency counter 600 megish, give or take a twiddle. For two days much scratching of head (now you know where the hair went). Recheck components and circuit board. Look for missing holes and tracks (without track layout!). Total despair, I was building this in secret to surprise the mob and I could not find out what was wrong. It was not the missing components I still hadn't got, they were not in this part of the circuit.

The decision was made and I was off to 'IQMs. He built the one for the review and he, unlike any normal amateur as he would have us believe, will fix it I am sure. I explain the trouble to Mike that it will not wobble in the right place on the band. He powers it up to confirm that I am telling the truth for once. He then starts to take my masterpiece to pieces!, mumbling things about short leads (remember that was mentioned earlier). Well, there is short and short, and my short is not short, because he removed the legs completely! I ask now, 'how do you stick it on?', and he showed me.

We powered it up again and it nearly wobbled on frequency, at least it was in band! OH, I had switched two caps round. Who understands cap' markings anyway? There was no help from the parts list.

It still was not right so he removed one of the caps from the oscillator and threw it away!, but he replaced it with a leadless type. Low and behold we were on frequency.

From here on in all went according to the instruction set. Mike found the components to fill in for the missing ones and I finished up with a transmitter with a watt of output....and its still going strong!!!

MCR21 AT LINCOLN

Brian Summers G8GQS,

Those members who are regular visitors to the BATC Convention will have noticed the absence of my Outside Broadcast van MCR21. This is mainly due to pressure of work which limited the time available to prepare the OB van for the show and the journey.

MRC21 is still alive and well, and this year the chance to take it to the 'Lincoln Hamfest' presented itself. As it is only eight miles to the Lincoln showground the journey was undertaken with confidence!

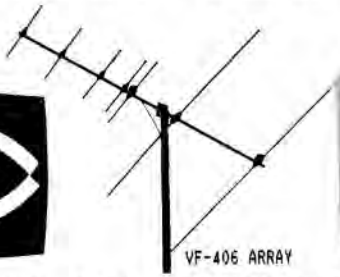
After discussions in the planning office (the local pub!) it was decided to employ the 'KISS' principle (Keep It Simple Stupid!). So, on the day the two new(ish) Marconi Mk.V111 cameras, which we had recently installed, were quickly deployed on the grass outside the vehicle. A modest 30amps of mains power was drawn from a convenient distribution box. Three colour monitors were displayed in a temporary (very) shelter which we hoped would provide some shade and improve the contrast of the monitors. The external monitors were connected to the OB van via multiway camera cable. This has three coaxial cables, three screened quads and sixteen other cores. The use of an on-site vision (OSV) system enabled the three monitors to be individually connected to the OB van, and supplied with mains, a loudspeaker feed and a telephone in the minimum of time.

The BATC's demonstration tape was played on one monitor, a short tape about the van on the second and mixer output to the third monitor. A good number of people watched the monitors and a constant stream of people came into the van, which was organised as a 'walk-through'.

I would like to thank the crew who made it possible: Paul Marshall, Jill Marshall, Bernard Golland, Dave Hill and M.Keyes.

HS PUBLICATIONS

7 EPPING CLOSE DERBY DE3 4HR ENGLAND



* DX-TV AERIALS -VHF and UHF * MASTHEAD AMPLIFIERS * DISTRIBUTION EQUIPMENT *
* D-100 CONVERTER SYSTEMS * TECHNICAL PUBLICATIONS -DX TV *
* SATELLITE TV BOOKS * VIDEOS -Propagation and How to DX *
* AERIAL HARDWARE for DIY construction *

«DE-LUXE» D-100 DX-TV CONVERTER SYSTEM (Reviewed in TELEVISION Dec. 88 issue)
* Multi-system sound
* Wide and narrow IF bandwidth selection
* VHF/UHF -covers virtually every terrestrial TV channel you're ever likely to encounter! (Inc. special Eastern-bloc channels in Band II, 70cm ATV band -even Ch A80 for AFN-TV Soesterberg from the Netherlands).
* **ONLY £89.99 inc. UK P&P**

VF-406 DX-TV ARRAY FOR BANDS I/III
* A compact but efficient array with wideband coverage of Bands I and III
* Separate downleads ensure maximum efficiency and enables individual filtering and amplification of each band should this be neccessary
* Design tried and tested on SpE, Band III Meteor Scatter, F2 and Trops!
* **ONLY £27.95 (Including UK Carriage)**
  OR £38.95 (including BAND III MH amp. with 20dB gain and 1.8dB noise figure)

Suitable PSU: £13.45 inc P&P...Twin output type (feeds 2 TV sets) £15.45 inc P&P

AN INTRODUCTION TO SATELLITE TELEVISION by F.A. Wilson
Highly recommended for anyone interested in satellite TV. (104 pages 260 x 195)
Price £6.55 UK.....Surface £7.45.....Air (Europe) £8.45.....Air £8.90

TV-BILDKATALOG -2ND EDITION by Norbert Kaiser
Identify DX signals with this detailed guide to European test cards and captions. Lots of useful information with maps, etc.
Price £6.55 UK.....Air (Europe) £7.30.....Air (Rest of the World) £8.50

TELERADIO NEWS DATA FILE -BAND I/II
Our very own publication revised July/August 1988. It includes a European picture guide with test cards, clocks, etc. There's also a handy Band I/II transmitter map with list of TV stations you're likely to encounter via SpE.
Price only £5.99 (UK).....Surface Mail £7.75.....Airmail £8.75

TELERADIO NEWS
Subscription magazine for TV DX enthusiasts. Includes latest news from around the World, reception reports, pictures, etc.
Annual subscription for 6 bi-monthly issues £6.00 UK.....Airmail £8.50

* WE CAN SUPPLY A WIDE RANGE OF VHF & UHF DX AERIAL SYSTEMS AND ACCESSORIES *
Send 19p stamp (or 2 IRC's) for our full product range.

INTERCARRIER SOUND MODULATOR

C Melen VK4ZCM & B.I Riding

This frequency modulated intercarrier sound generator has been designed to interface with the ATV video modulator described elsewhere in this issue. It is designed to accept standard 'line' level audio in, and is capable of producing in excess of 6v p-p of subcarrier output.

PERFORMANCE SPECIFICATIONS

Input signal level:	100 - 500mV rms.
Input impedance:	Constant 50k
Frequency response:	15Hz - 16kHz + 2dB relative to a standard 50uS pre-emphasis curve
Signal/noise ratio:	(sound board only) >65dB relative to 1KHz.
Distortion (50kHz dev, 1kHz):	<2% (peak programme level)
Distortion (20kHz dev, 1kHz):	<1% (average programme level)
Sub-carrier output:	>6v p-p (typical 8v p-p)
Sub-carrier spurious outputs:	>20dB down (including harmonics)
Subcarrier output impedance:	<250-Ohms

CIRCUIT DESCRIPTION

The unit consists of three basic sections:

(i) Input amplifier and pre-emphasis circuit.
(ii) Modulated subcarrier oscillator.
(iii) Output amplifier.

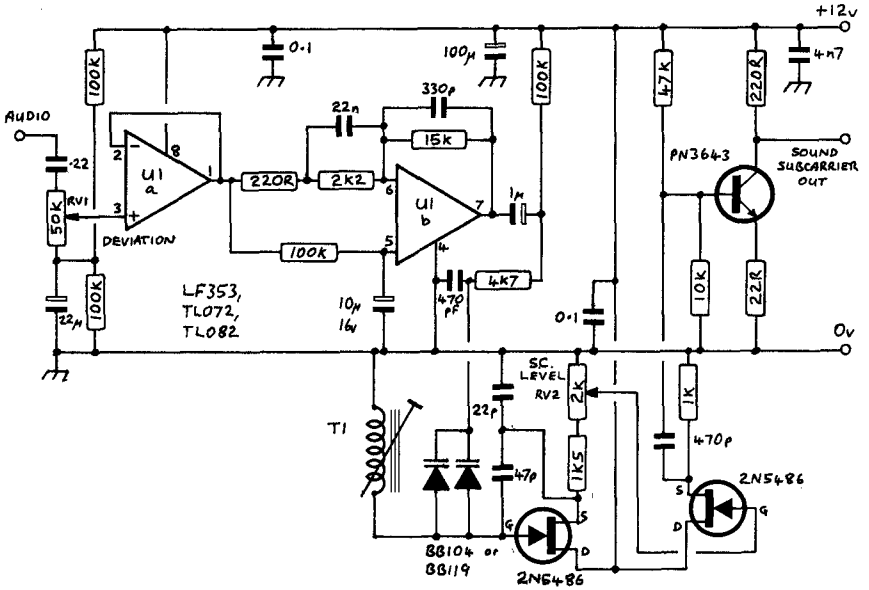


Fig.1 Sound subcarrier generator

Fig.1 shows the complete circuit diagram. The input amplifier is a two-stage arrangement. The first stage (U1a) is used purely as a buffer, which prevents the input source impedance from effecting the circuit performance, while the second is an inverting amplifier having a frequency response approximating a 50uS pre-emphasis curve. The input impedance is defined by the deviation control RV1. Bias of half-supply is applied via the lower end of RV1 to allow for operation of the op-amp by a single power rail. U1b provides the necessary voltage gain to drive the varactor diodes and also defines the 50uS pre-emphasis curve; this is set by the 22n capacitor and 2k2 resistor parallel combination. The 330pF capacitor across the feedback resistor sets a ceiling on the stage's high-frequency gain, thereby avoiding the possibility of stage instability The 470pF/4k7 combination on pin-4 is a simple filter which sharpens the high frequency rolloff of audio drive to the modulator diodes above the audio spectrum. The 470pF capacitor also presents an RF 'earth' for the intercarrier signal itself, which is present at the cathodes of the diodes.

The modulated oscillator is a standard Colpitts circuit using an FET which is biassed for best thermal stability. The feedback ratio is set by the 47 and 22pF capacitors and ensures sufficient feedback to assure reliable oscillation, but without producing a distorted waveform. The output is fed to a FET source follower to minimise loading by the following stages.

The output amplifier is a common-emmitter type having a stage gain of ten. Under open-circuit output conditions the stage has more than enough gain to produce greater than 6v p-p output. Note that capacitive loading of the output will limit the gain, resulting in insufficient output. Care should therefore be taken in the length of wiring between the output and the video modulator sound input terminal.

The inductor L1 should be around 45 turns of 30swg enamelled copper wire, close-wound on a 5mm former, although this may need some adjustment to obtain the required frequency range.

To set the deviation, apply station level audio to the input and power to the supply rail. Using an oscilloscope and probe, monitor U1 pin-7 and adjust RV1 for 1.8 to 1.9v p-p.

To set the sound injection level on an AM transmitter you will need an accurate demodulator and an oscilloscope. Measure the transmitted video's peak sync level (relative to zero volts). Now remove the video signal and adjust RV2 so that the p-p value of the subcarrier (observed on the 'scope) is equal to the sync tip level previously determined but divided by 1.75. eg: 400mV sync tip; sound injection 235mV p-p gives a peak vision carrier/sound carrier ratio of approximately 13dB. This being the new standard layed down for stereo TV sound.

Acknowledgements to the South East Queensland ATV Group; to Ian Riding for his assistance in the development, and to Richard Carden VK4XRL for supplying the article to CQ-TV.

INTERCARRIER SOUND DEMODULATOR

Peter Delaney G8KZG,

There have been a number of designs for a receiver IF strip in club publications, for which PCB's are available. For AM use, the TDA2540 and SL1430 with a SAW filter makes an easy to set up system which, with a varicap tuner, will cover the broadcast channels or 70cm (described in Amateur Television Handbook). For FM use there is the design using an NE564 and a pair of NE592 or LM733 devices. This appeared in CQ-TV122, and "The Best of CQ-TV"; and with a suitable down converter (see CQ-TV117, "The Best of CQ-TV" or CQ-TV 144) makes a receiver for the 24cm band, including the TV repeaters. It also has applications at 10GHz, etc.

The piece lacking from these boards is a sound demodulator for the intercarrier sound found on broadcast or 24cm and higher amateur transmissions. (There is not room on 70cm for intercarrier sound using the usual double sideband transmitters).

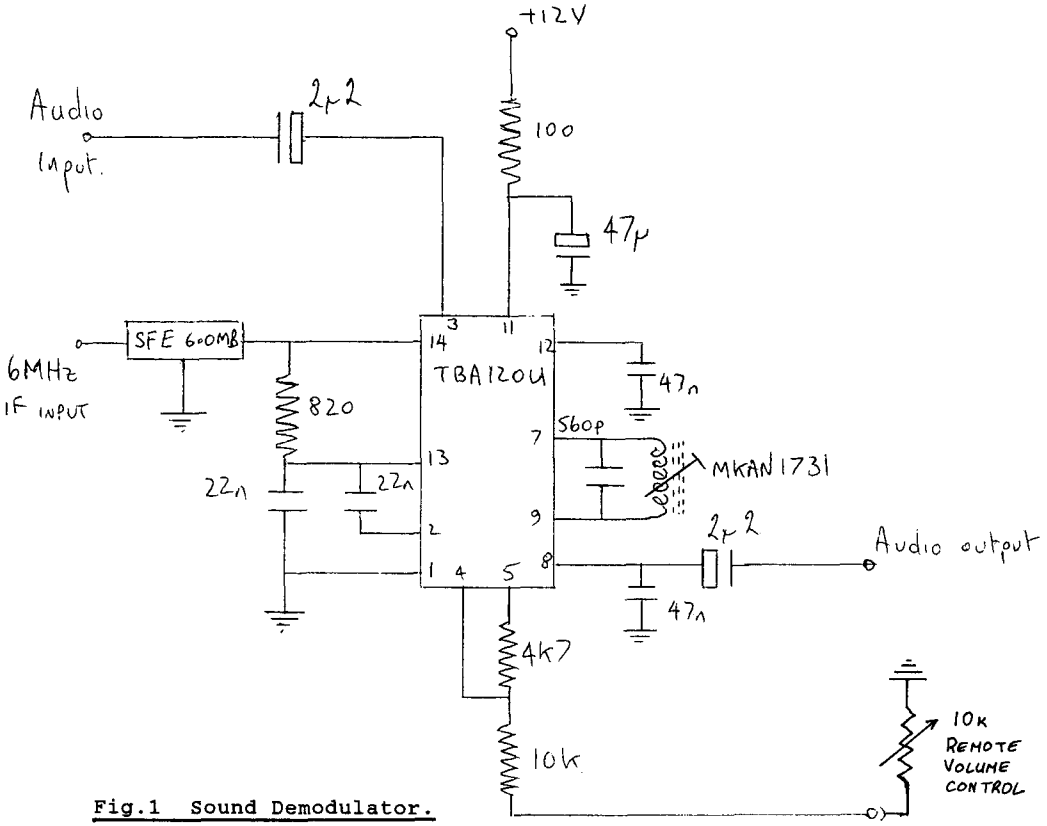


Fig.1 Sound Demodulator.

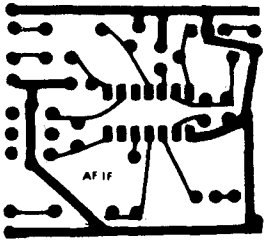
CIRCUIT DESCRIPTION

This circuit takes the video output signal, (a suitable take-off point is provided on the FM demodulator board), and produces an audio signal. It is built around the readily available TBA120U (the other variants have different internal circuitry). The input is passed through a ceramic filter for the audio subcarrier frequency in use (6MHz in U.K., 5.5MHz in Europe, etc), although a conventional tuned circuit could be used in place of the 820-ohm resistor, with a 56pF coupling capacitor where the filter sits. The demodulator tuned circuit uses a Toko pre-wound part, available from Bonex etc., although a home made coil could obviously be used. If making your own coils, the input one should have a 'Q' of about 75, and the demodulator coil a 'Q' of 40.

The output voltage is of the order of 1V r.m.s. (depending on the deviation set at the transmitter, of course), across a 1k-ohm load, which is quite adequate to drive a small audio amplifier like the LM380 etc. The output level can be set by the gain control, which, as it is a voltage control rather than passing the audio through it, can be positioned remotely in some convenient position. It gives about 80dB of control.

The circuit also allows another audio signal to be fed in at pin-3, and amplified by about 8dB - if this is not required, ground the audio input (pin-3).

The circuit diagram in Fig.1 shows all the details, although the filter and tuned circuit would need changing in "non-6MHz" areas. The single sided board pattern and component layout are reproduced full size in Fig.2. The circuit draws about 15mA at 12V. The Toko coil comes pre-aligned, but a slight adjustment may be made to get the maximum undistorted output. You can then listen to as well as watch the local tv repeater!



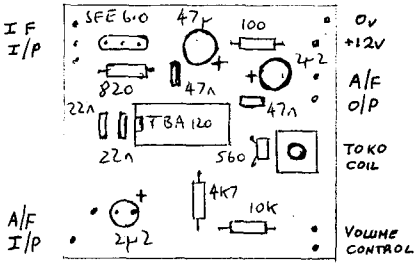


Fig.2 PCB layout and component overlay.

BROADCAST BAND DX-TV RECEPTION

Garry Smith and Keith Hammer,

In the last CQ-TV magazine we mentioned Meteor Shower propogation, which provides signals, albeit short-lived ones, when other modes of reception are scarce. There are peak dates which are applicable to the various showers. Some showers are more active than others and are well worth tuning in to. Below is a list of showers and their expected peaking dates for 1989:

SHOWER	OVERALL PERIOD	EXPECTED PEAK	COMMENTS
Quantrids	Jan 1st - 6th	* Jan 3rd at 1500	+/- 3 hrs
Lyrids	Apr 19th - 25th	Apr 22nd	
May Aquarids	Apr 24th - May 20th	May 5th	
Delta Aquarids	Jul 15th - Aug 20th	Jul 28th - 30th	
Perseids	Jul 23rd - Aug 20th	* Aug 12th at 1400	+/- 12 hrs
Orionids	Oct 16th - 27th	Oct 20th - 23rd	Flat peak over 3 days
Taurids	Oct 20th - Nov 30th	Nov 1st - 8th	Weak, flat peak
Leonids	Nov 15th - 20th	Nov 17th	
Geminids	Dec 7th - 16th	* Dec 13th at 2100	+/- 6 hrs
Ursids	Dec 17th - 25th	Dec 22nd	

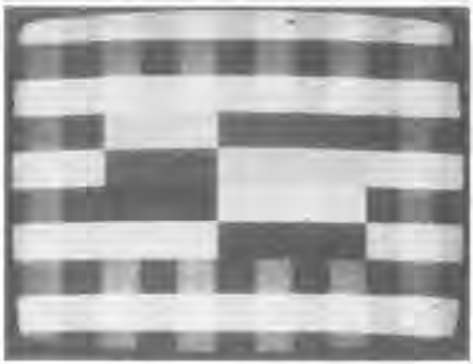
* indicates excellent showers for TV DX'ers!

(Our thanks to Roger Bunney of Romsey for supplying the above information).

During the showers marked with an asterisk signals can appear every few seconds throughout Band-1 during peak activity. Make a point of checking Band-111 channels too, because reception is possible as high as E10 or E11. For some reason directing the aerials towards Scandinavia seems to produce more signals than any other direction. The results obtained can vary tremendously from year to year because the showers may be more intense in other parts of the northern hemisphere than over Europe.

SEPTEMBER

Sporadic-E DX occurred during the first few days of September with mainly routine stuff. This was to be the gradual winding down of the great 1988 Sporadic-E season! The 1st and 4th were both excellent days when conditions were wide open to the south and central Europe. High MUF's on the 4th produced signals from Albania on Ch. IC (82.25MHz vision), Russia and Rumania on R3 (77.25MHz). Several Norwegian stations made an appearance on the 28th with various transmitter



locations seen at the foot of the PM5534 test card, ie; STEIGEN (ch. E2), HEMNES (ch. E3) and HADSEL (ch. E4).

Tropospheric reception was evident on many dates. One enthusiast reported signals from Switzerland in Band-111 and UHF six times in twenty one days! On the 7th and 16th mystery signals were resolved on E36 in the form of a 'blockboard' test pattern just before midnight (see adjacent photograph). On the 7th this was preceded by colourbars with the lower half blank except for the words 'EUTELSAT/F1 TRANSPONDER 3'. The origin of these signals is thought to be West Germany. A growing number of the larger cities in Germany now have 'local' transmitters from which the 'SAT-1' and' RTL+' satellite broadcasts are relayed. Most of these transmitters have an ERP of below 20kW.

On the 20th the Austrian 'ORF FS1' PM5544 test card emerged on channel E8 from the Gaisberg transmitter for a short period when the Belgian E8 transmitter went off the air. Other interesting catches included East Germany at Band-111 and UHF, Sweden at UHF and various Norwegian Band-111 coastal outlets.

There were reports of the Danish TV-2 network being received in Wales at UHF. At the moment only a few of the transmitters are actually broadcasting programmes, many are still on test. The new TV-2 network, when completed, will consist of sixteen high-power UHF outlets, many of which will have an ERP of 600kW. There are plans to eventually transfer the 'DR' network from the VHF bands to UHF. A subscription movie channel may then take up residence on the old channels.

OCTOBER

The most significant reception during October was via F2-layer propogation. Affected by the solar cycle suitable conditions occur approximately every eleven years. Not every peak is a good one, sometimes the MUF will not rise high enough to affect TV frequencies. During the last cycle (number 21) TV DX'ers in the UK and Europe were receiving TV pictures from all over the world, mainly on the lower Band-1 channels between 48 and 50MHz.

The Belgian test card with an important announcement.

Most countries do not transmit on frequencies below 48MHz, but New Zealand and Australia both have TV channels at 45.25MHz and 46,25MHz respectively. Between 1978 and 1981 signals from Australia penetrated the UK on many occasions. Similarly, BBC1 signals on the old 405-line ch.1 (41.5MHz sound/45.00MHz vision) and France on their now defunct ch.2 were resolved in Australia.

F2 reception occurred at detectable levels on many days towards the end of the month. The 31st produced the strongest DX signals for

almost two hours on channels E2 and R1. The signals could not be identified because the video content sufferred from extreme video distortion. It was difficult at times to detect whether the pictures were still or moving! Multiple images and severe vision distortion are a feature of F2 propogation.

Tropospheric DX during October produced some interesting catches once again in Band-111 and UHF. The 15th and 16th were excellent with UHF signals from Norway, Sweden, West Germany, East Germany and France. Even AFN-TV Soesterberg put in an appearance at the top end of the UHF band on A80. David Glenday (Arbroath, Scotland) deserves a mention - he managed to pull in some spectacular DX using a single UHF grid. He identified Switzerland E34 on the 15th at a distance of some eight hundred miles. Even the new Danish TV-2 PM5534 test card was spotted just before midnight with its new logo (black on white) on channel E30 from Vejle/Hedensted! The biggest surprise was the appearance of the 'RTL-PLUS KoLN' test pattern on channel E36 from, we suspect, the new 'local' outlet at Lubeck/Berkenthin.

NOVEMBER

There was a hint of F2 activity on the 6th just *below* E2, with various noises and Russian communication networks present. Sporadic-E was evident on several dates. Norway, Italy, Switzerland and France all came through on the 2nd. On the 13th Yugoslavia, Spain and Italy emerged between 1000 and 1040, whilst on the 17th an opening to the south produced DX from Spain and Portugal. Tropospheric reception was limited to a meagre number of Dutch, French and Belgian stations in Band-111. Meteor shower activity seemed poor, despite the highlight on the 7th when the Swedish 'KANAL 1 SVERIGE' PM5534 card suddenly materialised on Band-111 channel E10 for a second, swiftly followed by a 'ping' on E4.

NEWS FROM ABROAD

In northern Yugoslavia an unidentified transmitter on channel E3 is regularly being received from the south-west. The video is severely distorted, but at times African dancers and a test pattern (vertical stripes) have been deciphered.

Malaysia is regularly being received in northern India via F2 or TEP (Trans-Equatorial Propogation). Sometimes the sound and colour is present, depending on the accompanying video distortion. Much of the reception is on ch.E2, although FM broadcasts from Malaysia have been heard as high as 107MHz. Thailand E3 is fairly common too.

Turkish Delight at UHF! A tropo signal for Mediterranean DX'ers but it's unlikely to ever reach the United Kingdom.

The Sporadic-E season has commenced 'Down-Under' according to Duncan Fraser in New Zealand. Initially, signals were weak and intermittent from Australia, but now the openings are becoming more intense and prolonged. On the 8th Tasmanian FM was heard at good strength on a telescopic rod aerial! New Zealand's TV ch.1 audio (50.75MHz nominal) was received in California for thirty minutes during early November. He also mentions that an Australian DX'er noted Chinese signals for four hours on channel C4 (77.25MHz) at the end of October via a combination of Sporadic-E and TEP. Channels A2 and A3 (525-lines) were also in evidence during the same opening, possibly originating in the Philippines. Signals on ch's. E2 and E3 were also resolved which are thought to have come from Malaysia.

MUSIC LISTS WANTED

Not quite DX-TV, but does any CQ-TV reader have any play-lists of music used for test card transmissions during the 1950's and early 1960's? In particular, lists covering ITV for 1958 and 1959, and *any BBC information regarding test Card 'C'. Please contact Keith Hammer, 7 Epping close, Derby, DE3 4HR. Tel: 0332 51 33 99.*

Not really relevant but it's a nice picture and fills an awkward space!

This is printed on one of those posh (£1,000) Mitsubishi jobs which take a picture straight from the TV set. Guess the CQ-TV office could use one of these - must work on the committee....!

IN PLACE OF THE TUBE

Part-5

By Peter Delaney G8KZG,

In parts 1 to 4 we looked at the frame transfer type of CCD, as made by EEV and Mullard. We now look briefly, for completeness, at the other types of CCD mentioned in the first part of this series.

There are two basic forms of X-Y device, one uses MOS capacitor pairs, which store electrical charges generated by the light falling on them. A charge pattern therefore exists that corresponds to the image focussed onto the CCD. These varying charges result in a different voltage on the various capacitor elements. To generate the television waveform, these are addressed sequentially by 'scanning' circuits. The Y address determines the row to be read, and the X address determines the column to be read (i.e. the position along the line, Fig. 14).

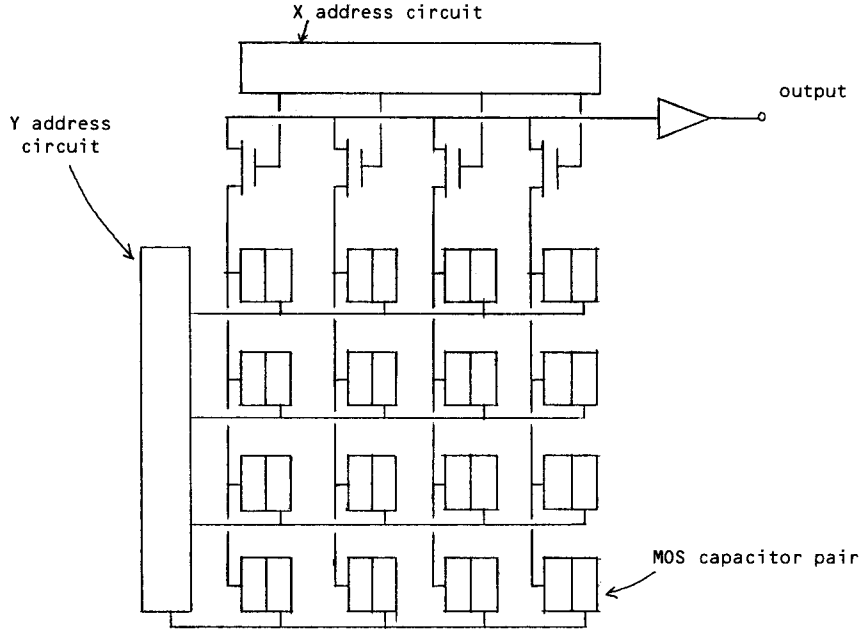


Fig.14 X-Y addressed MOS capacitors

In the other type of X-Y solid state imaging device, the CCD process is not used as each sensing element is a photodiode, arranged in a matrix. The rows and columns are switched in sequence, by MOS switches, to generate the TV waveform.

A rather different technique is used in the inter-line transfer type of CCD. Like the frame transfer type, the device contains image sections and storage sections. However, in the inter-line type of

CCD, the image and storage sections are arranged in alternate strips across the device (Fig 15). The photo sensitive elements are not horizontally adjacent to each other, which limits the resolution available with this type of device. To operate the inter-line CCD, the charge pattern created by the image on the vertically arranged photo-elements is transferred to the adjacent storage section. From these it passes via the readout section to create, with suitable processing, the television waveform.

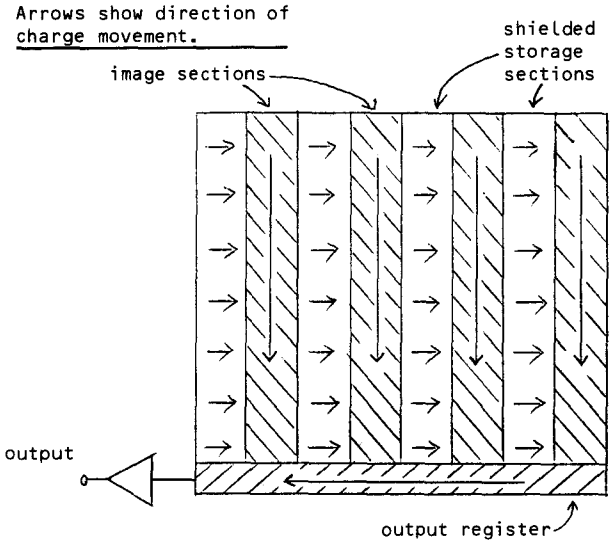


Fig.15 Inter-line transfer CCD

The CCD is, of course, a relatively recent development, and so circuit details and technologies may change quite quickly. Currently, the frame transfer device offers several advantages over the other types. It is possible with tis type to accumulate the charge pattern over a short time (the integration time) compared to the television frame times, which is useful for 'freezing' motion. They can also be configured for slow-scan television, and, at the present state of the technology, offer better resolution and sensitivity than the other types. In addition, amateur grade versions are available from EEV and Mullard, and so seem to be the most likely device for club members to use for experimental work with "state of the art technology".

The author is most grateful for helpful advice given by Kate Howarth (Mullard) and Richard Hoare (EEV).

ATV WORKING - 10.25GHZ

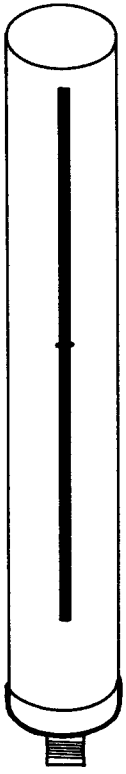
SLOT AERIALS

Hap Griffen WA4UMU

The original article - 'Experimentation with Slots' - from which this piece has been written, appeared in Vol.18 No.5 of Spec-Com magazine, and we thank the editor for his permission to use the material here.

One of the main reasons that the hobby of amateur radio exists is experimentation. It's been a long tradition for hams to probe the limits of technology and proceed to accomplish what the 'experts' say is impossible or impractical. Granted, the day of landslide technical progress outside of corporate laboratories seems to be drawing to a close. Even so, there are areas in which an 'old' technology can be revised and put to use within our modern, high technology hobby. A prime example of this is the recent rise in popularity of Slot aerials for ATV.

Being in the TV broadcast business, an obvious path was to investigate slot earials which have been the standard means of achieving non-directional, horizontal polarisation ever since UHF transmissions became popular. These aerials were first pioneered more than 50 years ago by an engineer named Andrew Alford. Their first use was in aircraft where a protruding aerial was undisirable. A slot was cut in the fuselage of the plane with a resonant cavity enclosing the back, and was excited by a feedline connected across its centre.



The Alford Slot

THEORY

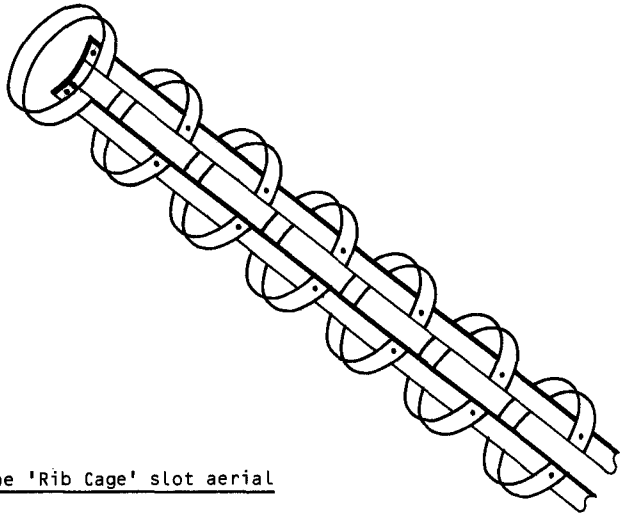
The Alford Slot aerial is a horizontally polarised, omni-directional radiator with a theoretical gain of 5 to 9 dBi (2.86 to 6.86 dBd) depending primarily upon its length. It is particularly suited for beacon or repeater use and can be stacked end to end to achieve nearly 3dB more gain. The bandwidth is plenty wide enough for ATV applications. The non-directivity (ratio of maximum to minimum gain) is typically 1 to 1.5 dB.

The aerial consists of a length of tubing with a longitudinal slot cut into one side. The slot can be fed across its centre, in which case both ends of the slot will be shorted by a strap, or can be fed across one end and the opposite end shorted. The designs usually encountered are of the centre-fed variety.

The length of the slot determines the gain - a vertical half-wavelength slot is equivalent to a horizontal half-wave dipole and produces horizontal polarisation. Consider, if you will, a slot cut in an infinite sheet of metal and fed across its width with a current source. The voltage across the slot would be that of an infinite (matched) transmission line. The electric field would be directed across the slot and would be similar in amplitude in the direction of propagation (away from the feedpoint)

as the infinite transmission line. If we short-circuited the slot at two points equidistant from the feedpoint, a standing wave will develop, and the voltage distribution will be that of a shorted transmission line. Although there would be the familiar standing wave pattern in the direction of propagation, the electric field would still have the same variation across the slot as before. The radiation from the slot in the infinite plane will be bi-directional broadside to the plane. By bending the plane around into a cylinder, the radiation pattern becomes close to omni-directional and, if the circumference of the cylinder is close to 3/8 wavelength, the pattern is typically within 1.5 dB of circular.

The trick with the Alford Slot is that by making the phase velocity of the wave travelling up the slot faster than the speed of light, it's possible to obtain a dipole type field distribution over the length of the aerial which is many times longer than the free-space half wavelength. The result is similar to feeding several dipoles in phase but without the lossy phasing harness. The gain obtained is proportional to the length of the slot in free-space half wavelengths.



The 'Rib Cage' slot aerial

The idea of having a velocity factor greater than one may disturb some readers, but remember, it is only the standing wave pattern that appears to travel faster than light; the wave itself propagates slower. These actions are very similar to the operation of waveguide at frequencies just above cutoff.

The cylindrical body of the aerial makes the slot act like a transmission line shunted by an infinite number of inductive loops, with the gap across the slot acting like a series capacitor to the loops. The cutoff frequency of the structure is determined by the resonant frequency of this LC network. Waves cannot propagate along the slot below cutoff frequency, and the phase velocity (and therefore wavelength) is theoretically infinite at the cutoff frequency. With increasing frequencies above cutoff, the wavelength slowly decreases to its free-space value.

The dimensions of the aerial are highly interdependent. The velocity factor is determined by the length of the slot, the cylinder diameter, the material thickness, and the slot width. The higher the velocity factor, the higher the gain, but the more critical the dimensions become. Therefore, most slot aerials are constructed for velocity factors between 2 and 5 and operated 5 to 15% above cutoff. The feedpoint impedance of a tuned Alford Slot is around 200-ohms resistive, so it is a good match to 50-ohm coax with a 4:1 balun.

PRACTICAL TESTS

In January 1986 a 10 Watt remote transmitter was installed on top of an eight-story building in Sumter, South Carolina using one of K4NHN's 'rib-cage' slot aerials on 439.25MHz. We had been using a vertical Isopole with very disappointing results. However it was immediately obvious from reception reports that the rib-cage aerial was running circles around the Isopole.

In April 1986, the aerial was measured against a reference dipole (consisting of a dipole cut for 439.25 MHz, with a quarter-wave impedance matching and sleeve balun section) as well as several other commercial and homebrew Yagis and quagis. The test field was the grassy parking area of the local football stadium with the test aerial approximately 500 feet from the 2-Watt source. All test aerials were mounted 10 feet above ground (the slot was tested with its centre at 10 feet above ground). The test site was at the top of a steep hill and approximately 12 feet higher in elevation than the source site. All test aerials were fed into a Tektronix spectrum analyser through a 10dB pad and 35 feet of Belden 8214 coax. A reference signal level was taken with the dipole and noted as -43 dBm. When feedline losses and the 10dB pad are taken into consideration, this is almost identical to the value predicted by the free-space path loss equation. The signal from the slot was -36 dBm with the slot side aimed at the source, -37 dBm with the 'back' aimed at the source and -38.5 dBm from the sides, indicating a maximum gain of 7 dBd off the front, 6 dBd off the back, and 4.5 dBd off the sides; within 2.5 dB of omni-directional. Other aerials were measured with results as follows:

AERIAL	Gain (dBd)
Reference dipole	0
8-element quagi	12.8
6-element KLM Yagi	8.0
F9FT Yagi	9.8
Old Jaybeam skeleton slot	9.0
Cushcraft DX-420 colinear	10.0
H4NHN 'rib-cage' slot	7.0 (front)
	6.0 (back)
	4.5 (sides)

If these results are compared with the results of other 'official' gain measuring sessions, the values obtained seem to be correct within a dB or so. The K4NHN slot was mounted at the WA4UMU ATV repeater site along with another one cut for 427.25 MHz in June 1986. This performed flawlessly with very good coverage until August 1987 when the repeater tower was blown over in a violent windstorm. The tower was twisted in half and the aerial mounting brackets totally destroyed, but the 'rib-cage' slots survived with only minor damage.

A COAX SPLITTER

By Bob Platts G8OZP,

This article describes the construction of a simple 50-ohm splitter for use on the 11m, 6m, 2m, 70cms and 23cms bands. A soldering iron and a pair of wire strippers are the only tools required for construction of this device. The splitter is based on four equal lengths of 75-ohm cable nd is shown in Fig.1, and a carefully constructed device should exhibit an SWR of less than 1:1.2.

The design is very flexible, (not intended as a pun) and may be constructed in several different forms. The most simple is as a permanent splitter installed in the aerial feeder. Alternatively, it may be constructed with connectors on each, some or all ports. I have constructed several such splitters using PL259's at each end, BNC bulkhead sockets each end and an N-type free female connector on port A, with equal lengths of 50-ohm coax from ports B and C, terminating in male free N-types.

For ease of construction the use of foam dielectric UR202 (standard TV feeder) coax is recommended. Firstly cut four equal lengths of the cable to the lengths indicated below:

BAND	10m	6m	2m	70cm	23cm
CABLE LENGTH	1.7m	988mm	340mm	113mm	38mm

Number the lengths 1,2,3 and 4 and strip back the outer insulation of each end by approx 12mm and tease out the braid.

PORT A

1) Tape all four cables together with their ends level with each other.
2) Cable 1 and 4: Strip inner insulation back flush with the outer braid.
3) Cables 2 and 3: Strip back the inner insulation by 5mm and connect the inner conductors together.
4) Connect together the braids of cables 1,2,3 and 4.
5) Connect together the inner conductors of cables 1 and 2.

PORT B

1) Strip back the inner insulation of cables 1 and 2 by 5mm and connect he inner conductors together.
2) Connect the braids of cables 1 and 2 together.

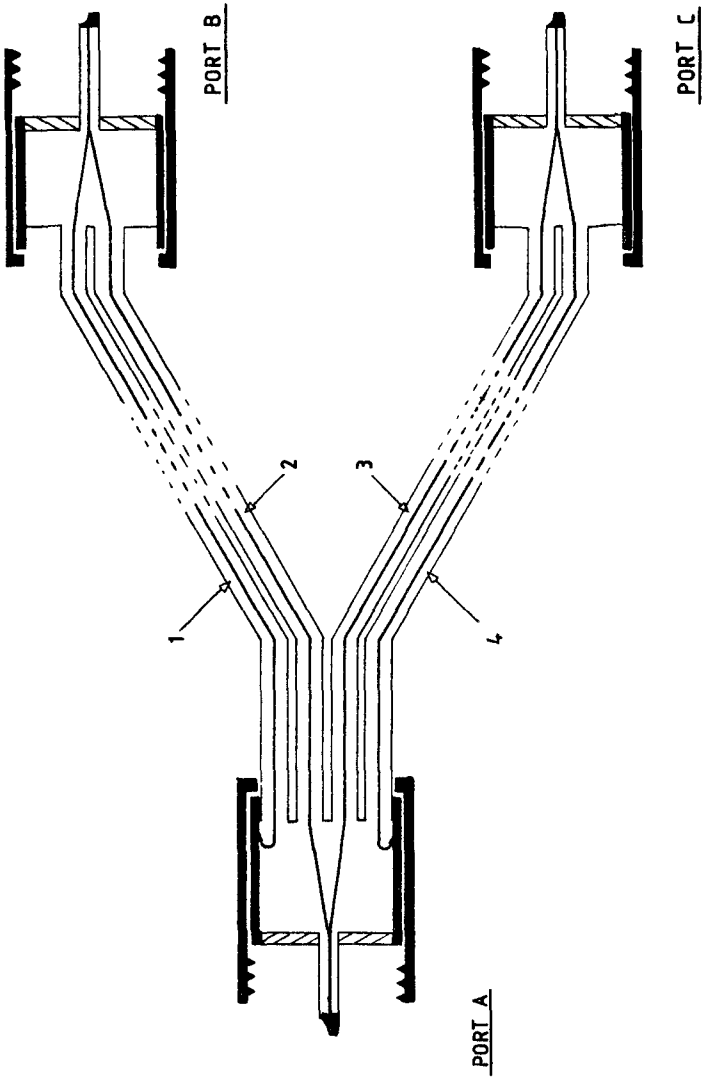
PORT C

As port B but using cables 3 and 4.

This completes the construction of the basic splitter. If it is to be hard-wired into an aerial system splice onto the 50-ohm feeder and insulate with good quality tape. Feeders connected to ports B and C must be of equal lengths.

If PL-type connectors are to be used, the cable will have to be stripped back further to allow connection to the inner pin. If foam cable has been used it will be found possible to screw the four cables into the body of PL connectors. Take care that loose strands of outer braid do not short out to the inner conductors.

PL259's are not recommended for 70cms and 23cms working here *(or anywhere!)*, bulkhead BNC or N-types are preferred. Some care and patience is required when fitting N-types, silicon lubricant will be required to allow the gland nut to slide over the outers of the four cables. Two further combiners could be connected to ports B and C to make a 4-way device.



A POLAROTOR CONTROLLER

Dave Lawton GØANO

As with Amateur Radio (not TV!), satellites use various forms of signal/aerial polarization. The design described here is for use with commercially available Polarotors, and is used to remotely change between Horizontal and Vertical polarization. There are several methods used to acheive this; magnetic field devices, pin diode switching, dual polarity feed systems etc., but this circuit is for the most commonly used type; that of a servo controlled moving vane inside the throat of the feedhorn. Although a straightforward 90-degree movement is all that is required, most will in fact move more than 180-degrees, this is to allow for various angles of mounting and for skew adjustment across the sky.

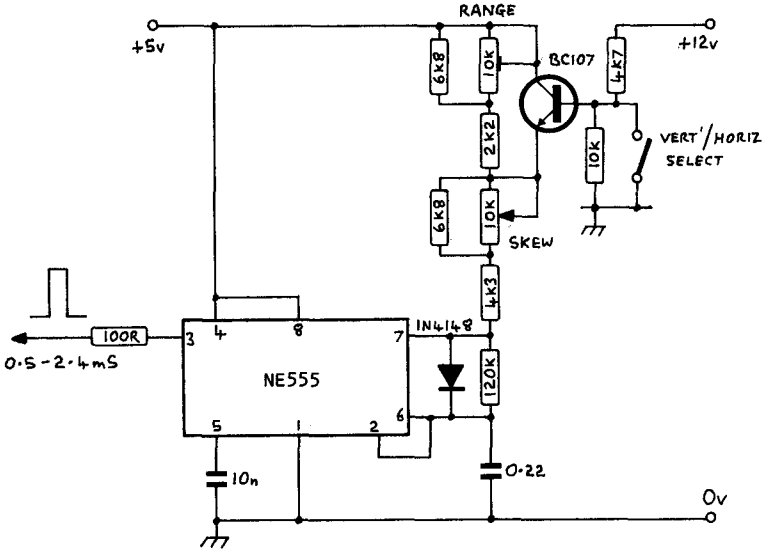


Fig.1 Polarotor control circuit diagram

The Polarotor I use is the 1KU made by Chaparral. It requires ground (Øv), +5 volts and a positive pulse of between Ø.8 and 2.2mS duration with a repetition rate of approx 2ØmS for correct operation. These requirements are met by the circuit shown in Fig.1. The 'skew' control provides approximatley 90-degrees of movement and the 'range' control is used to set a 90-degree shift when the switch is operated. Fig.2 shows my polarotor and gives information on its connections and pulse durations.

The switch could be directly connected between the supply rail and the lower end of the 2K2 resistor, thus doing away with the transistor switch. The transistor was included however with the idea of remote control by microproccessor in the future. It is neccessary to take the transistor base 4K7 to +12v to make sure the transistor turns hard on.

When testing the circuit it is important to make sure the polarotor servo is not being driven hard against its end stops, as this could cause it to burn out if left in that state for any length of time. Small adjustments to the values of the resistor chain can be made to reduce the control range if this is found to be the case. Try your tests on the work bench and not with the Polarotor fixed to the dish, it saves a lot of running back and forth.

I have also used this circuit to drive an Echostar 'Offset' Polarotor with only minor resistor changes.

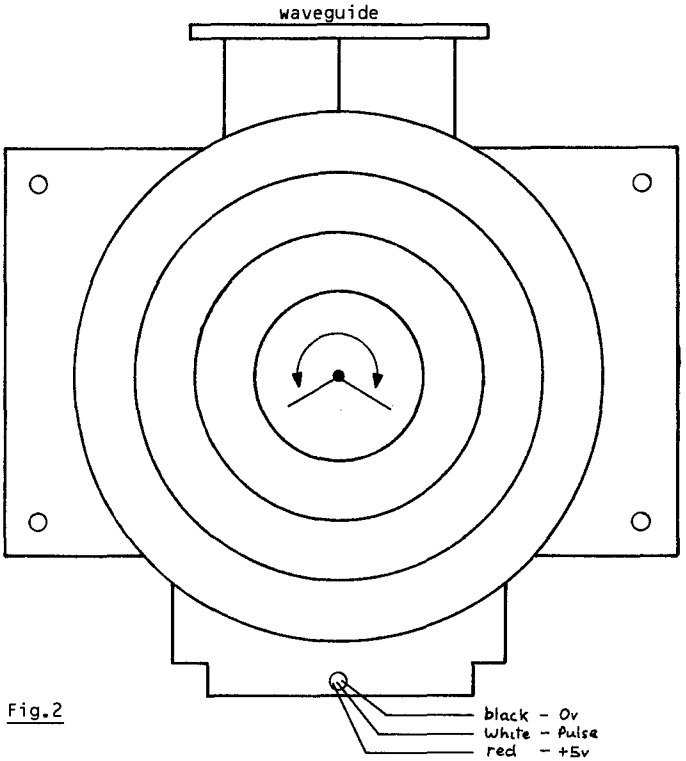
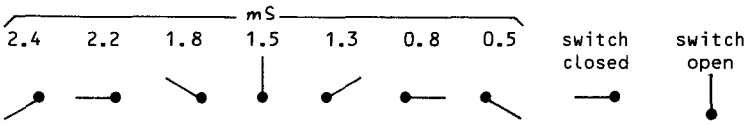


Fig.2

View looking into the front of the polarotor.



With switch closed, skew controls approximately 2.4 - 1.6mS.

With switch open, skew controls approximately 1.6 - 0.8mS

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.

PROFESSIONAL STAFF FOR EDITING

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!

YOUR INPUT NEEDED

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.

YOUR RESPONSE PLEASE!

Please check the boxes below and let us know your thoughts about our project. You can subscribe now and the funds will be kept in escrow until we publish our first issue. Issue dates: January, April, July, October, mailed month prior, deadline second month prior.

☐ **Yes, this is an idea who's time has come. I will support the effort as indicated:**

- ☐ operating news from my area _____
- ☐ promotion of subscriptions in my area.
- ☐ classified or commercial ad space, please send rates.
- ☐ my subscription for 1 year $15 (USA) $20 Canada US Funds
  Introductory special: 2 years $25 $30 Canada US Funds
- ☐ Technical article or regular column about _____

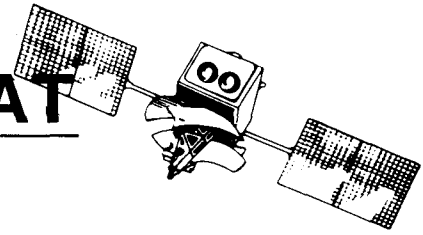
☐ No, thanks but I may be interested later.

Other comments:

Reply to: **ATVQ**
1545 Lee St., Suite 73
Des Plaines, IL 60018

One last advantage, a business phone you can call: 312 298-2269

SATELLITE CHAT



By Paul R. van Rossum

This time, as promised, Ku-band frequency information. I'll start with the Eutelsat frequencies; they are by far the easiest to work with in terms of frequency and transponder indication.
Eutelsat satellites are most often referred to as "ECS" satellites. Technically speaking this name is only correct at launching time. As soon as the satellites are found to function properly and are handed over to the Eutelsat organization they are renamed. Most recently ECS-5 became Eutelsat I f5. I hope you won't mind my sticking to the initial namegiving for simplicity's sake.

ECS-5.

By the time you read this some major changes will have taken place. On the 16th of September at 4:00 Central European time all tasks of ECS-1 will be taken over by ECS-5, which for this purpose will have been moved into ECS 1's orbital slot of 13° East.
For the viewer there's little practical difference, might it be that the signal strength of some channels might seem to have improved. There are, however two main changes:

1. Transponder 1, so far in use by Italy (RAI-UNO) will be given to Luxemburg's RTL+. They had been assigned to transponder 8, which in turn could only broadcast over the "East beam" antenna. Consequence was poor reception in the western regions of Europe.
2. Transponder 8 will be taken out of use (spare)
3. Transponder 2, with the same problem as 8, was assigned to 3-SAT. When Europa-TV filed for bankruptcy, the Dutch PTT lent the transponder to them. With ECS-5 wholly intact 3-SAT will return to it's original East Beam transponder and transponder 3 will be available for whoever succeeds in getting a commercial Dutch programme started in spite of government opposition.

ECS-2 (7° East)

This satellite is in use for utility purposes mainly. It's use is rather unpredictable where some channels are concerned. Also, often reception is poor, because often switching takes place from one beam to another. Please note the maps for illustration. The only "public" broadcast is on transponder 5, which relays the WorldNet programme of the U.S. government for Eastern Europe in SECAM-colour.
Transponder 10 is used by international news organizations such as Visnews and WTN, usually with short news shots (no commentary) to be used by broadcasting stations. A good time to view is 15:00 European time. Transponders 1 and 7 are main Eurovision relay channels, with 4 and 9 as reserves. All transmissions are Sound-in-Sync, meaning that the digital audio has been mixed in with the synchronization pulses. This means that one doesn't only miss audio, but also video tends to become very unstable (depending on make & type of TV used). Most TV's cannot discriminate between sync pulses and mixed-in audio data. About this more later on.
The WorldNet channel is often used to report on special events. The launch of ECS-5 some months ago was shown live via this channel, but also a recent bank shareholder meeting could be seen.

Channels 2, 8, 11 and 12 are used for telephony in TDMA; no video involved. Channel 6 finally is listed in some magazines as leased by "Pace" (something associated with WorldNet/US gov't). Most recently pictures in D2-MAC could be seen on this channel.
Finally, in a planning phase seems to be "Eurosport"; they will use transponder 10 in a starting phase, then to change over to ECS-1 once it's ready at it's new 16° East position, awaiting the successful launch of Astra in November to find it's final home there.

With these many unknown factors it seems smart to first give a basic frequency lay-out for the Eutelsat satellites. There's no exact frequency per transponder. Each transponder can deviate plus or minus 18 MHz (real deviation tends to be within a few MHz, generally). Transponders one through six are with horizontal polarization, seven through twelve are vertical. All these broadcasts take place in the lower and top half of the Ku1 band (10.95 - 11.7 MHz).
Extra transponders 13 (horizontal) and 14 (vertical) are in the Ku3 band (12.5 - 12.75 MHz) and were initially just meant to transport business information. However, France is planning to use ECS-4 for one or two TV programmes in that frequency region. Logical, because their national Telecom frequencies use the same spectrum. But later more on this.

Eutelsat Video Center Frequencies:

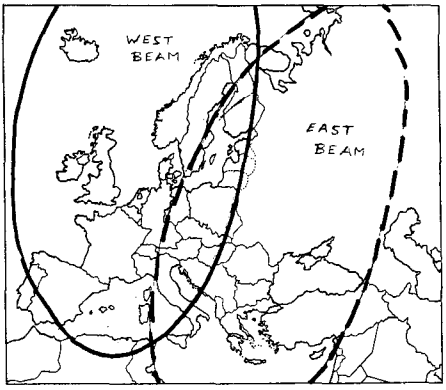
Ku1:

Transponder 1	H	10.992	V	Transponder 7
Transponder 2	H	11.075	V	Transponder 8
Transponder 3	H			
Transponder 3	H	11.158		
		11.158	V	Transponder 9
Transponder 4	H	11.492	V	Transponder 10
Transponder 5	H	11.575	V	Transponder 11
Transponder 6	H	11.658	V	Transponder 12

Ku3:

Transponder 13	H	12.542	V	Transponder 14

Eutelsat satellites beam areas:



Chann.	Freq.	Pol.	Organization	Language/source	audio
			ECS-5 (13° East)		
8	11.007	H	RTL Plus	German TV	6.65
	11.007	H	Radio Luxemburg	stereo radio	7.02 / 7.20
14	11.057	H	3-SAT (East Beam)	German TV	6.65
27	11.174	H	commercial Dutch TV	(planned)	6.65
	11.174	H	Cable One	stereo radio	7.56 / 7.74
64	11.472	H	TV-5	French TV	6.65 (J17)
66	11.486	H	WorldNet	US government	6.65
	11.486	H	Nightflight Scandinavia/Sweden	Today	6.65
85	11.650	H	SKY channel	English TV	6.65
	11.650	H	SKY channel	stereo TV	7.02 / 7.20
	11.650	H	SKY radio	stereo radio	7.38 / 7.56
5	10.987	V	TeleClub	German TV	6.50
17	11.091	V	spare (East Beam)		
23	11.140	V	ATN-FilmNet (scrambled)	Dutch TV	6.60
	11.140	V	ATN-Filmnet (extra audio channel)		7.02
	11.140	V	Radio 10 (Dutch)	stereo radio	7.92 / 8.10
68	11.507	V	SAT-1	German TV	6.65
	11.507	V	Voice of America	US government	7.02 / 7.20
	11.507	V	Starsat Radio (German)	stereo radio	7.38 / 7.56
88	11.674	V	Super channel	English TV	6.65
	11.674	V	Super channel	stereo TV	7.02 / 7.20
	11.674	V	Super radio	stereo radio	7.74 / 7.92
	11.674	V	BBC World Service	mono	7.38
	11.674	V	BBC Foreign Service	mono	7.56
			ECS-4 (10° East)		
8	11.007	H	RAI UNO	Italian TV	6.60 (J17)
84	11.642	H	RAI DUE (?)	Italian TV	6.60 (J17)
--	10.9..	V	??????	German TV	6.60
28	11.181		NRK in C-MAC	Norwegian TV	digital
64	11.472		unknown source testing MAC-scrambling		digital
86	11654		TVE-1	Spanish TV	6.60
	12.5 - 12.75 (V & H)		French TV in SECAM		5.50

ECS-1 (16° East)

will carry programming from Britain, France and Spain. Aforementioned Eurosport is likely to use transponder 11. Further details aren't available for the moment, though rumors are that FilmNet in combination with others might start a second network..

One last note on these ECS listings: all above mentioned programmes are sent by West Beam, unless stated otherwise. Some stations (notably RAI) have tested Eurobeam. RAI also split its transponder, using a lower frequency as direct feed. This stopped once they could use transponder 6 on ECS-4. When regular RAI DUE programming starts up, maybe they will continue this practise.

Intelsat.

This time I will concentrate on Intelsat's Ku-band transmissions, leaving C-Band for the next time. Not only because this section should stay within reasonable limits, but also because I expect to drastically improve my reception possibilities (larger dish, LNB with less noise, and who knows, perhaps I might find out how to make/ get a hold of a narrow-band video detector)

Intelsat's Ku band transmissions are designated officially in a rather complicated manner.The designation of transponder channels is not so much intended as a tool for listing transmissions by. Rather it's a technical description indicating how the available frequency slots are used. Here is the general set-up. This list is only valid for satellites in the V and VA series, but as these are the only ones right now active in Ku-band frequencies there's no need to complicate things by introducing extra information.
It must be said that the VA version also contains the 12.500 - 12.750 Business band, as will successive VI satellites to be launched from next year. As these transmissions so far involve no usable pictures or other decipherable information (as far as I know; I don't own a Ku3 LNB) I will for the time being ignore information about these activities. Of course, if anyone knows differently, I'd be glad to hear about it!

Intelsat designations:	Horizontal pol.	Vertical pol.
slot 1 and 2 10.954 - 11.031 GHz. Bandwidth 77 MHz.	Transponder 61 channel 1 West channel 2 West	Transponder 71 channel 1 East channel 2 East
slot 3 and 4 11.039 - 11.111 GHz. Bandwidth 77 MHz.	Transponder 62 channel 3 West channel 4 West	Transponder 72 channel 3 East channel 4 East
slot 5 and 6 11.119 - 11.191 GHz. Bandwidth 77 MHz.	Transponder 63 channel 5 West channel 6 West	Transponder 73 channel 5 East channel 6 East
slot 7 - 12 11.457 - 11.696 GHz. Bandwidth 241 MHz.	Transponder 69 channels 7 W. through 12 W.	Transponder 79 channels 7 E. through 12 E.

PLEASE NOTE: The designation "East" or "West" officially refers to the antenna used on the space craft. Theoretically "East" can also be a horizontally polarized, and "West" a vertically polarized transmission!

As you can see from the above schedule, nothing is really useful: a transponder listing gives relatively little information on the frequency used, and once one finds a transmission, specially via

transponder 69 or 79 there's no way of knowing what channel to call it as no exact frequencies seem to be attached.

Luckily, in reality a lot of regularity appears to exist when looking at the Intelsat Ku-band activities. Generally the following pattern is apparent:

1. Horizontal polarization:		2. Vertical polarization:	
Drake channel:	Frequency:	Drake channel:	Frequency:
3 - 4	10.970 - 10.980 GHz.	6	10.990 - 11.000 GHz.
8 - 9	11.010 - 11.020 GHz.	9 - 10	11.020 - 11.030 GHz.
23	11.130 - 11.140 GHz.	25 - 26	11.150 - 11.160 GHz.
27 - 28	11.170 - 11.180 GHz.	30 - 31	11.190 - 11.200 GHz.
64 - 65	11.470 - 11.480 GHz.	61 - 62	11.450 - 11.460 GHz.
71 - 72	11.540 - 11.550 GHz.	69	11.510 - 11.520 GHz.
78 - 79	11.590 - 11.600 GHz.	77 - 78	11.580 - 11.590 GHz.
86	11.650 - 11.660 GHz.		
88 - 89	11.670 - 11.680 GHz.		

This mess is why I decided privately to stick to the channel indication on my Drake receiver. Using channel numbers with H or V indication would confuse matters, some coinciding, some conflicting with Intelsat's slot numbering. But now, let's start the listings, going from East to West:

Intelsat V f7 (66° East). (extremely weak signals, hardly visible!)

64 H AFRTS, in NTSC, reported scrambled. audio 6.80
86 H Turkish TV, first programme. audio 6.80
89 H Turkish TV, second programme, audio 6.80
6 V Iranian TV, first programme, audio 6.80, extra radio 1: 6.18
25 V Iranian TV, second programme, audio 6.80, extra radio 2: 6.18

Intelsat VA f12 (60° East). (totally leased by German Bundespost)

4 H 3-SAT (Austrian, German-Swiss & German ZDF programmes). 6.65
8 H West-3 (Northrhine-Westphalian TV) 6.65
8 H extra audio: Deutschlandfunk (for GDR) in stereo: 7.02 / 7.20
24 H Tele-5 (Berlusconi's commercial TV, mainly videoclips) 6.65
27 H Bayerisches Fernsehen (Bavarian TV) 6.65
27 H extra audio: Media Radio (local Munich private r) 7.02 / 7.20
73 H ARD Eins Plus (extra Germany I programme) 6.65
79 H Eureka TV (US style religious/church mixture) 6.65
6 V Occasional feed (ZDF telecast Hamburg - Shanghai) 6.65
25 V Occasional feed (ZDF telecast Hamburg - Shanghai) 6.65
61 V digital radio transmissions (experimental)
65 V AFN-Frankfurt (transmission in B-Mac) digital

Intelsat V f2 (1° West). (Israel beam hardly receivable in W. Europe)

4 H Occasional testing by NRK (in C- and D-MAC) digital
8 H ITV Sandvik (local TV for S.-Oslo) & NRK tests 6.60 & 7.20
22 H Sweden 1 in scrambled C-MAC (& radio px 1 & 3) digital
28 H Sweden 2 in scrambled C-MAC (& radio px 2) digital
64 H NRK test pattern and occasional feeds (sporting events) 6.60
89 H NRK occasional feeds (sporting events)
30 V Israeli first programme (extra audio Kol Israel 7.30) 6.60
78 V Israeli second programme 6.60

Intelsat V f6 (21½° West). (Italian commercial stations feeds)

3 H, 8 H, 22 H and 27 H. test patterns and occasional mid-afternoon entertainment and evening sports events for Italia 1 and Rete 5. via the last two frequencies. audio 6.60. slightly weaker in N.W. Europe.

Intelsat VA f11 (27½° West). (leased by British & American firms)

4 H	MTV (Music TV) videoclips	(7.02 / 7.20 stereo)	6.65
9 H	Children's Channel	(7.02 / 7.20 stereo)	6.65
9 H	Première (scrambled movie ch.)	(7.02 / 7.20 stereo)	6.65
23 H	Kindernet (Dutch children's TV)	(7.02 / 7.20 stereo)	6.65
	Lifestyle (Engl. housewife TV)	7.38 French, 7.56 German	
	Screen Sports (exotic sports)	commentary.	
28 H	BBC (mid-afternoon till 0:00) scrambled		6.65
	extra audio: BBC WS 7.02 FS 7.20, Radio Nova (stereo)		7.38/7.56
78 H	Satellite Information Channel (a.o Horse betting)	coded	B.MAC
	TV3 Scansat (commercial Swedish channel	coded	B-MAC
6 V	Canal 10 (English owned Spanish tv; vanished since 4/9) was scrambled, audio Spanish 6.65 and English 7.20		
25 V	CNN News, Atlanta, USA (US news channel, replacing commercials with endless boasting about itself) digital data 7.36, audio 6.65		
64 V	EBU feed from the USA (generally Washington & New York)		6.65

Intelsat V f4 (34½° West). (Philips Eindhoven-leases for D2-MAC tests)
As I was told while visiting the company early September Philips will conduct long-term tests from 10:00 to 13:00 European time on one or more transponders. On 6 V news feeds were reported, a.o. by BBC. No own observations so far.

Some footprints of Intelsat:

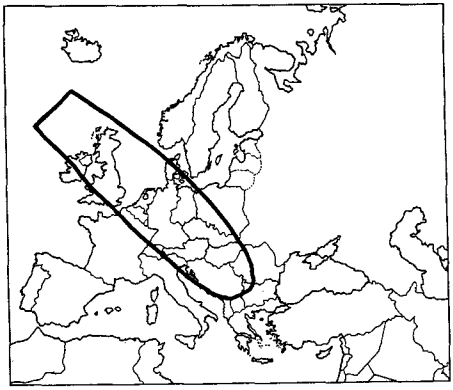


Fig.2 60° EAST WEST/EAST BEAM (FRG)

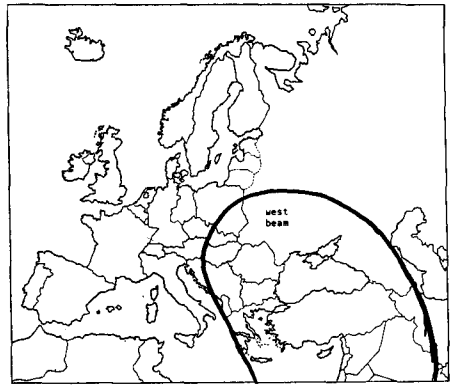


Fig.3 66° EAST WEST BEAM (TURKEY)

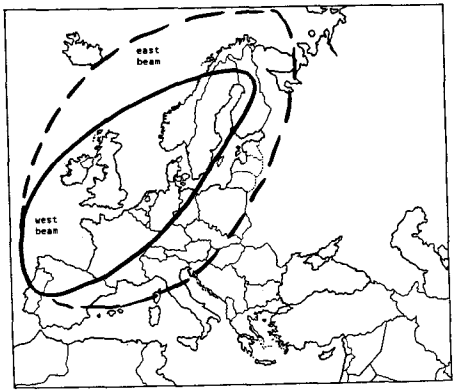


Fig.4 27.5° WEST BOTH BEAMS (BRITAIN)

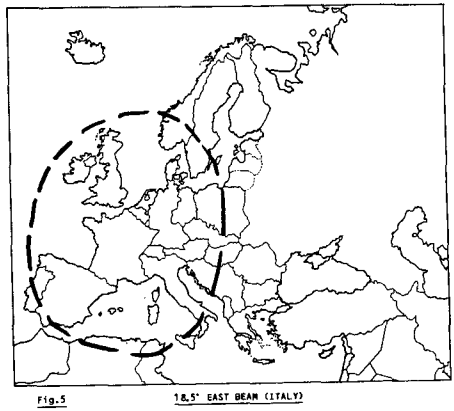
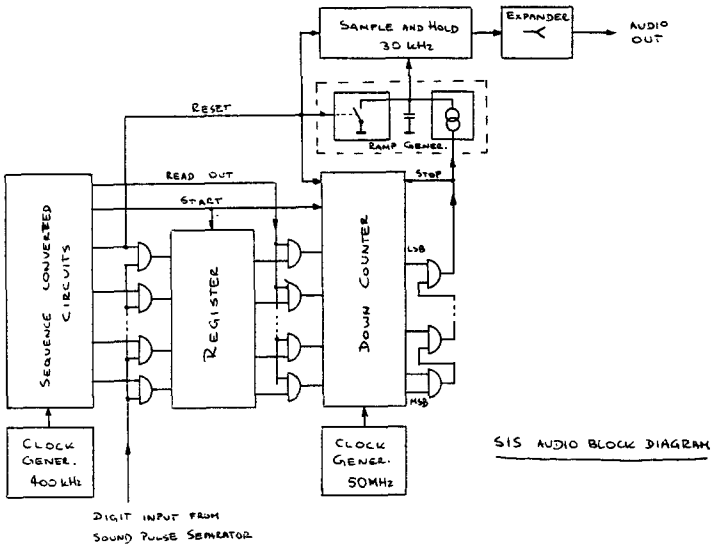


Fig.5 18.5° EAST BEAM (ITALY)

PanamSat ("Simon Bolivar") 45° West

A privately owned system (Spanish American Network). C-Band transmissions only for South-America, Ku-Band for Europe.
Ku-Band transponders cover a strange frequency spectrum, with three channels in the upper Ku1 band, and the other 3 in the DBS-band.
Horizontal polarization only, which makes that once DBS is introduced feeds for this range will be unsuitable for PanamSat. Personally I've seen no activity, but tests are reported on 11.500 GHz using PAL and NTSC colour and audio 6.60. Official Ku range is 11.500 - 12.000 GHz.

So far for this issue of "Satellite chat". My request for technical advice went largely unheeded so far. Two responses, one from Stanislaw Pazur in Warschau (Poland), who will help us to more information on the Sound-in-Sync system of EBU. It seems a rather complicated affair. He already sent a hand-made sketch of the block diagram, printed on the next page.. He also is looking for information how to descramble Première / BBC / ATN broadcasts. Who'll tell us more??



SIS AUDIO BLOCK DIAGRAM

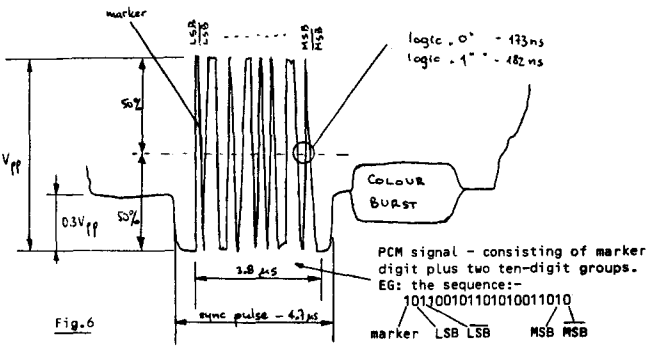


Fig.6

From Cyprus Marios E. Colocassides wrote to me, asking a.o. if anyone can tell more about AFRTS'scrambling via the Turkish beam at 66 E. I cannot see the latter, but it seems likely that neither transmission is scrambled, just B-MAC encoded. Manufacturer of B-MAC decoders is Scientific-Atlanta, but it seems such decoders are rather costly. Marios also is interested in EBU's S.i.S. pictures, looking for a way to decode them.without spending a small fortune. Anyone to react to Stanislaw's schematic?

By the reactions one wonders why the club is called "British" Amateur Television Club. How about it fellows; (if for no other reason, my youngest daughter likes to add to her British stamp collection!)
Can anyone help me on a regular basis to the last pages of Cable & Satellite Europe? The section called "Datafile" carries, in spite of a lot of errors, also often valuable news for this section!
Well, see you next time.

Paul R. van Rossum
P.O.Box 266
6541 RL Nijmegen
the Netherlands.

Drake channels with corresponding frequency.

1	10950-10958	33	11214-11222	65	11478-11486
2	10958-10966	34	11222-11230		
3	10966-10974	35	11230-11238	66	11486-11494
4	10974-10983	36	11238-11247	67	11494-11502
5	10983-10991	37	11247-11255	68	11502-11511
		38	11255-11263	69	11511-11519
6	10991-10999	39	11263-11271	70	11519-11527
7	10999-11007	40	11271-11280	71	11527-11535
8	11007-11016	41	11280-11288	72	11535-11544
9	11016-11024	42	11288-11296	73	11544-11552
10	11024-11032	43	11296-11304	74	11552-11560
11	11032-11040	44	11304-11313	75	11560-11568
12	11040-11049	45	11313-11321	76	11568-11577
13	11049-11057	46	11321-11329	77	11577-11585
14	11057-11065	47	11329-11337	78	11585-11593
15	11065-11073	48	11337-11346	79	11593-11601
16	11073-11082	49	11346-11354	80	11601-11610
17	11082-11090	50	11354-11362	81	11610-11618
18	11090-11098	51	11362-11370	82	11618-11626
19	11098-11106	52	11370-11379	83	11626-11634
20	11106-11115	53	11379-11387	84	11634-11643
21	11115-11123	54	11387-11395	85	11643-11651
22	11123-11131	55	11395-11403	86	11651-11659
23	11131-11139	56	11403-11412	87	11659-11667
24	11139-11148	57	11412-11420	88	11667-11676
25	11148-11156	58	11420-11428	89	11676-11684
26	11156-11164	59	11428-11436	90	11684-11692
27	11164-11172	60	11436-11445	91	11692-11700
28	11172-11181	61	11445-11453	92	11700-11709
29	11181-11189	62	11453-11461	93	11709-11717
30	11189-11197	63	11461-11469	94	11717-11725
31	11197-11205	64	11469-11478	95	11725-11733
32	11205-11214			96	11733-11742
				97	11742-11750

A LITTLE BIT OF NONSENSE

For some peculiar reason our esteemed retired editor has passed this item on to me and suggest I include it in the magazine as a quiz. Well then all you experts, what is it? All replies to John G3YQC!

図1　コントロール回路

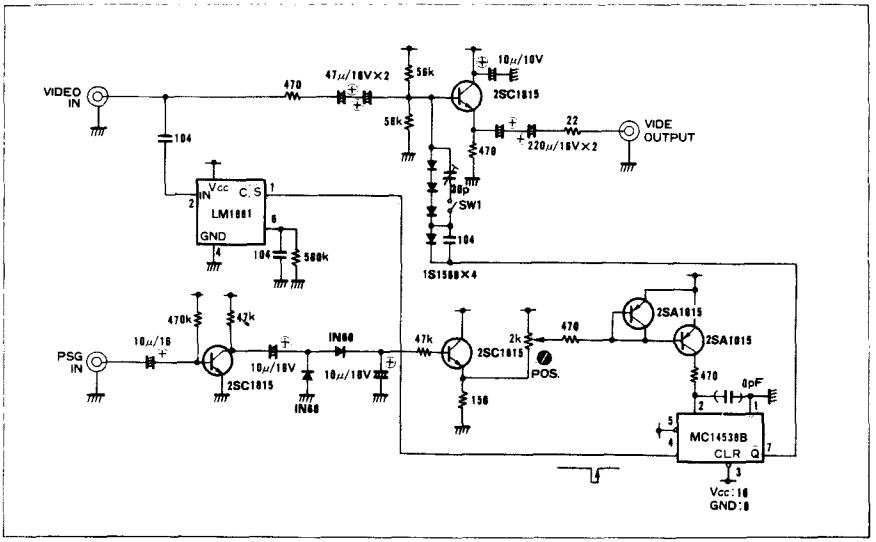


図2　LM1881

概要

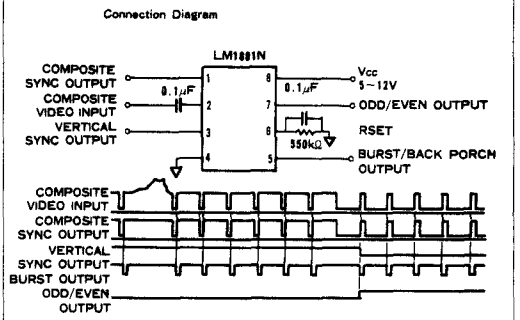
LM1881ビデオ・シンク・セパレータは，複合および垂直同期信号，バースト/バックポーチ・タイミング，オド/イーブン・フィールド・インデックスを0.5Vpp から2.0Vpp のNTSC ビデオ信号（負極性同期）から引き出す機能を持っています．

このICは外部抵抗を変えれば標準以外の高い水平周波数を持ったビデオ信号でも使えます．

垂直出力は垂直同期期間の最初のセレーション・パルスの立ち上がりエッジでトリガされます．標準以外のビデオ信号のように，この立ち上がりエッジがIC 内部でセットしたディレイ期間以内に発生しないときは，ディレイの後に無効垂直出力がICから出力されます．

特徴

■複合映像信号はACカップルされます
■入力抵抗10kΩ以上
■電源消費電流10mA 以下
■複合同期出力と垂直出力
■バースト・ゲート/バックポーチ出力
■水平走査周波数が外付抵抗で可変（64kHz まで）
■エッジ・トリガ垂直出力
■標準以外のビデオ信号（ビデオ・ゲーム，ホーム・コンピュータなど）のための無効トリガ垂直出力



リスト1　サンプル・プログラム

```
10 REM ////////////////////////////
20 REM ///   OPEN/CLOSE SCREEN   ///
30 REM ///      WITH  PSG        ///
40 REM ///   K.WADA  1/15/88     ///
50 REM ////////////////////////////
55 '
60  ON ERROR GOTO 210
70  CLS
80     SOUND 7,&HFE
90     SOUND 0,10
100    SOUND 1,0
110    SOUND 8,&H1F
120    SOUND 12,200
130    SOUND 13,13
140 FOR I=1 TO 5000:NEXT I
150    READ A$
160 FOR I=1 TO 160:PRINT A$;:NEXT I
170    SOUND 13, 9
180 FOR I=1 TO 2000:NEXT I
190    GOTO 130
195 '
200 DATA "-","*","_","O","#"  ' SAMPLE
205 '
210 CLS : PRINT "ﾌﾟﾛｸﾞﾗﾑ"
220 STOP
```

EUTELSAT NEWS

Following the successful launch of ECS-5 on July 24th last year, and after a short period of in-orbit testing, Eutelsat, the European Telecommunications Satellite Organisation, assumed control of the new satellite for commercial operations from the European Space Agency. The satellite is now designated Eutelsat I-F5. An anomaly in the performance of one of the transponders on F5 has led to a reconfiguration of the planned transfer of all traffic from Eutelsat I-F1, at 13 degrees east of the new satellite.

In order to satisfy all Eutelsat's clients, and to guarantee no interruption of services and no transfer of traffic from one orbital location to another, it has been decided to switch the television and radio channels on Eutelsat I-F1 at 13 degrees east to Eutelsat I-F4. F4 will therefore immediately be moved form its current location at 10 degrees east to 13 degrees east to take over the F1 traffic. It is expected to operate ten transponders at this location. All of the traffic currently transmitted by F4 at 10 degrees east will subsequently be distributed by F5 at 10 degrees east. After the switch of services is completed F1 will be moved to its newly assigned location at 16 degrees east where it will be able to operate up to ten transponders. These have already been booked by the UK, French, and Spanish signitories to Eutelsat. The planned sequence of events was scheduled to start during the latter part of last year as follows:

1) Colocation of Eutelsat I-F4 and I-F5 at 10 degrees east.
2) Transfer of all F4 traffic to F5 at 10 degrees east.
3) Repositioning of F4 from 10 degrees east to 13 degrees east and transfer of F1 traffic to F4 at 13 degrees east.
4) repositioning of F1 from 13 degrees east to 16 degrees east.

There will be no interruption of services during the manoeuvre described above, nor any need for cable operators or domestic TVRO owners to redirect aerials on the ground. Eutelsat expected the redeployment to have been completed by mid-october last.

Andrea Caruso, Director general of Eutelsat, said of the switch: 'There has been a strong spirit of co-operation from Eutelsat's twenty six signitories over the transfer, and a willingness on all sides to agree as quickly as possible on the new deployment plan. The reconfiguration of satellites has shown the strength of Eutelsat as a multiple satellite system capable able to guarantee to all customers complete continuity of services. I cannot but repeat that the success of a satellite system relies upon the flexibility of its configuration and the number of operational and spare satellites in orbit. This is why Eutelsat, both in its first and second generation satellite systems has a minimum of four satellites in orbit. By the end of october this year (1988) we expect to be operating almost forty transponders on our four satellites presently in orbit."

Eutelsat is an international consortium of twenty six member states charged with operating a system of telecommunications satellites for international and domestic communications in Europe, including television, radio, telephony and business services.

SATELLITES AND ALL THAT

Dave Lawton GØANO

So there I was, dreaming of how to get planning permission for a lattice tower, (no not from the council....from my wife!) She says "a Satellite dish on the garage roof would impress the neighbours.....", and this from an XYL whose comment after I bought her a 2 metre handheld when she passed the RAE was "it's a bit big, I'll have to buy a new handbag to put it in....." and she did. That's how the story started. I bought a 1.2M Offset dish through the pages of CQ-TV, and built the receiver from CQ-TV 125. At this stage I had not realised how little I knew about Satellite TV reception.

What's a Polar Mount? Where do you point the dish in the sky? Øffset or Prime focus, LNB's, polarotors, dish actuators and other totally unfamiliar terms suddenly became everyday language. Anyway I acquired a Patio Stand which needed a welding job doing on it; a Polar Mount that was missing a few parts, which eventually I sorted out; a second-hand Low-Noise Block Downconverter (LNB) and a polarotor - the means of switching from horizontal to vertical polarisation. I was ready to go.

I had the advantage of trying my receiver on a dish system we have at work, so I knew it was functioning, and I was also able to find the tuning positions for the various channels. This still left some variables; the elevation and azimuth of the dish for instance and, since I had bought a second-hand dish, where should the LNB feed support be? These points are, after all, fairly critical.

The text books told me that an elevation of 27.5 degrees and azimuth of 13 degrees east would find Eutelsat 1-F1, so I set my dish pointing at that location. Not a thing. What I hadn't been told was that a prime focus dish points at 27.5 degrees into the sky but the offset dish axis is near vertical, obvious I suppose after it's been pointed out.

At last I found a signal and was able to set the position of the LNB etc to find the other main 'bird' - Intelsat VA-F11 at 27.5 degrees west. The idea of a polar mount is that once it is set up correctly, all satellites in a geosynchronous arc can be scanned with movement of the dish in one axis only. You guessed it; practice doesn't always follow theory. After many adjustments of the mount though - bingo! another major acheivement.

The point of this story is that in order to achieve success I picked the brains of many people within the BATC, without whose help I would still be struggling to find that first elusive signal. So I would like to thank all those who gave so much of their spare time in helping me to get started.

ATV CALLING..144.750

A SIMPLE VIDEO TO DECODER INTERFACE

Bill Mercer,

A friend of mine has a home computer and an RGB monitor requiring separate syncs, and he asked me if he could use the monitor with his domestic VCR. He did not want me to interfere with the internal works of the monitor, thus a separate decoder and sync separator was required.

The specification for the monitor is: RGB input 1 to 5 volt peak-peak (p-p) at high impedance, TTL or analogue. A separate positive going, negative going or composite sync input between 1 and 4 volts p-p again at high impedance.

A study of one or two composite-to-RGB decoder circuits indicated that a source of horizontal 'sandcastle' and vertical blanking pulses would be required from the composite video output of the VCR. After much searching through manufacturers' data books, commercial application notes and past issues of CQ-TV, a prototype interface was assembled which gave the necessary pulses. When connected to a homebrew Pal/Secam decoder, which gave a 4 volt p-p output into a high impedance, a locked picture appeared on the monitor first time! However, for reasons pointed out in the circuit description, a second interface was made which gives perfect results from the VCR. Although, from necessity, I used Thomson TEA--- chips, I'm sure that in the UK there must be many surplus PAL decoders which could be used in the same way. The only limitation is that the interface outputs are all at high impedance and not 75-ohm.

CIRCUIT DESCRIPTION

The circuit diagram of the interface unit is shown in Fig.1. The video input from the VCR is at the standard level of 1 volt p-p into 75-ohm. This signal is fed to the decoder and sync separator chip IC1 (TDA2595) via the emitter follower stage of TR1. The positive going composite sync pulse train is taken from pin-9 of IC1 and routed to TR2, from which positive going buffered syncs can be routed to the monitor from the collector, or negative going from the emitter. The negative going sync from the emitter is also integrated by the network around C19, C20 and C23, inverted by TR3 and used to trigger one half of IC2, a CD4528B re-triggerable monostable. The positive going vertical blanking output is taken from pin-10 of this IC. The duration of the pulse is set by VR2.

Note: The vertical blanking pulse starts at the beginning of vertical sync. Originally I had used another monostable to detect the first pre-equalising pulse in the train to give a more exact start to blanking. However, I encountered problems due to short term interference pulses being detected originating in the VCR. Using this final design with a slightly shorter blanking pulse these problems have been eradicated.

The vertical blanking can be fed to the monitor separately, or if desired can be combined with the horizontal waveform by fitting Rx, as shown on the circuit diagram.

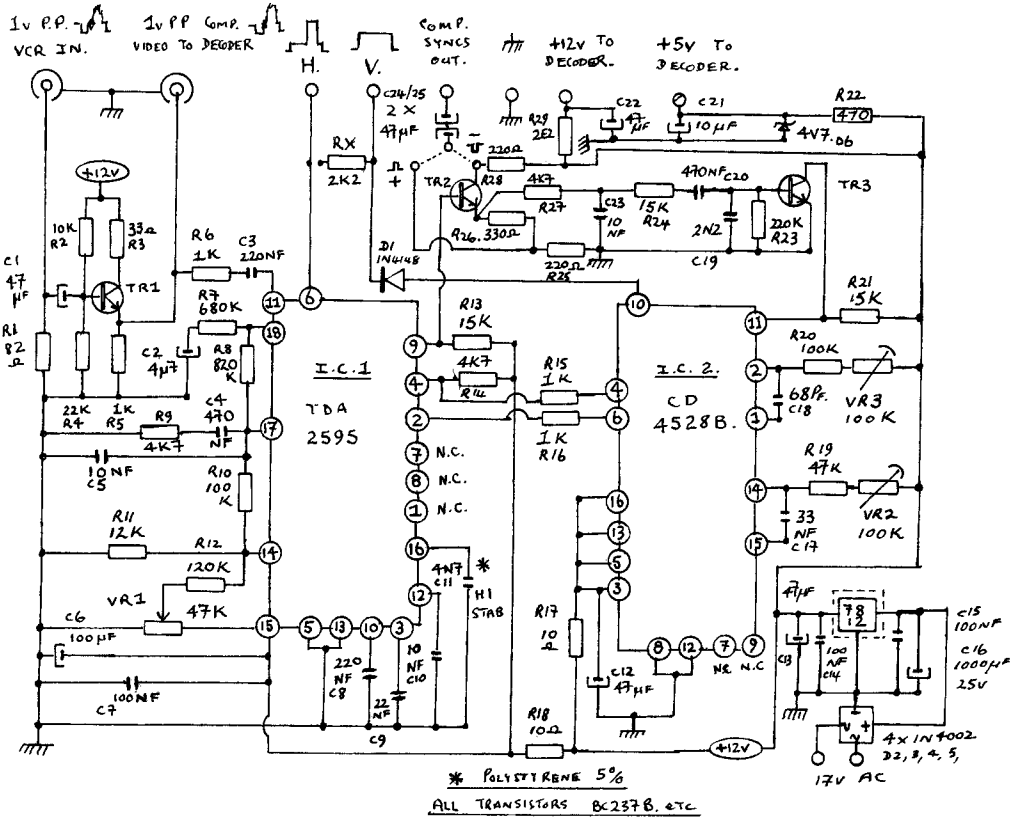


Fig.1 DECODER INTERFACE.

The horizontal 'sandcastle' output is derived as follows: The horizontal sync pulses separated from the incoming video signal within IC1 are used to lock the chip's internal HI oscillator. The period of this oscillator is adjusted by VR1, and internal gating provides the 4uS burst gate pulse. To lock the horizontal phase-lock-loop (PLL) in IC1, and to provide the necessary pulse to generate the 12uS horizontal blanking, use is made of the 29uS drive pulse at pin-4 of the IC. The leading edge of this pulse coincides with the start of the horizontal blanking and is used to trigger the second monostable in IC2. The period of the monostable is adjusted by VR3 and the output taken from pin-6 and fed to pin-2 of IC1. This pulse forms the required horizontal reference pulse for the PLL, and also, when internally combined with the burst gating pulse, provides the output sandcastle pulse at pin-6.

Thus, from the composite video input complete CCIR syncs, either positive or negative going, horizontal sandcastle, a slightly shortened vertical blanking pulse, or combined sandcastle and vertical blanking output can be provided. The interface can also supply the necessary +12v and +5v for a decoder as required.

CONSTRUCTION AND SET-UP

The printed circuit board layout and component overlay is shown in Fig.2. All the transistors are BC237B and all the capacitors polystyrene types with 5% tolerance, apart from C11 which should be a high-stability type. The integrated circuits may be socket mounted if preferred, but can safely be soldered direct to the printed circuit. The completed unit should be mounted into a die-cast box to ensure adequate screening. If desired the interface could be housed with the decoder to provide a complete self-contained system.

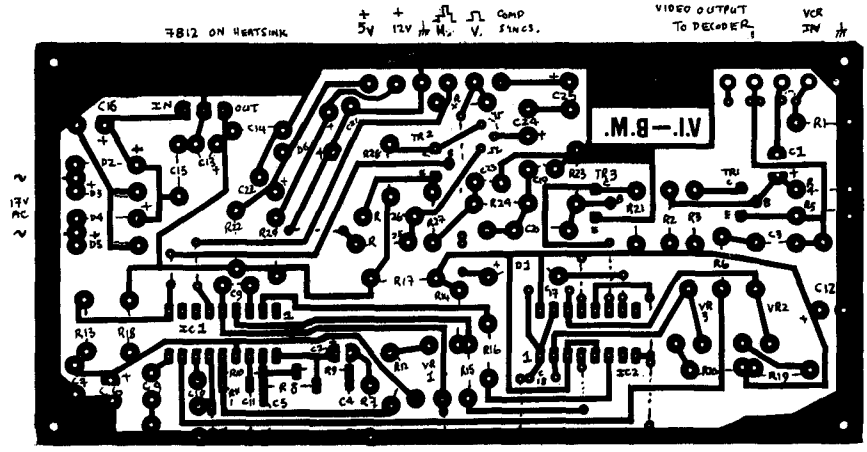


Fig.2 PRINTED CIRCUIT LAYOUT AND COMPONENT OVERLAY. (Less than actual size).

The connections to and from the interface are shown in Fig.3. The output leads must be as short as possible and not terminated with 75-ohms. The monitor MUST be a linear RGB type and not TTL.

The set-up procedure is very straightforward and is listed below:

1) Apply a 1 volt p-p composite video signal to the input and check that the video output from the unit is identical and undistorted. Check for the same conditions at pin-11 of IC1.
2) View the signal at pin-4 of IC1 on an oscilloscope and adjust VR1 for positive pulses of 29uS duration occuring every 64Us. Check for the same signal at pin-4 of IC2.
3) Connect the oscilloscope to pin-6 of IC2 and adjust VR3 to set the duration of the positive pulses at 12uS.
4) Connect the oscilloscope to pin-6 of IC1 and confirm the presence of a horizontal sandcastle pulse.
5) Connect the oscilloscope to pin-9 of IC1 and check for composite positive going syncs.
6) Connect the oscilloscope to the composite sync output and set the optional link at TR2 for positive or negative output as required. Check that the level is 3 volts p-p.

7) Connect the oscilloscope to pin-10 of IC2 and adjust VR2 to give a positive vertical blanking pulse approximately 1.4mS long.
8) Connect the oscilloscope to the horizontal output and confirm the presence of a sandcastle pulse. Connect the oscilloscope to the vertical output and confirm that the blanking pulse is present. Connect Rx if a combined output waveform (super-sandcastle pulse) is required.

The unit is now ready to connect between a VCR and a PAL, NTSC or SECAM to RGB decoder to provide all the necessary pulses for a correctly synchronised picture on the monitor.

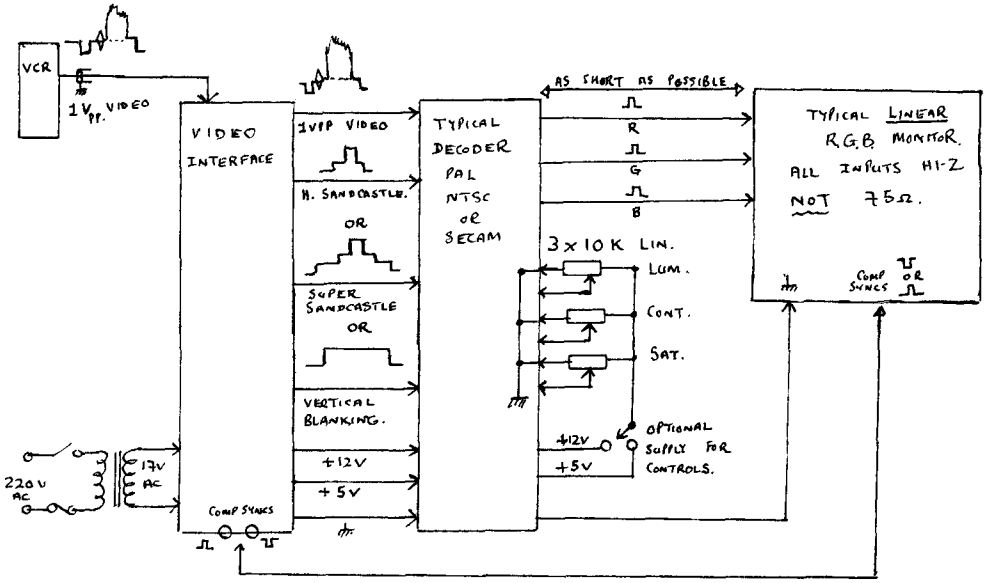


Fig.3 INTERFACE INTERCONNECTIONS

NEW HANDBOOK COMING SOON!

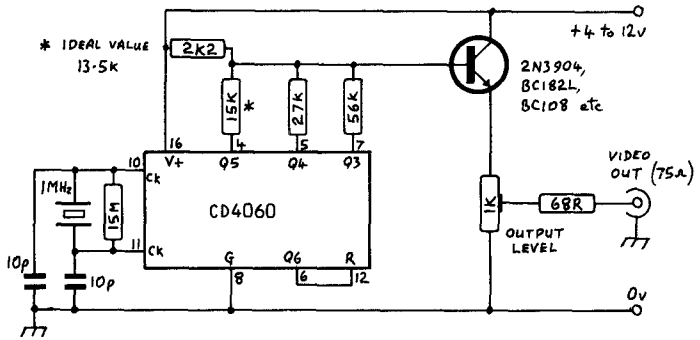
Yes folks, a new handbook is on the way. We hope to have the new book completed in time to be on sale at the convention. The book will replace the exhausted stocks of the 'Amateur Television Handbook' and will be called 'The Amateur TV Compendium'. The contents will include a large video projects section, 70, 24 and 13cm transmitters and receivers and other interesting ATV related projects. Don't forget, look out for the new handbook on the Club's stand at the convention.

IN RETROSPECT

THE SIMPLEST PATTERN GENERATOR - CQ-TV 138

John Cronk, GW3MEO has been struggling with this little circuit and has finally cracked it. It seems that the published circuit contained several errors, perpetuated from the original circuit as submitted to CQ-TV. The circuit shown below then SHOULD be correct!

The clock oscillator is a fairly common one and pin 12 should connect to pin 6, and the crystal connected between pins 10 and 11. The outputs are taken from pins 3, 4 and 5 and the step resistors should double-up, therefore the 6k8 should be 13.5k (probably two 6k8's). The 15R resistor should be 15M (10M is OK for this). The 10k doesn't seem to be needed so I have left it out.

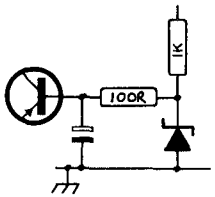


Grey-scale pattern generator (revised circuit)

24cm FM-TV TRANSMITTER - CQ-TV 133

Just a couple of points here: The first is about the use of back-to-back coupling capacitors. The common pole of C7 and C8 should be taken to ground through a high value resistor for polarising reasons.

The arrangement of T10 and T12 zener controlled emitter follower stages results in a low-impedance noise generator! No amount of capacity after the emitter will stop the noise. The answer is a simple filter as shown here.



Filter for emitter followers

This noise can be very mysterious on the signal as one doesn't suspect the transmitter at all. The effect is reported in VHF COMMUNICATIONS magazine (2/1977 p98). The bias on almost every stage also required adjustment.

Thanks also to John Cronk for these tips.

A FREQUENCY COUNTER - CQ-TV 144

Several members have phoned the editorial office to advise us that Fig's.2 & 3 referred to in the article were missing. Many thanks to all those who let us know, the missing Figures are shown below.

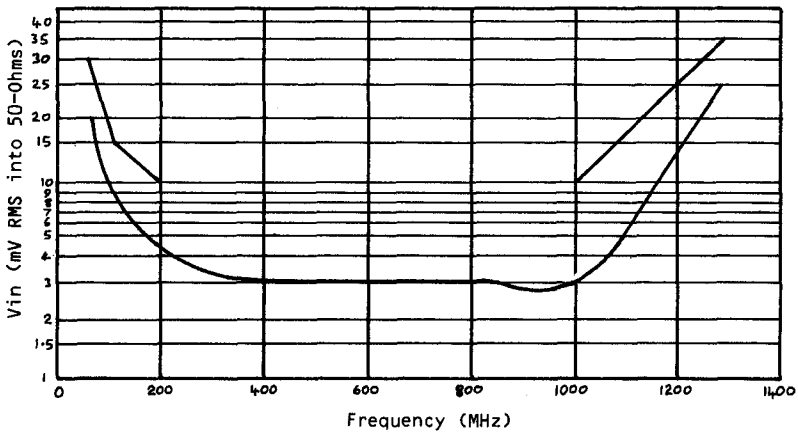
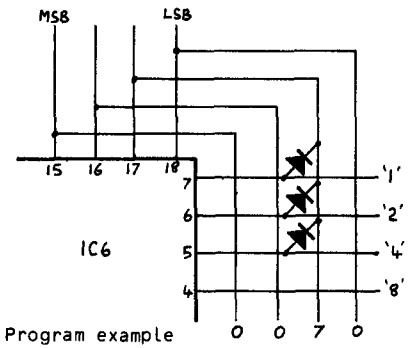


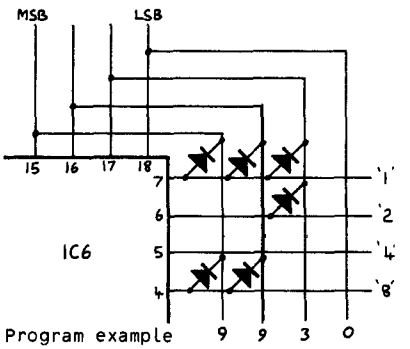
Fig.2 Typical input sensitivity



Program example 0 0 7 0

Frequency example: Fosc 1205 MHz
+prog 0070
Fdisp 1275 MHz

For oscillators BELOW the receive frequency



Program example 9 9 3 0

Frequency example: Fosc 2400 MHz
+prog 9930
Fdisp(1) 2330 MHz

For oscillators ABOVE the receive frequency

(first digit is not displayed)

Fig.3 Programming the ICM7270

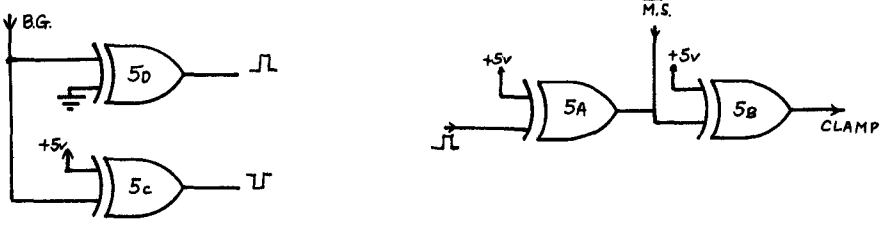
GaAsFET CONVERTER FOR 24CM AMATEUR tELEVISION - CQ-TV 144

George Mayo G4EUF has been having some 'fun' building this project and has found a few points that may be of interest. The inner conductor of URM95 cable is just the right size and type of wire for forming L1. Great care should be taken when cutting the slots for the 'coffin' capacitors, ensuring that none of the underside tracks are cut. Don't cut the slots on the printed lines but adjacent to them. Finally, L1Ø, which is not referred to in the article after all, may be omitted from the circuit completely. For details on some of the specialist component suppliers for this project please see the NEWS ROUNDUP page.

BOARDS FOR THE CQ-TV 134 PAL CODER - CQ-TV 143

We still appear to be in trouble with this one. Firstly, the PCB layouts shown on pages 77 and 78, although as a whole they correspond to the circuits shown on pages 82 and 83, individually they do not. In other words, parts of circuit-2 are actually on board-1. This will not have any detrimental effects on the operation of the coder, but just tidies things up a bit!

Secondly, the corrections given for the interconnection of IC5 (74LS86) in 'In Retrospect', CQ-TV 144 page 77, are still incorrect. The circuit should be as shown below:



Finally, also in CQ-TV 144 page 77: In paragraph three IC49 should read C49 *(I wouldn't fancy selecting-on-test an IC!, how about you?)*

SSTV FREQUENCY - 144.5MHZ

THE PANASONIC WJ-MX10 DIGITAL VISION MIXER

By Trevor Brown G8CJS,

I am often asked about mixing several different unlocked video sources, and up until now I have had to advise that this is not possible. Unless the individual sources can be locked to one sync-pulse source then the resulting vision mix will be literally a mixed up, unlocked mess! However, I have recently come across this new unit from Panasonic which is a two channel audio and vision mixer. This mixer overcomes the problem incorporating a digital synchroniser on channel one, which automatically synchronises this channel to whatever is on channel two. This makes possible wipes and cross mixes between a free-running camera and video recorder, or whatever sources you have.

The versatility of the Panasonic mixer does not stop at synchronising unlocked sources however, the digital store on channel-one is capable of a variable mosaic effect. The size of the mosaic 'tiles' are adjustable, but only in pre-set steps. Freeze frame and strobe effects are also possible via this store. The unit is also equipped with four clever routing switches which make good use of this single store. Using these switches the same source can be routed into both channels so that, for example, the same camera source could be fed into both inputs showing a scene minus the presenter. This scene can then be frozen in channel one, the presenter then moved into shot and moved around or cross mixed from channel two.

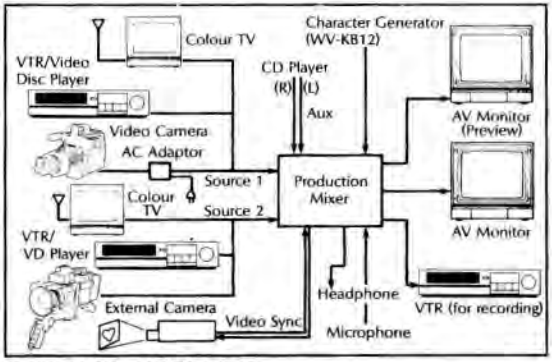
The wipe generator does not have edges to it, but it does have horizontal, vertical, box and circle wipes. The box and circles can be positioned around the screen using a joy-stick control. There is also an internal colour background that can be stepped through six colours. A key generator enabling one of the sources to cut holes in the other, which would be ideal for captions, is yet another feature.

Rounding the facilities off there is a nice little fade-to-black, white or colour, and a third video input which can only be used with a source externally locked to the sync available from the mixer.

The integral four input audio mixer is stereo and is complete with LED bargraph level metering, but featuring no equalisation controls.

The unit is equipped with BNC sockets for all video connections and phono sockets for the audio. Unfortunately, I was only able to conduct the review in my local video showroom, hence I was unable to carry out any specification measurements and checks. The results produced were very pleasing and I was unable to detect any degredation of the picture. The mixes, wipes and special effects all worked well with no tweaking required at any time.

My thanks to Errick's of Bradford for allowing me to conduct the review, the mixer is always on show should you wish to have a further look. The bad news is that if you want one they have to be ordered..... and they cost £1200!



SPECIAL EFFECTS

Variable mosaic

Variable paintbox

Plus: 'Freeze', 'Strobe' and choice of 8 background colours. Up to 17 wipe patterns with joystick built in for positioning. Superimpose function allows mixing of various effects.

POPULAR SLOW-SCAN FREQUENCIES

80 metres:	**3.730MHz**
40 metres:	**7.040MHz**
20 metres:	**14.230MHz**
15 metres:	**21.340MHz**
10 metres:	**28.680MHz**
2 metres:	**144.50MHz**

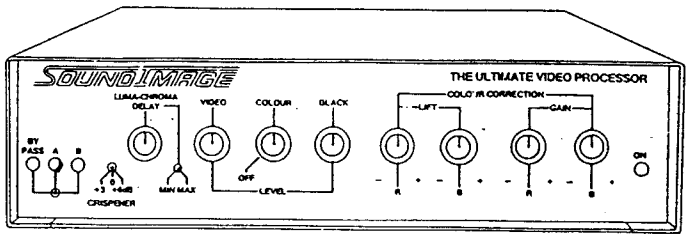
REVIEW

"SOUND IMAGE" VIDEO PROCESSOR

By David Wilson,

Coombe Products Ltd. make a video processor which could be very useful for ensuring that high quality video signals reach your transmitter or video recorder. Having used one for some time I decided that a brief description may be of interest to other members.

The video processor is housed in a neat brown and cream metal box approximately 9.5" x 9" x 2.5", with the electronics mounted on a single PCB measuring 9.25" x 5". There are four BNC sockets at the rear for A and B inputs (both terminated in 75-ohms) and two outputs.



All the controls are mounted on the front panel and are as follows:

The first is a three position switch with indicator lights, to select either A or B input for processing, or "Bypass", which puts the uncorrected A input through to the output. This is not a full bypass switch as you still need to have the unit powered to get an output.

The next control from the left gives a choice of 0, 3 or 6dB of horizontal enhancement boost at 2MHz. Crispening is also applied to the colour signal to reduce smear. Colour noise reduction of 2 to 3 dB is also claimed.

Many domestic VCR machines replay the colour information slightly displaced from the black and white picture due to extra delay in the colour demodulating circuitry. This unit allows you to correct for that using a Luma/Chroma delay variable control and Min/Max range switch. These should be adjusted to superimpose the colour information over the luminance detail. The adjustment range is +/-250 nanoseconds.

The video control has a +/-3dB range and colour level is +/-6dB with a colour off position. The black level control has +/-200mV adjustment.

The last four controls give +/-20% control of red and blue lift and gain and these, together with a power on light, complete the front panel layout.

Even with all the correction/enhancement switched out, the video processor improves the signal by re-inserting clean syncs and burst, so that any noise or dropout during the sync period of the play-in tape is not transferred as a disturbance on the output.

The colour correction facility is very useful for fine adjustments to the camera balance, especially if there was insufficient time to set the camera, or a correct balance could not be achieved due to mixed colour temperature of the lighting. I once had to make a video recording in a hall where the lighting was a mixture of daylight, tungsten, fluorescent and sodium-discharge light in various proportions, depending where you were in the hall. I could set the camera for the main source of illumination, but had to use the processor to adjust the colour on close ups when under a different lighting combination. The range of control is not enough so that you could correct a tape shot outside when the camera was still set for tungsten light or vice-versa. I did try that once but when the camera was clipping at peak white I ended up with yellow highlights after correction.

Simple colour effects should be possible with the unit when transferring from one VCR to another as follows:

1. To indicate a foggy day try turning the black level up and the colour down.

2. To shoot "day for night" turn the black level control down to "black crush" and add blue to simulate moonlight.

3. If you turn the colour control to off and increase both red controls and decrease the blue, you can simulate early sepia tinted films.

4. Experiment with all sorts of false colours and use as a still or moving background for your titles.

Whilst you might have a sequence of apparently perfectly exposed and colour balanced shots, when you edit them together any small differences are greatly magnified and are very noticeable. A colour corrector will help to match the shots on each side of the edit.

I have heard of problems with more than one unit when it had been running long enough to get warm. The TO3 power regulator, although fitted with a large heatsink, does get extremely hot and the case does not seem to have any ventilation holes for free access of cooling air.

I would have liked to have seen a mains on-off switch fitted as standard (even if only on the back panel). There is room on the front panel and I have fitted a miniature mains switch on my unit.

I have not used any of the other currently available colour processors but, after seeing the other units, I would say that this one has the best combination of facilities. Not many processors for non professional use have a Luma/Chroma delay adjustment and colour balance controls for both lift and gain.

SOFTWARE REVIEW

Johnny Brown, G3LPB, writes to us again concerning a couple of computer programs that he has been investigating.

The first is an amateur television program for the Spectrum computer written by G1WWX. Once loaded the program prompts for the users call-sign, QTH and 2m talk-back frequency. A menu is then displayed which offers a selection of patterns, test cards and colour bars, all with or without the call-sign inserted. Johnny asks whether or not the various screens could be saved to be fed into a slow-scan converter. *My suggestion would be to select the particular pattern required and then feed the video output from the Spectrum's edge-connector to the SSTV transmitter.*

The second piece of software reviewed comes from Grant Dixon G8CGK. This program is called **DRAW**, and allows the user to design printed circuits using the Spectrum. Within the program are ready-defined symbols for transistors, both PNP and NPN, rectifiers, capacitors, resistors, potentiometers, inductors, etc. This program is ideal for use by the amateur for designing circuits and, considering the limitations of the Spectrum by modern standards, is quite sophisticated.

Further information on either of these programs may be obtained from either Johnny Brown, or from the writers of the software. When requesting information please enclose an A4 SAE.

Another snippet of news is that J&P Electronics, suppliers of various ATV software packages for Spectrum, BBC, MSX, etc, have removed to the following address: UNIT 45, MEADOWMILL ESTATE, DIXON STREET, KIDDERMINSTER, DY10 1AL.

Finally, Johnny tells us that he has been offered various supplies of components at very attractive prices, and he is making these available to members only. The components include many types of IC's, transistors, capacitors, etc. Also available are some BETA VCR spares and some Spectrum computer boards, all unused and in various states. For further information and prices please send an SAE to Johnny Brown G3LPB, 45 Marlborough Avenue, Falmouth, Cornwall, TR11 4HS.

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.

VHF COMMUNICATIONS magazine is published four times per year and is available via our U.K. agent: Mike Wooding, 5 Ware Orchard, Barby, Nr.Rugby, CV23 8UF (Tel: 0788 890365). The yearly subscription is £8.75, which is payable by personal cheque, postal orders or bankers draft made payable to M.J.Wooding. The magazine is a MUST for the radio amateur interested in VHF, UHF and Microwave working, containing, as it does, detailed constructional articles for equipment operating in these bands.

SPECIALIST 'THEME' COLLECTIONS

VHF COMMUNICATIONS has collected together selected articles from previous magazines on common topics for the convenience of specialists. One such 'theme' is amateur television, in which nine selected articles taken from VHF COMMUNICATIONS form this collection. Supplied in a smart blue binder at the very reasonable price of;

£11.00 (INCLUDING POSTAGE)

There are approximately 90 pages of detailed constructional descriptions of all the modules necessary for the construction of a 70cm band, AM-TV transmitter and colour test pattern generator.

This is only one example from a total of 22 theme collections listed in the table below all at £11.00 including postage. Every collection comprises nine to eleven articles in a blue binder. As well as the subject articles, each collection contains many pages of interesting publications carefully selected from VHF COMMUNICATIONS.

1. ANTENNAS: fundamentals
2. ANTENNAS FOR 2m and 70cm
3. ANTENNAS FOR 23cm and 13cm
4. MICROWAVE ANTENNAS
5. AMATEUR TELEVISION (ATV)
6. CRYSTAL OSCILLATORS: XO's and VXO's
7. VFO's
8. FREQUENCY COUNTERS AND DIVIDERS
9. NOISE FIGURE AND NOISE SPECTRUM MEASUREMENTS
10. SIMPLE TEST EQUIPMENT
11. HF POWER MEASUREMENTS
12. SHORTWAVE AND IF CIRCUITS
13. MINI RADIO DIRECTION FINDER for 2m and 70cm
14. CONVERTERS AND PRE-AMPS FOR 2m and 70cm
15. CONVERTERS AND PRE-AMPS for 23cm and 13cm
16. TRANSVERTERS AND PA's for 2m
17. TRANSVERTERS AND PA's for 70cm
18. TRANSVERTERS AND PA's for 23cm and 13cm
19. CIRCUITS FOR 9cm and 6cm
20. 10GHz TECHNOLOGY Part-1
21. 10GHz TECHNOLOGY Part-2
22. FM EQUIPMENT FOR 3cm and 1.5cm

BINDERS available to hold twelve issues...£3.50 each.

OUR TWO LATEST PRODUCTS

CCD2 CAMERA

The CCd2 Camera is the smallest CCD camera available. The picture quality is superb and out performs most standard vidicon cameras. Basic sensitivity - 3 LUX, auto gain up to 400 LUX. Auto iris facility provided. 12v DC operation. Size: 5.7*5.7*4.8cm (W.H.D.). Video output BNC socket. Auto iris lens also available. Price less lens...£356 (Excl. VAT). Data sheet available.

TDMS1 TIME/DATE

The TDMS1 is a new low cost overlay unit for both Colour and Monochrome Video Sources, such as Cameras and VCR's etc. It provides a four line field including time, date, 8 character message and stopwatch facility. Based on a single board micro, the design allows many special OEM facilities to be offered. Battery back-up is provided as standard. PCB or fully boxed version available. One off prices: PCB...£121.75, Boxed...£134.25 (both Excl. VAT). Quantity discounts available. Data sheet available.

We are currently disposing of *HUNDREDS* of Mono and Colour monitors. All shapes and sizes and all at silly prices. Phone for details. We are also able to offer 30% discount on all NEC computers and printers.

CROFTON ELECTRONICS

HEALTH AND SECURITY THROUGH HI-TECH.
"KINGSHILL", NEXTEND, LYONSHALL, HEREFORDSHIRE, HR5 3HZ.
Telephone: 05448 557 Fax: 05448 558 Telex: 8951182 GECOMS G (Code C 470)

THE WORTHING AND DISTRICT VIDEO REPEATER GROUP

BATC TYPE

TEXT

IBA TYPE

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 BOARD FOR THE CIRKIT CROPREADY TEST CARD GENERATOR. BOTH 2 AND 8-WAY EXPANSION BOARDS ARE AVAILABLE ENABLING THE SELECTION, BY SP SWITCH OR BCD, OF EXTRA EPROM PATTERNS. PRICE: 2-WAY £6 & 8-WAY £18.00

AGC KIT

EPROM SERVICE FOR THE CIRKIT TEST CARD GENERATOR. A FAST RELIABLE SERVICE WITH A RANGE OF DESIGNS INCLUDING BATC, IBA LOOK-ALIKE, AND 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.

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

THE "NEW ATV" PROGRAM FOR THE 48K SPECTRUM. NOW WITH MORE THAN 60 COMMANDS ON THIS VERSION. THESE INCLUDE 7 TESTCARDS, MEMOPAD, CLOCK WITH ALARM, MAPS, TONES, LOCATOR CALC, FLAG, CROSSHATCH, TEXT PRINTING PLUS MANY MORE. ALL THIS, PLUS A SIMPLER 16K VERSION ON SIDE TWO FOR ONLY £6.00.

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.

ALL THE KITS DESCRIBED HERE CAN BE SUPPLIED READY BUILT. PLEASE SEND SAE OR PHONE 0903 67764 (7 & 8pm) FOR FURTHER DETAILS.

ORDERS PLEASE TO: MR. R.STEPHENS, G8XEU, (TREASURER GB3VR), TOFTWOOD, MILL LANE, HIGH SALVINGTON, WORTHING, W. SUSSEX. BN13 3DF

THE WORTHING AND DISTRICT VIDEO REPEATER GROUP

EBU TYPE 1 CONTEST NO. GREY SCALE

PRE-EMPHASIS KIT

PRE & DE-EMPHASIS KITS

FOR FMTV. BOTH TO CCIR STANDARDS, 75-ohm IN/OUT. ONLY £2.50 EACH (PLUS 50p EXTRA FOR READY-BUILT) PLEASE STATE 'PRE' OR 'DE' WHEN ORDERING.

PARABOLIC DISHES

THE GROUP HAS A SUPPLY OF 16'' SPUN ALUMINIUM DISHES AT £12.50 EACH. (PLEASE ALLOW 28 DAYS FOR DELIVERY). LARGER DISHES AVAILABLE ON REQUEST.

SOLENT SCIENTIFIC KITS

BY KIND PERMISSION OF ALAN LATHAM, G8CMQ, THE GROUP ARE ABLE TO SUPPLY THE FOLLOWING KITS. OTHER KITS IN THE RANGE WILL FOLLOW.

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 A DIECAST BOX AND COSTS ONLY £70.00.

23/24cm ATV CONVERTER

THIS UNIT BLOCK CONVERTS THE 1.3GHz BAND TO THE DOMESTIC UHF TV SPECTRUM. USE THIS KIT WITH A STANDARD TV TUNER AND BATC IF PCB, FOR A COMPLETE FM RX SYSTEM. SUGGESTED APPLICATION NOTES INCLUDED. £40.00

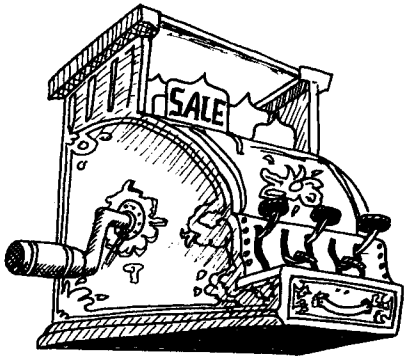
TWO CHANNEL PLL

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. UNIT SUPPLIED READY BUILT £25-00. CRYSTALS FOR THE PLL ON CHANNELS RMT1, 2 OR 3 £7-00 EACH. OTHER FREQUENCIES TO ORDER.

WE OFFER A FULL REPAIR AND SPARES BACKUP SERVICE. OUR KITS USE THE SAME COMPONENTS AND PC BOARDS AS IN THE ORIGINAL UNITS. SAE WITH ALL ENQUIRIES PLEASE.

SOLENT KITS INCLUDE PC BOARD, ALL ON-BOARD COMPONENTS, BOX AND FULL INSTRUCTIONS, BUT EXCLUDE EXTERNAL HARDWARE (SOCKETS, ETC). PRICES ARE INCLUSIVE OF POSTAGE.

ORDERS PLEASE TO: MR. R.STEPHENS, G8XEU, (TREASURER GB3VR), TOFTWOOD, MILL LANE, HIGH SALVINGTON, WORTHING, W. SUSSEX. BN13 3DF



MARKET PLACE

ADVERTISING RATES:

Classifieds - 5p per word*
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 (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. Tel: (0788) 890365 before 20th March.

FOR SALE

CANON VR-30 portable VHS + Tuner/Timer will also be available, please phone for details. ELECTROCRAFT genlock board for BBC micro complete with fitting instructions...£40. CHAMELEON colour palette with software on ROM and 40-track disc. Choice of 4096 colours from BBC micro! RGB output, modified to give two outputs (one with the mixer external key signal) as described in CQ-TV 132...£30. CUMANA graphics tablet for BBC. Small device allows freehand drawing on screen and print out with dot-matrix printer...£10. ELECTROHOME 9" B&W monitors, 2 off...£25 each. ARE YOU BUILDING a vision mixer/wiper/keyer? T-bar type quadrant faders as used in broadcast quality professional mixers. 5k LIN, single (two types). Black handles (90 degree pots) 3 off...£5 each. Chrome handles (pushrod pre-sets) 3 off...£5 each. Spare pots supplied, or £25 for all six. DUAL, SPLIT-LEVER fader, unused since new...£10. SINGLE older type fader with 10k geared pot and limit micro-switches...£3. RS type square illuminated PUSH BUTTONS, orange buttons. Current price >£5 each. 27 available @ £1 each or the lot for £20. INDICATOR LIGHTS, 24 volt, 5/8" diameter. Push-fit into 1/2" hole. 10 each of red, green an blue...£3 the lot. VARIOUS MICHROPHONES: AKG D190C stick mic with lead...£10. Foster dual-Z stand mic...£10. AKG D703 switched hand-held...£10 for a pair. Japanese cardiod electret, unused since new, together with high-Z dynamic mic...£5 for both. Electret boom mics, bodies house battery and pre-amp. Capsule is om approximately two foot curved tube...£15 for two. OFFERS on all the MICROPHONES at around £35 the lot plus postage. Larger items can be delivered within a reasonable distance, otherwise please add postage. David Wilson, 7 Massie Close, Willen Park, Milton Keynes, MK15 9HG. Tel: 0908 665106.

PHILIPS HIGH-RESOLUTION MONITOR, TTL, Analogue RGB and Composite video inputs. Only two months old, unused...offers. Brian Robinson G4ZEK, 9 Stammers Road, Colchester, CO4 5LX. Tel: 0206 851343.

PHILIPS VCR2000. good heads plus three tapes...£30 ono. D.Long, 13 Wellhome, Brighouse. Tel: 0484 713331.

PANASONIC WV350P B&W CAMERA, industrial studio type, will work on both 525 and 625b lines with internal or external syncs.C-mount but not lens included. 4" B&W viewfinder, video level control, intercom jack, back-feed for VTR or program video return, plus lots of other features. Camera works OK but tube is getting 'sticky'. Will pay shipping and would like to exchange for collection of back-issues of CQ-TV, or will accept...$100 US.

IKEGAMI HL77 manual...£5. AKG K158 Headset/Microphone...£5. SONY RF MODULATOR 2630...£10. SONY 1100 TUNER...£75. ECM 50 LAPEL microphone...£50. AKAI 4" MONITOR/AMPLIFIER - new...£110. MILLER fluid head...£40. AURATONE boxes...£5. TIME CODE reader/inserter - needs adjustment...£40. ZOOM, iris, focus motors etc...£10. CASIO 2" LCD TV...£35. SINCLAIR 1 1/2" monitor with internal ni-cad...£35. VIDEO DA's by Comprehensive Supplies - new...£30. TRIPLE STANDARD JVC BP5300 edit source VHS player...£350. SONY DXC1820 colour camera...£495. SONY PVM1370-QM colour monitor, computer, RGB inputs...£530. COX MC494 battery waveform generator...£250. 12/240v PHILIPS amp...£40. SONY F1 Betamax recorder - fault...£60.
Piers Bedford, 77 Barrowgate Road, London, W4 4QS. Tel: 01 747 0069.

SOLENT 24cm receiver complete with audio and video demodulators and 27-turn Quad loop aerial...£80. Ed Waggoner G1SBI, 21 Wycliffe Road West, Coventry, CV2 2EL.

5:1, f/2.5, 'C'MOUNT ZOOM LENS, to suit 1"format tubes, manual focus, iris and zoom controls, inc lens hood...£45. MONOCHROME PROCESSING AMPLIFIER, complete with power supply, in smart 19" rack mount case...£10. SET OF SCAN COILS for 30mm plumbicon tube...£5. CRT type AW17-20 for camera viewfinder, monitor, etc...£5. All items buyer collect or pay carriage - or could be brought to BATC Rally.
Peter Delaney G8KZG, 6 East View Close, Wargrave, Berks. Tel 073522 3121.

UHER REPORT 4000 mono portable tape recorder complete with Ni-Cads. Almost new, current trade price £812 + VAT...£395. TANDBERG MODEL II professional portable tape recorder and leather case. Excellent condition...£225. LINE DISTRIBUTION AMPLIFIER, audio, rack mounted, ten outputs. New...£195. PENTAX ME f1.7 50mm lens. Almost new...£95. HANNIMEX HMG 80-200mm f4.5 lens...£25. COLES/STC 4037 microphone...£25. COLES/STC ball-and-biscuit microphone...£25. LAVALIER ribbon cardioid microphone...£25. Self powered CARTRIDGE AMPLIFIER...£20. BRENELL 1" 8-track tape deck, complete with playback head. New but soiled and needs slight attention...£95 (the head alone is worth this!). Carriage extra or buyer collect. Bernard Whitty, Fourways, Morris Lane, Halsall, Ormskirk, Lancs, L39 8SX. Tel: 0704 840328.

BLANK E-PROMS: 2764...£1.00. 27128...£1.50. 27256...£2.50. 27512...£4.00. Even better prices for quantities of fifty or more. Julian Tether G6LOH, 29 High street, Whittlebury, Towcester, NN12 8XH. Tel: 0327 857766.

ASTEC CCTV MONITORS, 19" monochrome, three off ...£10 each. BLUEBEST CCTV MONITORS, four off...£10 each. Early PHILIPS valve VTR...£25. NEW VALVES ECC2000, E810F...half list price. 100 yard drum TRIAX VIDEO CABLE with connectors at both ends...£30. BICC or BELDEN VIDEO CABLE...50p per metre. (50p stamp for samples). M.Bond, 153 Welland Road, Dogsthorpe, Peterborough, PE1 3SU. Tel: 0733 53998.

Professional SONY DXC1820P ENG, EFP CAMERA, servo 10-to-1 zoom. Genlock colour bars, two batteries, charger, cable and case. Mint condition...£900 ono. 12-to-1 ZOOM LENS for Panasonic F10 type camera, as new...£250. PHILIPS EL3402A VTR B&W reel-to-reel plus tapes, servo fault...£15 ono. PHILIPS COMPOSITE COLOUR MONITOR...£50 ono. B&W PRO MONITOR, usual features but slightly soft tube. No case...£10. Some old SONY 405/625 VTRS for spares, some very old 405 single channel 10" HMV plus a load of odds and sods. Please ring. Pete Smith G1LTI. Tel: 0293 24231.

SHIBADEN FP-1500K colour camera fitted with Fujinon TV zoom lens 1:1.8, 20-100mm...£100. CAMERA CONTROL UNIT CU-1500K for above camera...£20. Approximately 20 metres CAMERA CABLE...£10. IKEGAMI PM125A B&W monitor...£45. These items being disposed of on behalf of a silent key and they are believed to be operating satisfactorily. D.G.MacKAY, 16 Henley Drive, Timperley, Altrincham, Cheshire, WA16 6RY.

FREE to a caring home! STELLA single channel projection TV set, with a complete set of spare coils. Housed in a dark wood cabinet with doors. HMV TV set also enclosed in a cabinet with doors. Opening lid exposes a push-button AM radio. MARCONI 2000 series colour TV, still giving a good picture! C.R.Stevens, High Street, Nutley, Uckfield, Sussex, TN22 3NF.

SONY HVS2000 camera selector as new. Complete with CCL-5 extension cable. Homebrew adaptor to allow any mono camera with external sync input to be used . Also Sony workshop manual...£40 ono. STL NOVATEL Prestel terminal, working OK...£25 ono. TWIN 8"" DISC DRIVES complete with PSU...£20 ono. SOLARTRON A100 oscilloscope c/w A101 30MHz amplifiers and A112 dual timebase...£80 ono. Ray Hill G0IMV, Marclecote, Ledbury Road, Ross-on-Wye, Herefordshire, HR9 7BE.

EX-BROADCAST EQUIPMENT: studio lamps, monitors, viewfinders, video amplifiers, U-MATIC edit machine 2850, audio jackfields. CABLING: RF co-ax and multicore. Some items new. TV's for spares/repair. New valves and semiconductors. 100's of bargains. Telephone to discuss your requirements please. Tel: 021 472 3688.

MELFORD DUI 24" MONOCHROME MONITORS, six available make me a silly offer for the lot. Buyer collects. NTSC CODER, similar to BBC PAL coder...£20. Jeffrey Borin. Tel: 01 863 2880.

ASTEC TVRO MODULES: AT1020 Tuner and AT3010 IF/Demodulator. Tuner modified for one input to BNC. Both used but in good working order...£40 pair. MICROWAVE MODULES bipolar low-noise 23/24cm pre-amplifier. used but in good working order...£20. DALLMEYER f1.9 TV lens, C-mount...£10. SONY TV zoom lens, 20-80mm, f2.5, C-mount...£20. 23cm CAVITY FILTER, 3dB loss, 6MHz bandwidth, ideal for narrow band system...£10. UNIVERSAL SYNC RE-GENERATOR (as in CQ-TV 136). Home built, internal PSU, simple enclosure, works well...£15. All postage extra. John Wood G3YQC, 47 Crick Road, Hillmorton, Rugby, CV21 4DU. Tel: 0788 69447.

Still a few left!! BGY22A hybrid devices, ideal for following the BATC ATV transmitter, 2.5W output for 50mW input at 12 volts...£10 each. ICOM IC2E 2m handheld (thumbwheel operation), c/w carrying case, Ni-Cad pack, charger and various aerials. Excellent condition...£150. ICOM IC4E 70cm handheld (thumbwheel operation), c/w Ni-Cad pack, base station power converter, remote speaker mike, various aerials. Excellent condition...£150. Both ICOMS subject to offers, around £275 for them both. Carriage extra. Mike Wooding G6IQM, 5 Ware Orchard, Barby, Nr.Rugby, CV23 8UF. Tel. 0788 890365.

MULTI-STANDARD DECODER CHIPS, PAL-Secam-NTSC, type TDA4555...£6 each (information available). Robert Knight, 45 Bullimore Grove, Kenilworth, Warks, CV8 2QF. Tel: 0926 50099.

FORTOP TVT435/R 70cm ATV transceiver...£95. SONY HVS-2000P vision mixer, as new, boxed...£55. ELECTROCRAFT GEN-LOCK PCB for BBC computer...£50. 21-ELEMENT TONNA ATV beam...£18. Doug Leighton G3UKM. Tel: 0676 34079.

VERTICAL APERTURE CORRECTOR 1u High, 19" rack unit...£30. BBC PULSE DISTRIBUTION AMPLIFIERS, four outputs...£2 each. BBC SPG changeover unit...£3.50. IVC 1" VTR with four tapes...£25. Some EMI 2001 spares, please enquire. STC PRESTEL terminal c/w 5" green screen monitor, complete...£50. PC BASIC language handbook...£5 Brian Summers. Tel: 01 998 4739 (answerphone).

TEKTRONIX 535A OSCILLOSCOPE, large, valved but very high quality. DC to 15MHz, dual channel, dual timebase. 10 x 6cm screen. Good working order, with manuals. Transport may be possible. W.H.Y. for exchange? Peter Carliell, 12 Huntsmoor Road, Ewell, Surrey. Tel: 01 337 9688.

JVC TELECINE ADAPTOR (cost £79)...£15. RS Components 0.5amp VARIAC with case and 13amp switched socket...£15. TONNA 1250MHz 23-element aerial...£10. CHANNEL MASTER mast support bearing...£5. THORN TX9 service manual...£5. All items as new. John Brown G8BUA, 14 St.Georges Ave, Hornchurch, Essex. Tel: 04024 77493.

The BATC's own video 'THE DEVELOPEMENT OF THE TV TEST CARD'. George Hersee, designer of Test Card F, reveals how test cards are made and displayed. 60 minutes on 3 hour tape, VHS ONLY. Send £5 to Andy Emmerson, 71 Falcutt Way, Northampton, NN2 8PH.

AIDS Ltd. CROSSHATCH test signal generator, 405 and 625-line working. Video and bands 3, 4 and 5 outputs...£15 plus carriage. Andy Emmerson G8PTH, 71 Falcutt Way, Northampton, NN2 8PH. Tel: 0604 844130.

TWO PYE 405-line MONITORS, at least one working. Free - looking for a good home. Not exactly compact! Don't force me to dump them! Roger Harris G3ZFR 0203 365117.

SONY HVS 2000 PS plus camera plus adaptor plus leads...£130. SONY 1810 U-MATIC, unknown condition...offers. Assorted U-MATIC TAPES...from £0.50 each. Buyer collects or pays carriage. Martyn Tayler, Tel: 0689 31339.

PANASONIC NV3000 PORTABLE VHS VCR c/w carrying case and manual, little use...£120. Professional; PAN & TILT HEAD, suit up to 50lb camera...£25. S4077C COLOUR STRIPED VIDICON, as new...£5. 30mm used PLUMBICONS, tested...£3 each. 30mm YOKE...£2. TTL B&W SPG, usual outputs, mains lock...£5. Similar to last item but XTAL/GENLOCK auto changeover...£7.50. COLOUR SPG + PAL CODER on PCB, as used in domestic cameras...£10. All with connection data. Please see wanted section. Trevor Lumb, 2 Briarwood Avenue, Bury St.Edmonds, Suffolk, IP33 3QF. Tel: 0284 754318.

HITACHI PORTABLE VIDEO SYSTEM, VKC600 colour camera, VT7000 VHS portable deck (takes full size cassettes), matching tuner and timer and two rechargeable batteries. All in working order...£350 ono. Frank Dimmock G0CFD, 13 Stephenson Way, Bourne, Lincolnshire, PE10 9DA. Tel: 0778 423433.

EXCHANGE & WANTED

GOOD PRICE paid for BAIRD autographed letters etc. TELIVISOR or parts etc for a permanent exhibit. MOTOROLA walkie-talkies. Piers Bedford, 77 Barrowgate Road, London, W4 4QS. Tel: 01 747 0069.

A COPY OF the old BBC/IBA/BREMA 1967 film 'The Colour Receiver Installation Film' on either VHS video format or 16mm film, to borrow or purchase. Paul Sawtell, 20 Seymour Road, Wollescote, Stourbridge, West midlands, DY9 8TB. Tel: 038482 6679.

OLD CAMERA TUBES, (and similar imaging devices) of various type and age, for historic (!) collection. 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.

Good price paid for recordings of early BBC" TRADE TEST CARD MUSIC and early Test Card 'C' 50/60's music. Tel: Paul Sawtell 038482 6679.

METEOSAT pre-amp, Wood and Douglas preferred. Plug-in units and other accessories for TELONIC SM2000 sweeper and/or data. INFORMATION on UA1 x/y plotter (ex Telford) model 99.714-0, and advice on D-A connectors for BBC-B. ADVICE on marketing range of home produced VHS videos on a range of electronics and ham radio subjects from before Ohms law to machine code programming. REFERENCE to simplest proven method of using Solfan heads for 3cm WB FM TV. Ralph Taylor, Bwlch Glas, Penrhyndeudraeth, Gwynedd, LL48 6RU. Tel: 0766 770637.

VALVE TYPE STUDIO equipment, preferably Pye 405 or 625, or W.H.Y. CIRCUIT or manual for Pye camera type 2130 D6Y. M.Bond, 153 Welland Road, Dogsthorpe, Peterborough, PE1 3SU. Tel: 0733 53998.

SOUND DISTRIBUTION AMPLIFIER "come on Ken Bailey". Cheap vision mixer. WHY. Pete Smith G1LTI. Tel: 0293 24231.

BACK ISSUES OF CQ-TV. I am trying to build a reference library of material dealing with ATV. Any member who has a collection of back issues of CQ-TV and who would be willing to part with them, I am interested. I need all issues up to and including 140. I also need a copy of the ATV handbooks. Please send details in a letter to Howard Cochran W4PPN, 5600 Birchill Road, Charlotte, N.C. 28212, USA.

Does anyone have details of a program for an IBM-AT-PC computer for SSTV, RTTY and PACKET use. Any information on this matter would be greatly appreciated. Jack Geeraerts ON5NM, St-Katelynevest 27, B2000-Antwerp-1, Belgium.

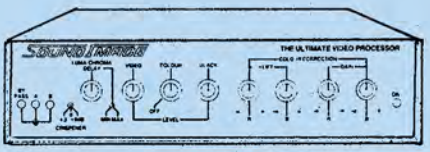
ELECTRONIC VIEWFINDER and SHOTGUN MICHROPHONE for Hitachi VKC2000E Colour camera. (Viewfinder is the same type as sold by the club at the convention 1987). Chris Maxwell G8MKT. Tel: 0827 285949.

The following odds and ends would be most useful for a display of 405-line television I intend to present at this year's convention. PYE LYNX CAMERA in first rate condition. Any C-MOUNT lenses made by Dallymeyer. Any 405-line GREYSCALE GENERATORS. 405-line ELECTRONIC CAPTION/CALLSIGN GENERATOR. Some BROWN 13amp MAINS PLUGS (yes, you remember them!). I also have a small number of 405-line TV recordings (VHS format) which I will be happy to exchange with others. Does anyone have a decent recording of the CAT-70 proceedings, mine is about 4th generation. CAMERA SERVICE MANUALS for PYE LYNX to buy. Also service manuals for PYE SENTINEL to buy or copy. Andy Emmerson G8PTH, 71 Falcutt Way, Northhampton, NN2 8PH. Tel: 0604 844130.

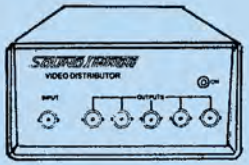
WANTED/EXCHANGE good 2/3 PLUMBICON and 1" 10:1 or more ZOOM LENS, 1" format. Trevor Lumb, 2 Briarwood Avenue, Bury St.Edmonds, Suffolk, IP33 3QF. Tel: 0284 754318.

THE SOUNDIMAGE RANGE

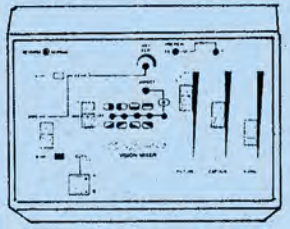
● VIDEO ACCESSORIES ●



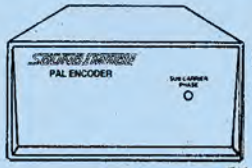
The Ultimate Processor
Ideal for VTR Editing and Transfer
£199 + £3.00p&p **Total £202**



Video Distributor
One in Five Out
£69 + £2.50p&p **Total £71.50**

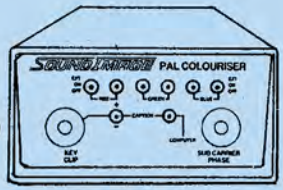


Vision Mixer
A+B, Key, Caption and Stereo Audio Inputs with at least 30 Effects
£199 + £2.50 p&p **Total £201.50**



Pal Encoder
for use with Genlocked Computers
£149 +£2.50p&p
Total £151.50

Pal Colouriser
for Computer or Camera Input
£199 + £2.50p&p
Total £201.50



PLEASE SEND CHEQUES FOR TOTAL PRICES STATED TO:

COOMBE PRODUCTS LTD.

21 MILL ROAD, LISS, HAMPSHIRE GU33 7BD Telephone: LISS (0730) 895278. 24 Hour
For enquiries and further information write to above address or ring answer phone service

AVS

ASTLEY
VIDEO
SERVICES

34 Withington Dr.
Astley
Manchester
M29 7NW.

TEL.
OR 0942 893573
061 790 4649

NEW & SECOND HAND
VIDEO EQUIPMENT
BOUGHT & SOLD

CAMERAS, MONITORS, PANTILTS, SEQUENCERS, ZOOM LENSES
VIDEO SWITCHERS,TIME LAPSE RECORDERS, BRACKETS

WE CANT LIST ALL OUR DIFFERENT TYPES OF EQUIPMENT
AS STOCK ARE MOVING FAST .....

FOR FURTHER DETAILS RING
US NOW OR SEE US AT MOST
OF THE MAJOR RADIO RALLIES.

****** SPECIAL OFFER ******

UNIVERSAL NICAD CHARGER
BRAND NEW CHARGERS.
(CHARGES PP3,AA,C&D SIZES)
ONLY £5.95 +£1.00 POSTAGE.

ADAPTOR & EDITING LEADS KIT
FOR AUDIO & VIDEO
4 LEADS & 6 ADAPTORS
ONLY £5.75 plus 50 pence postage

cheques payable to A.V.S.