CQ-TV MAGAZINE No.148

BRITISH AMATEUR TELEVISION CLUB

NOVEMBER 1989

CONVENTION VENUE - MAY 6th 1990

HARLAXTON MANOR - GRANTHAM

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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.

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

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CLOSE FOR PRESS FOR THE NEXT ISSUE ..... 20th DECEMBER 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 G0ANO, 'Grenehurst', Pinewood Road, High Wycombe, Bucks HP12 4DD: Tel: (0494) 28899

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

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

EXHIBITIONS AND RALLIES - also arrangements and information about lectures and talks to clubs; demonstrations etc: 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.

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

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

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

POSTBAG

AMIGA SSTV

Dear Mike,

with reference to the Amiga SSTV program by Volker Wertich available from ICS as reviewed by Andy Emmerson, G8PTH, in CQ-TV 147.

I have used this program extensively since it came onto the market and have corresponded several times with ICS.

Please note that the only mode provided by it for line sequential colour is the Wraase standard. There is no support for Robot modes at all, except black and white frames sent in Wraase emulation.

The author does not seem to want to recognise the existence of Robot machines at the moment, as the 'BETA' trial version of his upgraded software still uses the square picture format, instead of a 4 by 3 aspect ratio, and does not recognise the special VIS or auto start/stop/select tones used by Robot.

I have lost confidence in this author to such an extent that I have built a Robot 1200c 'clone' in the time I have been waiting for his 'all singing and dancing' upgrade.

Yours, Peter Lockwood, G8SLB.

BATC CONVENTION

Dear Mike,

Knowing that there have been demonstrations of SSTV in past BATC conventions, I would have been just as disappointed as Peter Bruce was at this years lack of representation of our facet of the hobby.

His observation was meant to be constructive and appears to have been cast aside rather than acknowledged. The demand was there but the supply found lacking in this instance - for whatever reason! Another SSTV enthusiast, Peter Lockwood, G8SLB.

I reiterate, if you want these displays etc. at your convention give us, your committee, some help! We are unable to write to you all personally, asking for demonstrations of your equipment and pet facet of ATV. We contact you through the forum of the magazine (CQ-TV 145, page-10, paras-4, 5 & 6), if you do not read it, or take no notice of the appeals we can do no more! ... Ed.

CQ-TV GETS AROUND!

Dear Mike,

its been a long time since I put paper in the automatic writer, but I just had to mention a few things.

It is quite amazing where CQ-TV gets to. Over the last 12 months I have had numerous requests from many far flung places in many lands, and feel that the BATC are doing a marvellous job keeping people in contact with each other.

Many people with similar interests sit and put pen to paper in the quest for knowledge. I have had requests from ZL, Europe, Oman, the USA, and the latest from Nigeria. These do not include G, GW, GI, GM, GD or even EI, so all credit for the people that put it all together (people Johnny!?!).

It is worthwhile that someone somewhere reads even the odd little bits of information etc. that appear in the mag.

To all that contribute in anyway to the Club, I think that they also deserve a mention, stand up chaps and take a bow!

73 from Cornwall, Johnny G3LPB

WEATHER SATELLITES

Dear Ed,

is there anyone out there who has built the Maplin Frame Store for the Meteosat Pictures? The series of articles was published in their 'Electronics' magazine during 1987.

The board is based on V 9938, its "father" was TMS 9918, the graphics controller used in the unfortunate Texas Instruments home computer (in the PAL version there was the TMS 9929).

The chip was good for games with a lot of sp[rites in many planes, but not that good for graphics. V 9929 was developed by Yamaha to be all compatible with 9918, but they added many graphic bit-mapped modes up to 256 x 212 pixels out of 256 colours. It was used in their MSX computers that are in the meantime pretty obsolete too.

The trouble for me is that the data-sheets from Maplin were sold out, so again can anyone help? The board itself is up and running, I tested it using my Cortex computer and got all the known graphics without any software changes, but without the fantastic new graphics modes.

Cortex is based on the TMS 9995 processor and, you guessed, it is obsolete too! There is a small group of faithful users in the U.K., some members of the BATC perhaps?

In spite of all this obsoletisme (his word not mine .. ed) the boards excellent and the fastest way to test it was to use a Z80, based computer and utilise the testing program published in 'Electronics #9 1987 p-48 but, this time, I was not so lucky. I couldn't get a single pixel into the screen though I'm pretty sure all the hardware is OK.

I stepped through the program and checking using a logic analyser verified every byte sent to the 9938, so far it's the same as the listing. Has anyone had thesame experience with the original set of Maplin boards?

Finally, last but not least, who can help me with some Meteostat pictures recorded on cassette?

Ladislav Vig, Leisibachstr 22 a, 6030 Ebikon, Switzerland

Come on folks, surely someone out there can help this poor unfortunate obsolete soul

NEWS ROUNDUP

CQ-TV OVERSEAS POSTAGE

The current rates for overseas and air-mail postal rates are shown below.

Please remember to add the appropriate amount to each year of subscription renewal, in order that you will receive your copy of CQ-TV.

SURFACE MAIL WORLDWIDE .. £2.50

AIR MAIL .. ZONE-A £4.00

AIR MAIL .. ZONE-B £4.50

AIR MAIL .. ZONE-C £5.50

Zone-A includes the Middle East and the North African continent.

Zone-B includes the U.S.A., the Indian sub-continent, Malaysia and South America.

Zone-C includes Australia, New Zealand, China, Japan and the Far East.

Please pay your subscription by Eurocheque, cheques drawn on a U.K. bank or bearing the name of a U.K. agent or by U.K. Postal Orders

To ease the workload of our very busy membership secretary, please consider subscribing for several years at a time.

NEW CONSTITUTION

The proposed new constitution is almost ready and it will be published in the next issue of the magazine.

This is the last opportunity to take part in shaping it, and with it the future of the BATC.

After the draft of the new constitution is published it would be expensive for the club to publish a revised version, so if you feel you have an input NOW is the time!!

If you enclose an A4 SAE I will send you a copy of the proposed Constitution. It is planned to vote on the new Constitution at the next General Meeting in the spring of 1990."

Please write to: Brian Summers, Hon. Treasurer, 29 Perivale Grange, Perivale Lane, Greenford, UB6 8TN.

B. Summers September 4, 1989

F-CONNECTORS

Following the item in Edpost in CQ-TV 147 I have been contacted by Harrison Electronics who have offered the following information:

'We have been importing and distributing high quality F-connectors for some years. We stock two sizes in the high quality range, F5SC and F7SC. They are a fully waterproof plug with gold plated centre pin and are 75-ohm impedance.

The F5SC fits UR203 (7.2mm OD) or similar cable and the F7SC fits URM57 (10.5mm OD) or similar cable. Prices are: 1-9 off @ £2.70 each; 10-19 off @ £2.42 each; 20 off @ £2.07 each. These prices include VAT but are subject to carriage at cost.'

Harrison Electronics, CenturyWay, March, Cambs., PE15 8QW Tel: 0354 51289. Fax: 0354 51416.

AMATEUR SATELLITES

News gleaned from an RSGB Council letter informs me that on November 10th six Amateur satellites are to be launched simultaneously using an Arianne booster. More details in the next issue.

GB3ZZ

The latest issue of the Severnside TV group's magazine 'P5' reports on the latest improvements to GB3ZZ, the Bath 24cm FM ATV repeater.

The changes made to the repeater include improvements to the through colour response, a rebuild and rehousing of the equipment in a rack-mount system, inclusion of on site video monitors and a 2M radio link.

Further changes planned for 1989 are a completely revised software set for the logic control, giving many remotely selectable facilities for the user by means of a DTMF system, and a set of six directional beams additionally at the receive aerial. These aerials will be selectable using the DTMF tone-accessed logic, enabling the user to switch from the Alford slot to the higher gain

beam aerial closest to his heading, thus giving better repeated pictures.

Keep up the good work down there folks, you make the rest of the repeater groups look like amateurs!

ROCKET ATV!

We have all read with interest about Bill WB8ELK and his Balloon ATV experiments. Well, Bob Rau N8IYD is also just as mad (in the scientific sense that is). Bob and his group flew an ATV transmitter and camera on short, but dizzying, flight to 4000 feet and back, on board a 2?" diameter, 109" long Argus IV rocket. The descent was a little quicker than planned due a partial failure of the parachute!. However, the results were good and the experience gained useful ... NASA watchout!

SPECIAL OFFER

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

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' supplement are available – a description of most of the various PCB's 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 orders only in favour of the BATC – do not send cash or postage stamps please.

Batches of callsign badges are sent to the engravers once per magazine cycle. Please ensure that your order reaches Members' Services by the CQ-TV close date found at the bottom of the contents page in each issue. Badges are distributed to members as soon as they have been engraved.

VIDICONS

The club has 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 the BATC, and normally must be ordered direct from equipment suppliers.

CHEAP CAMERAS FROM PHILIPS

"Video cameras will now be easier and cheaper to manufacture following the latest technology breakthrough from Philips Components".

So started an announcement in Electronics Weekly dated April 12th 1989. It seems that Philips have launched the first European colour charge coupled device (CCD) module which should greatly simplify construction of consumer video cameras.

The module is so complete that, according to Philips, manufacturers with no design experience or assembly facilities will now be able to fit the module to a chassis and lens

to create the camera. Estimates of the finished product are around £400. "The high sensitivity module features a picture resolution of up to 450,000 pixels and produces an acceptable colour picture down to low light levels of 0.45 lux on the sensor". The module measures just 195 x 42 x 48mm and weighs in at 150g.

SATELLITE CHAT

A letter from Paul van Roosum informs me that the lack of a 'Satellite Chat' column in the last issue or two has been mainly due to ill health. He hopes to furnish me with some copy in the near future and asks, in particular, for your letters and enquiries etc.

If you have any questions concerning broadcast satellites and TVRO etc please write to Paul in order that he can provide the answers and information in the column.

Paul van Roosum, Marialaan 20-22, 6541 RL Nijmegen, The Netherlands.

GB3ET

Not to be outdone by the 'ZZ mob the 'ET crew have sent me some news re their box.

Some refurbishment recently has included the replacement of the W&D receiver with a loaned satellite receiver, this has effected a noticeable improvement in the quality of through pictures.

Future plans include changing the Alford slot Rx aerial with a directional type. This would be quite acceptable as the repeater is located near the top of the IBA Emley Moor TV tower, and is shielded to one side by the tower itself. (A picture of the site is featured on the rear cover of The ATV Compendium -ed).

The TX aerial is a 'Skeleton Parabolic' device built by ANT products (don't ask me, I don't know what it is either - ed).

Also planned for change is the transmitter, as it is a little difficult to persuade the present unit that 1318.5MHz is where it ought to be! Replacement with a crystal locked unit is hoped in the near future.

A problem recently presented to the group is that a charge is now being made for the site. In order to cover this, continue with improvements and just generally maintain the machine , the group is initiating several fund-raising ideas, some of which can be seen in their advert elsewhere in the magazine.

For further information or to join the group please contact:

Barry Keedy G6LIC, 14 Lingwell Gate Crescent, Outwood, Wakefield, WF1 2PA.

DRO PUCKS FOR 3CM

With reference to the project 'A 3CM ATV Transceiver' featured in 'The ATV Compendium' our resident microwave boffin (and the author of that project) Bob *Gun Diode* Platts has advised me of an update to the section of that project dealing with converting a Satellite LNB unit for 10GHz ATV.

Bob has located a source of DRO pucks that will directly replace the existing one in the LNB, and eliminate the necessity of trying to file it down to bring it to the required frequency.

The **38DRO9.1** device will work satisfactorily with a satellite receiver, as it should return an IF around 1GHZ when tuned 10.25GHz (ATV area of 3CM).

The **38DRO9.7** device will return an IF around 600MHz or so, and as such can be used with a standard TV tuner to receive 10GHz ATV. Both devices are available in 1 off quantities quoting the above part numbers at a cost of £7.95 + VAT + £1 post & packing. Cheques or cash with orders to:

Oakbury Components 12 Oxford Road Newbury Berks, RG13 1DA

EDITORIAL

CONVENTION 90

As you have probably realised from the front cover of this issue we are holding the 1990 convention at **HARLAXTON MANOR**, nr. Grantham. This location, as the photographs show is superb. The manor house is set in many acres of ground and gardens, with ample space for parking (at last!). We shall be using various areas of the house for the show and will be giving you full details in future issues.

Why Grantham? I have heard quite a few ask already, and I daresay a few more will too. Our answer is why not? The loction is superb, it is a family spot, we will have lots of room, thus hopefully alleviating the crush of past years. There will be realistically priced refreshments available too!

OK, so some of you will have an extra 50 miles/1 hours extra journey (this includes most of your committee too). Then again, many of you will have correspondingly less journying. Not much to shout about really when we remember that we have visitors from Europe, America, and a planned visit next year by Michael Shefield ZL1ABS from new Zealand. I wonder if those that do the bemoaning are the ones that travel all over the country to other rallies.

Watch the next two issues of the magazine for all the details of next year's bumper ATV rally. Don't forget, weork out your ideas for exhibits that you want to put on/see. Exhibits showing your particular facet of ATV.

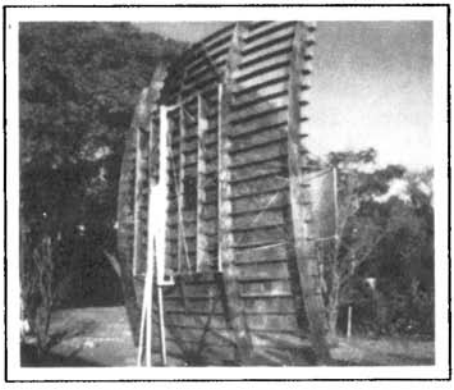
For further details and offers of help (!) or ideas for demos etc, please contact convention organiser Paul Marshall, BATC Secretary at the address shown on the 'Who To Write To' page at the front of this magazine.

SEE YOU THERE

NEW MEMBERS

We are pleased to welcome the recent new members who have joined the club. I hope that you enjoy being members of the club, there's a lot you can get out of it. Don't forget I am always on the lookout for material for the magazine, and it may be that our new colleagues may have some information, circuit ideas, etc. that could be useful to us all. Please don't be afraid to send me articles or whatever, or even to phone me for advice on such ideas. My address and phone number is shown on the 'Who To Write To' page at the front of the magazine.

One recent new member, Des Hobshausen from Honeydew, South Africa, sent me the photo shown here of his home-brew dish aerial for the 4GHz TVRO system he is constructing. Many thanks for the photo Des, welcome to the club and keep up the good work.



To all members don't forget:

SPREAD THE WORD

interest all your friends in the club and its activities. Only by maintaining the healthy membership can we be a force to be reckoned with by the Powers-that-be in the fight for our hobby in general and ATV in particular.

CQ-TV AND THE DESK-TOP PUBLISHER

The more observant amongst you, or maybe just those of you that know about these things, will notice that a few of the articles in this issue have been produced using a desk-top publishing system. For the uninitiated (until very recently that included yours truly too) the articles include 'Using oscilloscopes' and 'E-Proms'. There are others - find-em! The most obvious difference is purely visual, in that the presentation is columnated rather than the usual full-page format we use.

I would appreciate any constructive critical comment concerning the look of the magazine using this type of production. I would also like to hear from you if you have any other ideas about how you would like to see YOUR magazine.

BATC SUBSCRIPTIONS

Yes it's that time of year again. If you have received a Membership renewal form with this issue then your subs are due. You can check when you are paid up to by looking at your membership number printed in the top right-hand corner of the address label affixed to the rear of the test card insert. The first two figures of this number indicate the year to which you are paid up. **E.G:** membership number 901234 indicates that the subscription expires on Dec 31st 1990.

Unfortunately we have to announce that the subscription rate is to increase on **JANUARY 1st 1991** to £9.00 per year. Although this will be an increase of 50% it must be remembered that this is the first increase for many years, and at £9 it still represents excellent value for money.

GOOD HEAVENS! you get four issues of this excellent magazine to say the least!

With this extra money we will be able to continue producing CQ-TV at the present high quality level, we may even produce

more per year (help! – the Atari keyboard's smoking now!). We also hope to increase the range of benefits offered to members and I would welcome any ideas that **YOU** have that you would like to see the club involved in.

It would be of great benefit to the club, and not least to our hard-working Membership Secretary Dave Lawton, if, when you pay your subscriptions, you could pay for two years at a time or more. This would save a lot of Dave's valuable time (please remember like the rest of the Club's Offers, a vast amount of spare unpaid time is devoted to club business). It will also save you MONEY. The amounts are as follows:

1990 only ..... £ 6.00

1990 & 1991 ..... £15.00

1990 to 1992 ..... £23.00

1990 to 1993 ..... £30.00

As shown above, a saving of £1.00 can be made by paying up tp 1992, and £3.00 by paying up to 1993.

CREDIT CARDS

A number of members, many overseas, have enquired as to whether they can pay subs etc. by credit card. This would be a very good method, except for the cost to the club. Apart from the commission charges, the credit card companies either have a fixed charge, or a high minimum commission charge. This, unfortunately, makes it un-economic for the BATC at the moment. Your Hon. Treasurer will review the situation next year to see if it is viable then.

Again we recommend that paying for several years at a time may offset the costs of obtaining U.K. cheques for our overseas members. If any member has difficulties obtaining U.K. cheques please write to the Treasurer, Brian Summers (address on the 'Who To Write To' page) and he will see what can be done to help.

OVERSEAS MEMBERS ONLY: it is quite allright to pay your subscriptions early, perhaps by adding your subs. to an order from Member's Services or Publications. If this is the case **PLEASE WRITE CLEARLY** what the extra money is for, and don't forget to add air-mail postage if applicable. **PLEASE DO NOT** do this the other way round, by adding am order to your subs. if sent to the Membership Secretary.

COLOUR REPORTING CHART

On the rear cover of this issue is an FM colour reporting chart. We have endevoured to reproduce the relative picture levels corresponding to an average 'P' report. You may find this a useful guide to giving picture reports when working 24Cm ATV etc.

As is outlined on the chart, colour will drop out at different levels on different monitors. Thus a P3 on one monitor may be as shown on the chart, yet be in colour on another monitor. This highlights the fact that the colour, or no colour, content should not really be taken into consideration when giving a report.

We hope that you will find this chart useful and wish to thank Henry Ruh KB9FO and Graham Shirville G3VZV for the pose!

THE END

OK that's it for this issue, I hope to see some of you at the Leicester Rally. The club will be there both days, Friday 27th and Saturday 28th October. I shall be on the stand both days, so please come and make yourself known and have a chat. Oh, by the way, unfortunately the Severnside mob will also be there on the Saturday, still it will probably produce yet another photo of me and Viv to bore you with ..... 73 Mike.

THE CAMTECH 24CM FM ATV TRANSMITTER REVIEW

John Wood G3YQC

The Camtech Electronics 24cm FM-TV transmitter represents the latest addition to the FM-TV equipment market. "The design incorporates the very latest surface-mount component technology combined with extensive use of microstriplines to give a unique, small size and highly reliable product".

MANUFACTURER'S SPECIFICATION

Transmitter Frequency	1240 - 1320 MHz
RF Output Power	0.5 Watts
Modulation System	FM with full CCIR pre-emphasis
Conducted Harmonics	< -30 dBc
Power Requirements	11 to 12 Volts DC @ 350mA
Size (W x H x D)	64 x 32 x 84mm

An External Audio Subcarrier Input is Provided.

DESCRIPTION

The transmitter is housed in a very robust, finned diecast case which also acts as an efficient heatsink. On the back is an SMB RF output socket and a DC power socket, whilst the front carries audio subcarrier and video input phono sockets.

An access hole is provided so that the frequency may be adjusted without removing the board from its enclosure. This is the coarse frequency control, however, for fine adjustment a separate control is provided on the front panel.

The video deviation control is fitted on the PC board and is not accessible from the outside.

The transmitter is *not* supplied with any connectors or leads, therefore purchasers should ensure that they have the right connectors readily available or they may be ordered from Camtech with (or without) the transmitter. You will need two standard phono plugs, a 2.5mm DC Power Plug and a SMB (miniature push-on) coaxial plug.

A short length of good quality sub-miniature coax cable will also be required in order to make an adaptor lead to the more usual BNC or N connectors. I understand that Camtech will supply a SMB plug with a length of coax already fitted if required.

The documentation provided gives specification, a circuit description, advice on installation and hints on the transmitter's correct use. Also included are details on how to construct a suitable harmonic filter - a thoughtful touch.

BENCH TESTS

The following test equipment was used to carry out the lab tests:

Racal-Dana 9921 Frequency Counter
Racal-Dana 9232 Bench Power Supply
Marconi 2383 Spectrum Analyser
Tektronix 465B Oscilloscope
Racal-Dana 9087 Signal Generator
Philips PM5646 Television Pattern Generator
Hewlett Packard 435A Power Meter
Hewlett Packard 8481A Power Sensor

Frequency Measurements

When received the transmitter frequency was nominally set to 1260MHz. Tests showed that it would tune between 1181 and 1374MHz. The fine tune control had a range of 5.2MHz. Using a 12v supply two sets of frequency measurements were taken. The first (Fig.1) shows frequency drift over the first two minutes after switch-on, and the second (Fig.2) shows the drift for the next thirteen.

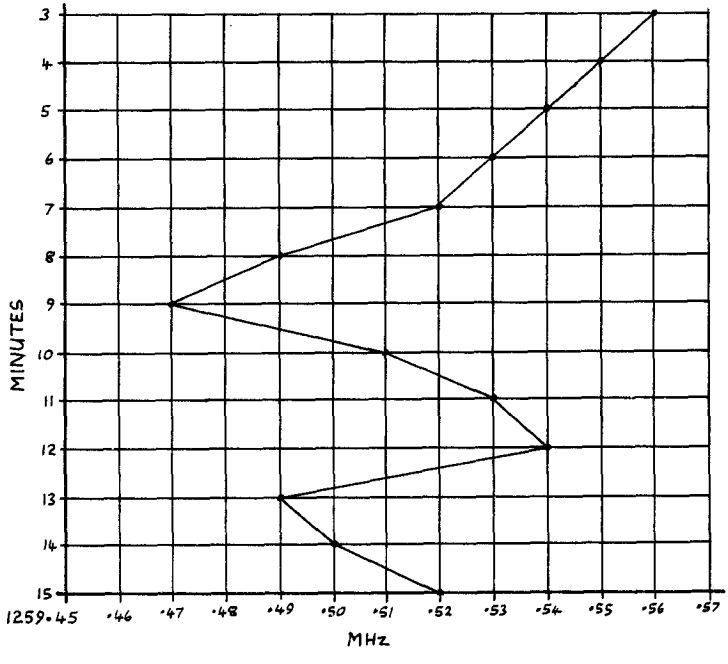


Fig.1 Frequency Drift during first 2 minutes

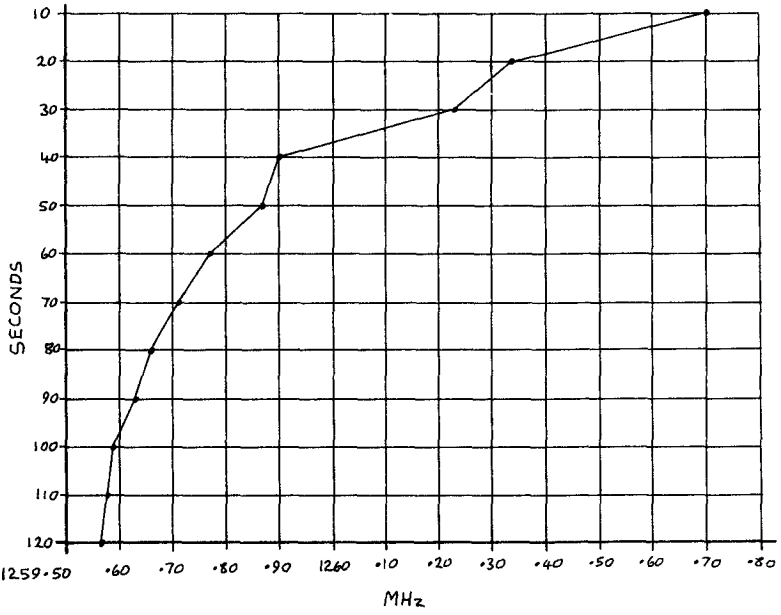


Fig.2 Frequency Drift during first 15 minutes

Output Power

The lowest measured power output was 390mW at 1181MHz, this rose to 480mW at 1370MHz. The slope between these two levels was approximately linear although there were a couple of minor 'bumps' in the response towards the high frequency end.

Because it was necessary to provide coaxial adaptors to get from the SMB output to the N-type required at the measuring equipment, it is reasonable to assume a minimum loss through these of 1dB, although this could be as high as 2. It is also reasonable therefore to conclude that the transmitter does meet its specification at its output socket.

Harmonics

Using the spectrum analyser and running the transmitter from 12v DC produced a second harmonic measuring -30dBc and the third at -38dBc. Running the transmiitter at the recommended 11.5v DC produced an improvement in the harmonic content.

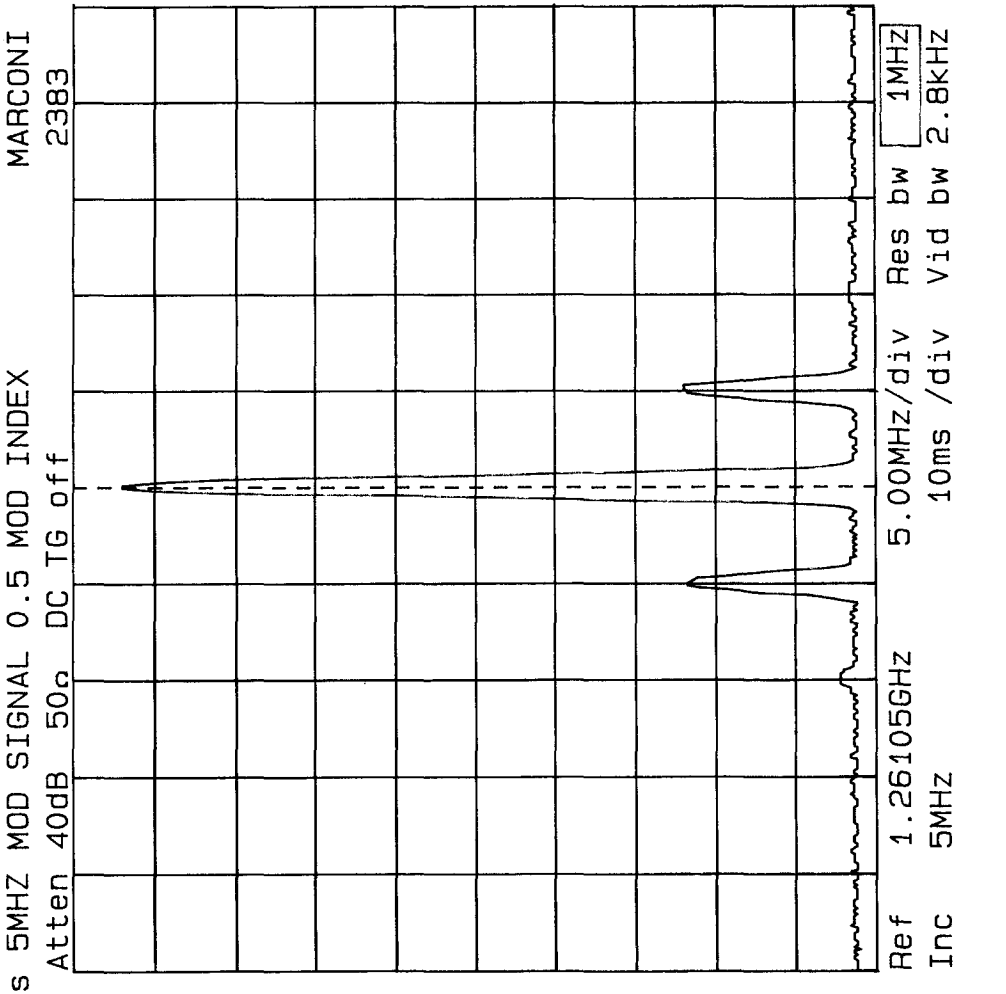

A mVolts 5MHZ MOD SIGNAL 0.5 MOD INDEX
MARCONI
2383
Atten 40dB 50Ω DC TG off
100
90
80
70
60
50
40
30
20
10
0
Ref 1.26105GHz
5.00MHz/div
Res bw 1MHz
Inc 5MHz
10ms /div
Vid bw 2.8kHz

Fig.3.

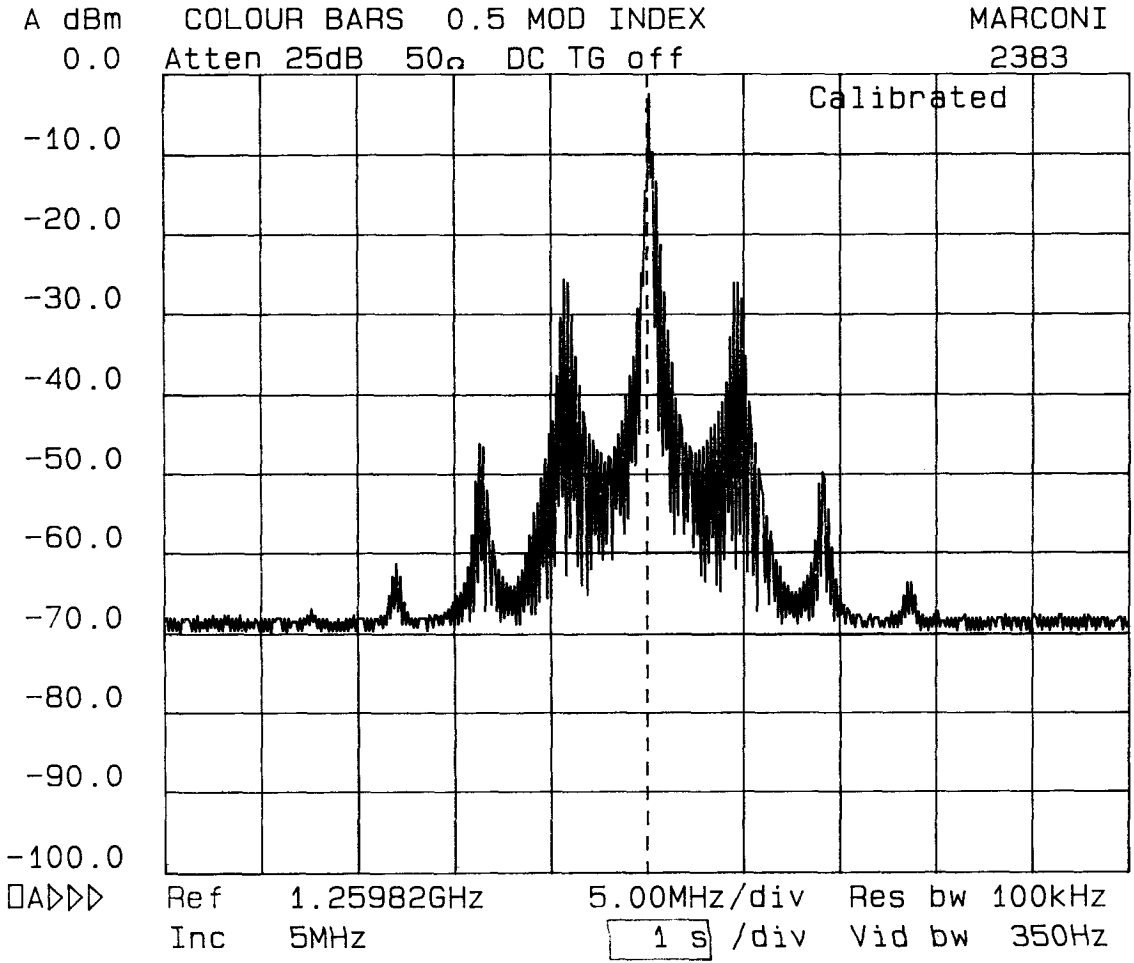

A dBm
COLOUR BARS 0.5 MOD INDEX
MARCONI
0.0
Atten 25dB 50Ω DC TG off
2383
Calibrated
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
Ref 1.25982GHz
5.00MHz/div
Res bw 100kHz
Inc 5MHz
1 s /div
Vid bw 350Hz

Fig.4.

Video

According to the manufacturers the video deviation is pre-set to around 5MHz using 1.407MHz modulation at 1v p-p and read using the first Bessel zero technique on a spectrum analyser. Whilst this produces an acceptable bandwidth, it is a little wide when compared with the normally recommended 'amateur' FM spec. (CQ-TV 142 p74).
As an experiment we applied the recommended 5MHz sine-wave to the video input and, viewing the display on a spectrum analyser, adjusted the video amplitude (deviation) from the signal generator so that the sidebands coincided with the recommended modulation index of 0.5 (see Fig.3). Having left the transmitter's deviation control as originally set, a level of 620mV p-p was required to achieve this.

Whilst the equipment was set up we felt it would be instructive to make plots of some typical colour pictures in order to see exactly the channel bandwidth required for an amateur signal. The test patterns used were obtained from a Philips PM5646 electronic pattern generator.

Fig.4 shows the spectrum of a transmission using 100% saturated colour bars and Fig.5 shows the plot using a plain red pattern. Fig.6 uses the full Philips test card. It is particularly interesting to note by the way just how closely these plots adhere to Carson's Rule Bandwidth.

Sound

Next the sound subcarrier generator was connected. It was found that there was an attenuation of around 10dB in the sound path when compared to that of the video. Taking this into account a subcarrier level of 390mV was required to produce the recommended -14dB sound subcarrier amplitude with respect to peak video. Fig.7 shows the plot of a plain red pattern with sound subcarrier added. This may be compared with that of Fig.5.

CONSTRUCTION

The transmitter's general appearance quite rightly suggests that here is a unit which will easily withstand the rigours of both shack and portable operation for many years. The solid, heavy diecast enclosure ensures that even severe knocks would be unlikely to damage the transmitter board itself. The PC board is supported by three small screws which pass through standoff pillars and feed into captive nuts on the PCB. The board itself also slides into a runner thus providing even more rigidity and strength. If the board has to be removed - say, for deviation adjustments - you may find it a little fiddly to position the three board spacers before the screws are located through them. If you turn the case and board upside down, place the spacers over the holes in the board and carefully slide it into the enclosure, the screws will then firm the spacers against the case.

The board itself is very nicely built and all the surface mount components are positioned accurately and soldered well. The quality of the board and construction is to a high standard, although those surface mounts could make future servicing a bit of a problem.

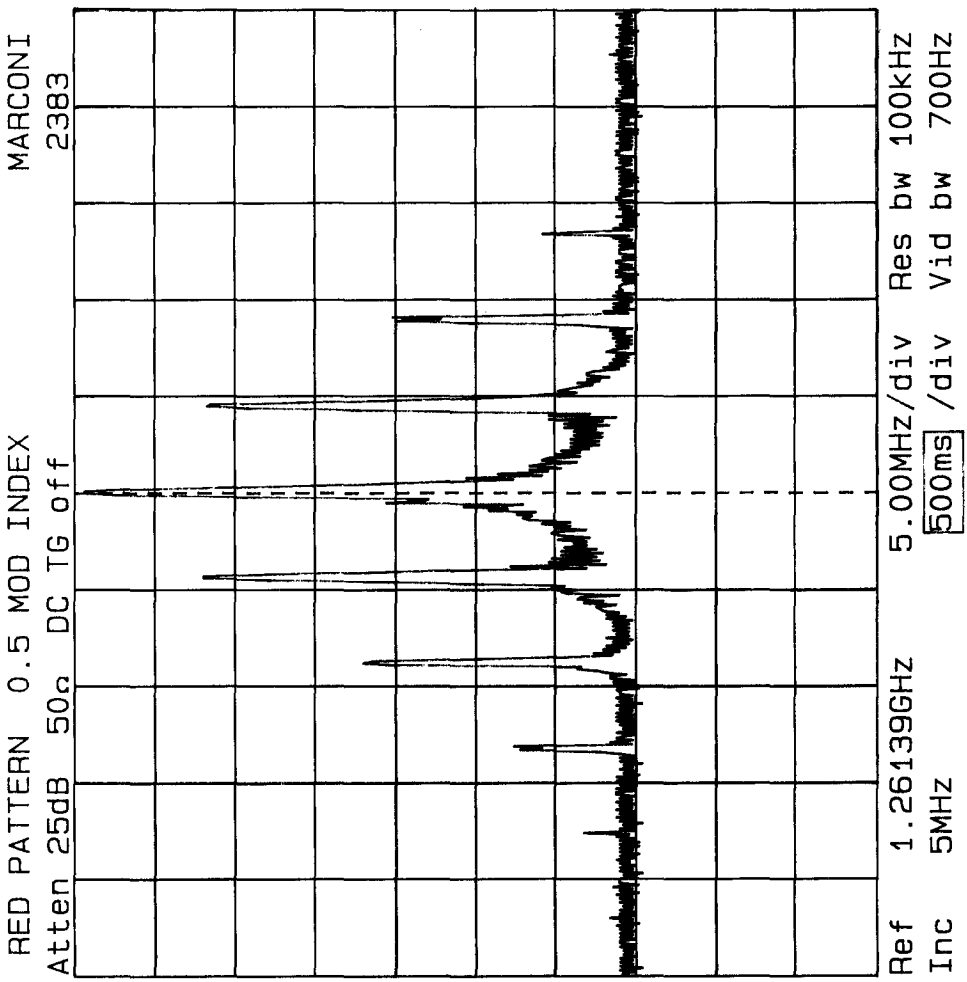

A dBm
RED PATTERN 0.5 MOD INDEX
MARCONI
Atten 25dB 50Ω DC TG off
2383
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
Ref 1.26139GHz
5.00MHz/div
Res bw 100kHz
Inc 5MHz
500ms /div
Vid bw 700Hz

Fig.5.

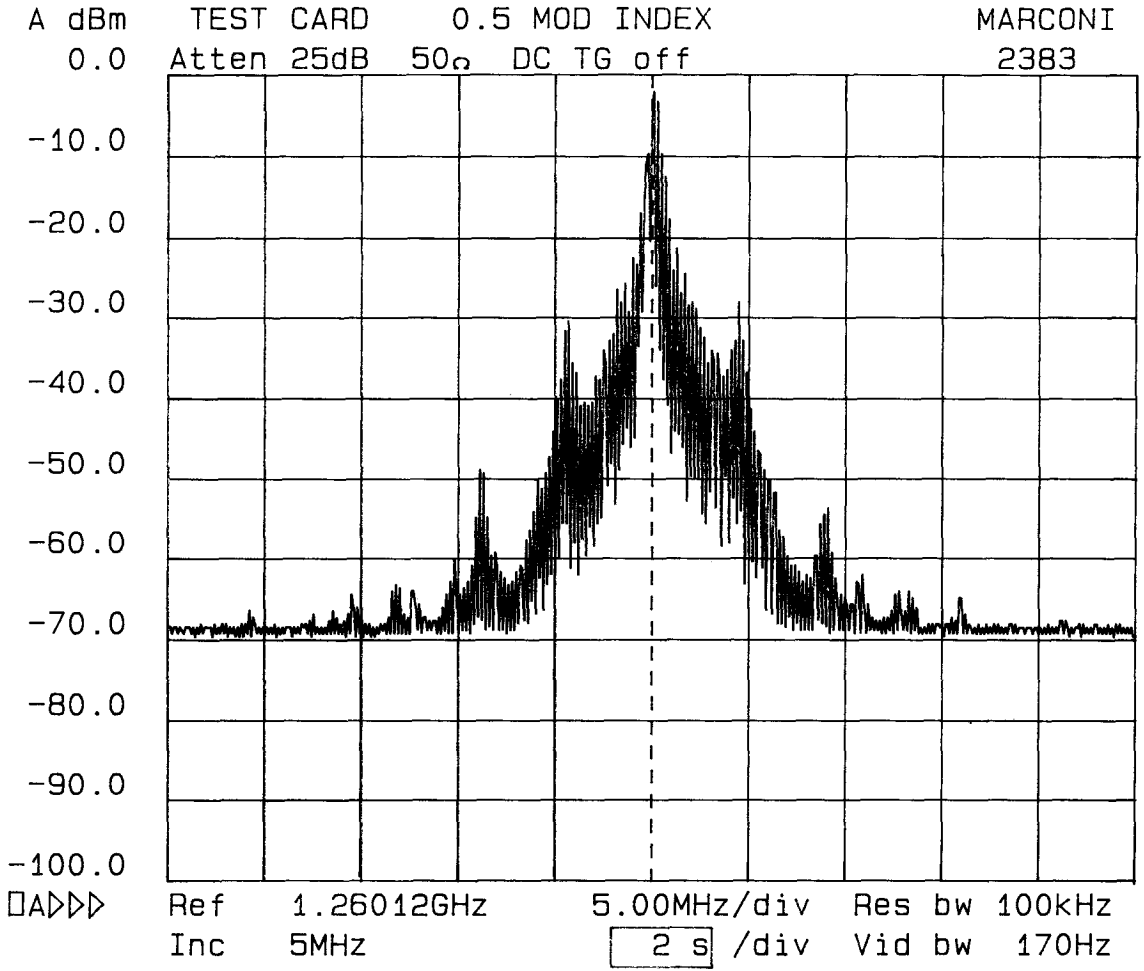

A dBm
TEST CARD
0.5 MOD INDEX
MARCONI
0.0
Atten 25dB
50Ω
DC TG off
2383
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
Ref
1.26012GHz
5.00MHz/div
Res bw 100kHz
Inc
5MHz
2 s /div
Vid bw 170Hz

Fig.6.

I have to admit some disappointment over the use of phono connectors for the video and sound signals. I expect most people at some time get into trouble with these and I would have preferred to find miniature jacks or the like there instead. I also question the use of an SMB socket for the RF output. Most of us use either BNC or N-types in our shacks, so it will be somewhat inconvenient to have to provide adaptors to suit. Surely the board could have been designed to accept a standard BNC socket?

CONCLUSIONS

This transmitter represents a very high class, ready-built product which will provide excellent quality pictures for many years to come. The facilities provided are sensible and the overall operation simplicity itself. The useful output power will probably suffice for many who only work locally, however it provides sufficient power to drive further amplifiers.

I liked:
The excellent construction
The small size
The useful power output
The feel of the controls
The quality of pictures produced

I did not like:
The phono connectors
The SMB RF output connector
The lack of access to the deviation control
The lack of essential connectors supplied as standard

SOUND SUBCARRIER GENERATOR

The companion audio subcarrier board is available as an uncased kit which is designed to interface with the 24cm transmitter as well as most other similar transmitters. This board is uses conventional components and fairly standard circuitry.

"The circuit consists of a microphone amplifier with speech compressor, audio filtering and a 6MHz oscillator/FM modulator. The oscillator is suitably buffered and has a variable output allowing adjustment of the ASC level into the user`s transmitter video modulator".

MANUFACTURER'S SPECIFICATION

RF frequency	6MHz (adjustable 5.5 - 6)
Peak System Deviation	Adjustable to +/- 50KHz
Microphone Amplifier	
Input sensitivity	4mV RMS
Audio Compression Range	>30dB
Audio Bandwidth (3dB)	200Hz - 8KHz
Audio Distortion	<5%
RF Output into 75-ohms	Adjustable 0 to 1v p-p
Power Requirements	12v DC @ 16mA
Size	85 x 43mm

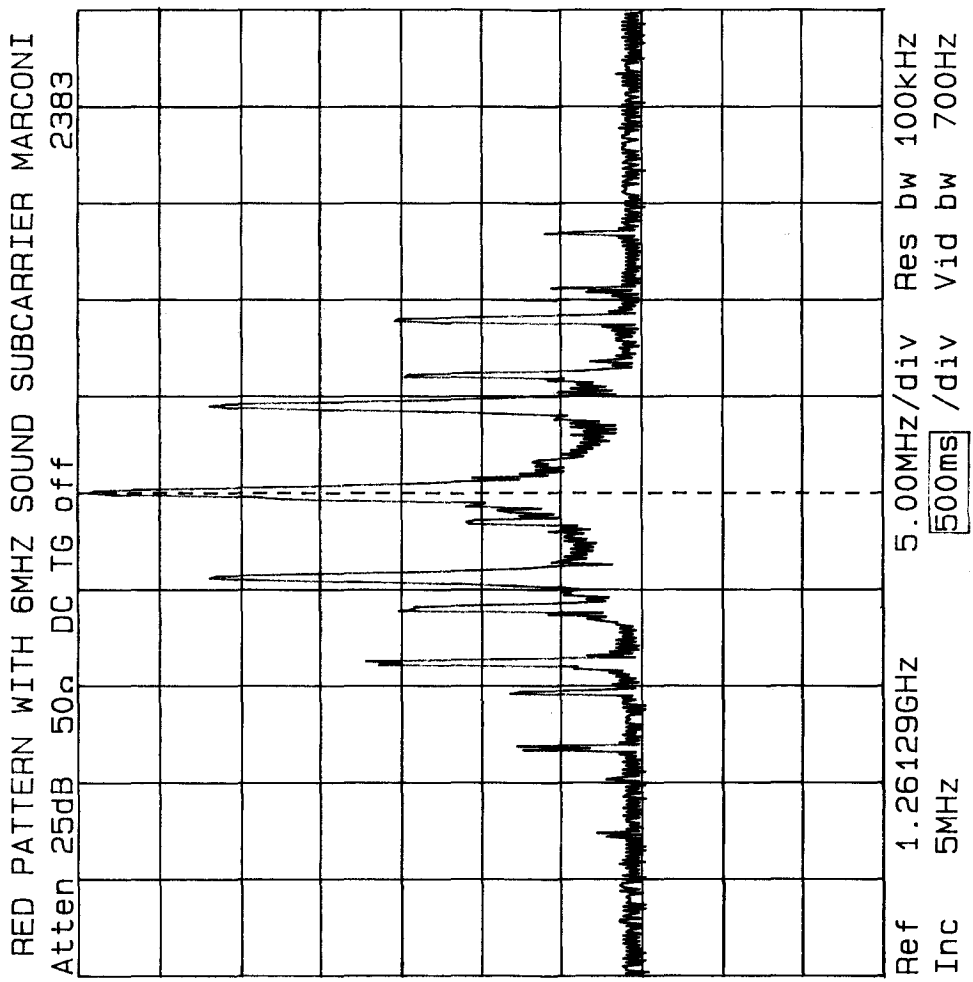

A dBm
RED PATTERN WITH 6MHZ SOUND SUBCARRIER MARCONI
Atten 25dB 50Ω DC TG off
2383
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
□A▷▷▷
Ref 1.261296Hz
Inc 5MHz
5.00MHz/div
500ms /div
Res bw 100kHz
Vid bw 700Hz

Fig.7.

The review unit was supplied ready-built so the ease of construction cannot be assessed in this review. In use however, the unit performed very well. The deviation control had a good range, re-tuning was quite straightforward and the adjustable output range should be adequate for most purposes. Frequency stability was good and audio quality was maintained through to the output. The use of a VOGAD (Voice Operated Gain Adjustment Device) is a very useful facility and certainly minimises the risk of over deviation. That, combined with the compression system ensures that the unit can be very sensitive and therefore ideal for general shack use.

It was not thought necessary to conduct rigorous tests on this unit, suffice to say that it worked well and came supplied with adequate documentation, which should ensure a minimum of problems with construction and alignment.

ON-AIR TESTS

These tests were conducted by our esteemed editor in his shack, conducting both simplex contacts and contacts via the GB3RT ATV repeater. The resulting pictures were found to be consistently good, and the unit proved very stable.

The sound subcarrier generator provided good quality audio although, as with his own his own 24cm equipment, the received audio was found at times to be noisier than the received picture strength seemed to indicate. This, however, is a common complaint with amateur FM TV, and is considered not to be the fault of the equipment, but more a result of the transmission conditions. Any weakness in received signals is more easily discerned on the audio rather than the video, thus often resulting in good pictures but poor sound.

Mike's conclusion was that the transmitter performed exceedingly well and gave good results with no necessity to make constant adjustments.

WIN THIS REVIEW TRANSMITTER AND SUBCARRIER GENERATOR

Camtech have kindly offered the review units as prizes in a competition to be held in the next issue of CQ-TV. First prize will be the Transmitter and second prize the Audio Subcarrier Generator (which can be used with most 24cm transmitters).

The competition will be open only to members of the BATC.

CAMTECH ELECTRONICS. 21 Goldings Close, Haverhill, Suffolk CB9 0EQ, England. Tel: (0440) 62779

A PARAMETRIC TRIPLER FOR 23CM

J.Cronk GW3MEO

When starting to build for 1300MHz it is very useful to have a crystal controlled RF source for setting up filters, wavemeters and finding the band. The unit described here is a tripler that can be driven from a BATC 70cm ATV transmitter board (CQ-TV 122, TV for Amateurs, Best of CQ-TV). The prototype produced around 38mW at 1306.5MHz, more than enough for a test beacon around the shack.

A considerable amount of practical experiment has gone into the design shown. Many diode types were tried, ex-tuner varicaps, BA481 Schottky barrier types, IN21's, but the well known IN914 silicon high-speed switching diode was finally chosen for the best output at this power level.

DESCRIPTION

The equivalent circuit is shown in Fig.1, with most of the inductors and capacitors being formed by the mutual arrangement of the component parts. The 435.5MHz input signal from the BATC ATV transmit board is coupled to a ¼-wave line L2 by the link L1. The leads of the parametric diode are used to form L3, which is closely coupled to a low loss ½-wave line tuned to 1306MHz by C3. This form of capacitor construction is recommended rather than the usual disc and screw type, because it overcomes the problem of poor contact of the screw and has lower self-inductance.

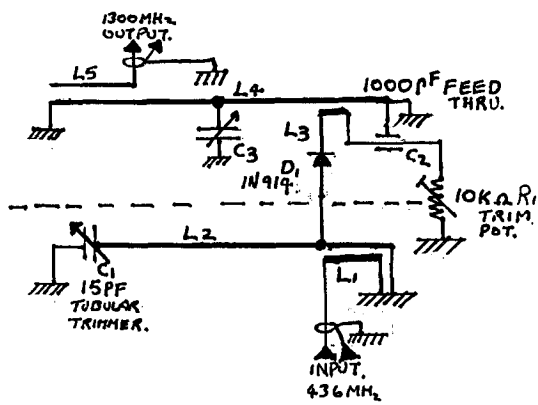


Fig.1 Equivalent Circuit.

The RF current flows through C2 (1000pF) and the DC current through R1 to generate a bias. The output can be taken from a link similar to L1, but it is more efficient at 23cm to leave the end of L5 unconnected , but close to L4. The capacity thus formed can be made to tune out the reactance of L5.

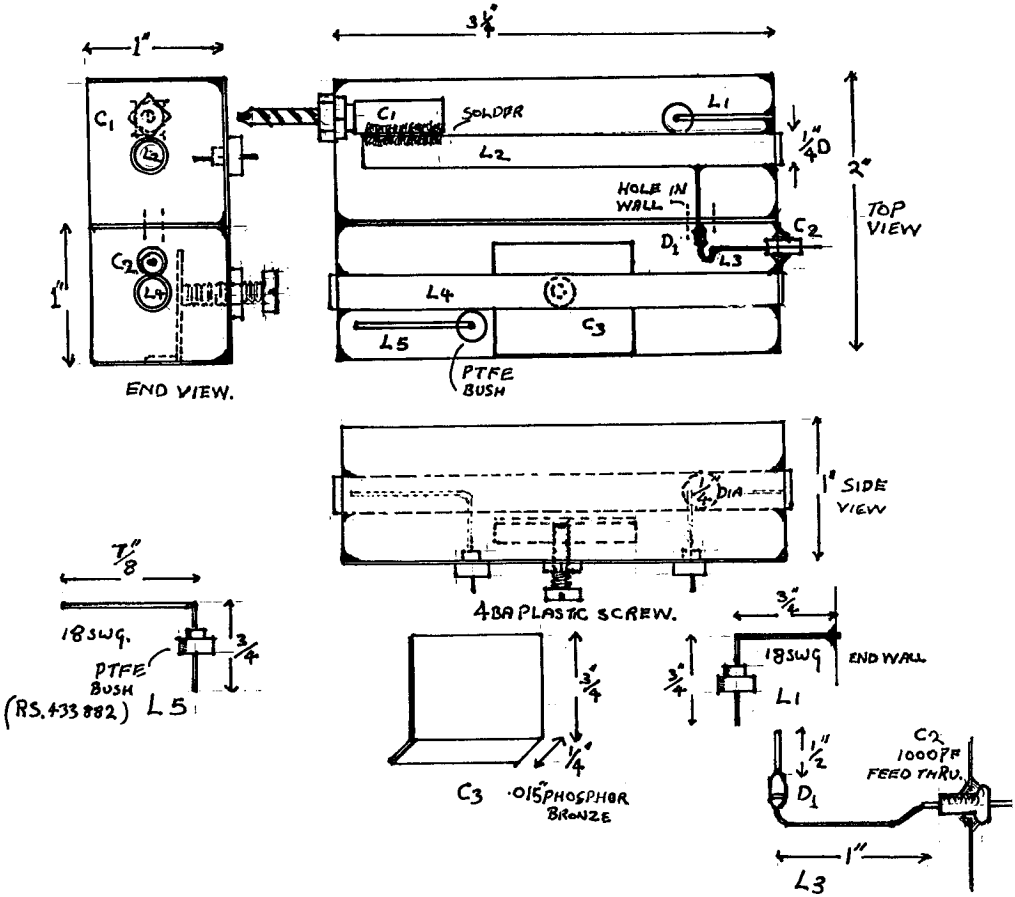


Fig.2 Construction Details

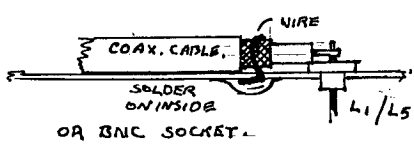


Fig.3 Input & Output Connections

CONSTRUCTION

The cavities (see Fig.2) can be made up from PCB material or sheet metal. I used a combination of both. A slightly larger than 3¼" x 2" piece of 3mm single sided PCB material for the base, a 10½" x 1" strip of 20 thou. brass bent into a 3¼" x 2" rectangle for the walls and a strip of a double-sided PCB material for the divider. The ¼" diameter conductors are pieces of copper pipe, but thin walled brass tube would be simpler to solder.

The capacitor C3 is made from a 1" square of thin springy metal 15 thou. phosphor bronze with a bend ¼" from one edge.

The connections to the links L1 and L5 could be BNC sockets. A cheaper alternative method for connecting the co-axial cable using R.S. PTFE bushes (part no: 433 882) is shown in Fig.3.

An adequate capacity soldering iron is essential, I had to use two Weller TCP1 soldering irons to solder the copper tubes. If thin brass is used for the sides do not attempt to drill the ¼" holes with an ordinary twist drill or the holes will not finish round. Drill a small hole and file or ream to the final size.

The final assembly is commenced by soldering the sides and ends to the base. Next fit the divider strip and make the holes and fit the lines L2 and L4, and the capacitor C1. Clean off all the flux and polish up the metalwork, this is very important as RF at these frequencies is very easily absorbed by foreign bodies! Solder C3 on the inside and bend down so that the plastic screw can push it towards L4. Finally add L1, L5, C2 and the diode.

SETTING UP

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

COMPONENT LIST

R1 ... 10k Trimpot
C1 ... 15pF Tubular Trimmer (Philips)
C3 ... see Fig.2
L2 ... see Fig.2
L4 ... see Fig.2
D1 ... 1N914 Diode
C2 ... 1000pF Feed Through
L1 ... see Fig.2
L3 ... see Fig.2
L5 ... see Fig.2

ATV CALLING..144.750

CAMERA REGISTER NEWS

Brian Summers G8GQS

Since my article in CQ-TV 146 several interesting items have come to light, including one camera the variety of which I thought no examples had survived. If you have an old ex-broadcast camera please contact me. The registry is trying to locate the following cameras, Pye MK II (Photicon), Pye MK V or an EMI 204 colour camera ?

I also have been contacted by a couple of people who want to buy large cameras, something like EMI 2001's, so if you are thinking of selling I can put you in touch with them. I can also offer advice on the operation of large cameras and Outside Broadcast Vehicles, so contact me for tea and sympathy.

A recent acquisition of a 30mm Plumbicon conditioner has enabled me to treat my tubes and sort a few duff ones out. If you want yours doing give me a ring and we'll try and sort the transport out.

Brian Summers G8GQS, 29 Perivale Grange, Perivale Lane, Greenford, Middx. UB6 8TN. Tel: 01 998 4739

FUGI LENS MODIFICATION

M.Perry G8AKX

There appears on the second-hand market from time to time zoom lenses designed for portable cameras. These lenses have motorised zoom and servo actuated irises. The zoom mechanism can be used manually, but the iris is spring loaded to be closed unless servo actuated.

The following description is based on converting a Fugi 12.5 to 75mm Zoom lens so that the iris can be opened by varying degrees manually. Previously it was simply wedged fully open.

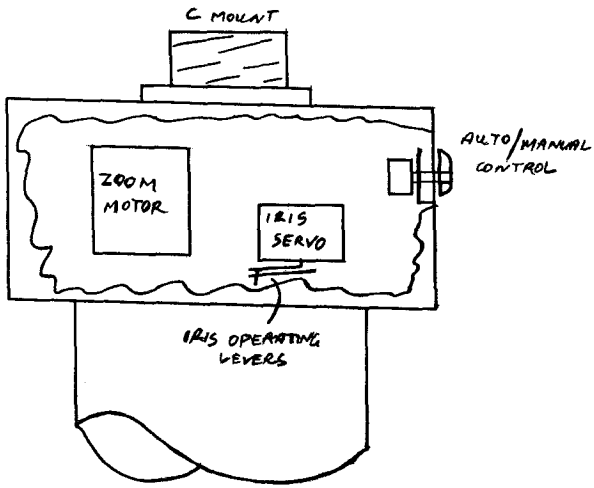


Fig.1 Lens Cut-away Diagram.

The diagrams shown in Fig's.1 and 2 show the basic mechanisms inside the lens and their modus operandi. As the iris is sprung return to close it only needs to be 'pushed' to open, and will return to the closed position under action of the spring when released. This action is very light, thus very little force is required to actuate this movement.

The iris servo levers are just accessible and can be operated by a straight push. The principle adopted, shown in Fig.3, is to use a nut running along a screw when the screw is rotated. A spring wire attached to the nut then pushes the iris lever and subsequently opens the iris. An ideal source of suitable spring wire proved to be paper clips. The dimensions quoted were as used in my conversion and they are not critical. The screw size used will depend upon the bush size available.

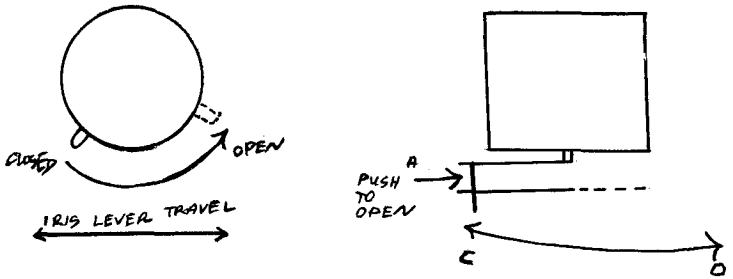


Fig.2 Iris lever operation.

DEMOLITION INSTRUCTIONS!

First remove the cover from the actuator enclosure and ensure that the iris lever is accessible. Remove the circular cover around the C-mount and then the black locking ring.

NOTE: I found the screws in the cover very tight and being very small could be easily damaged. Normal screwdriver action caused the driver to slip from the head of the screws being such a small philips type with little grip. The method I used, although it may seem obvious, was as follows: I placed the lens on a firm surface with the C-mount face upwards. Placing the screwdriver in the slot I applied full body weight pressure over the screwdriver and eased the screws loose by turning the shaft of the screwdriver with a pair of pliers. All I can say is it worked for me -- but no guarantees!

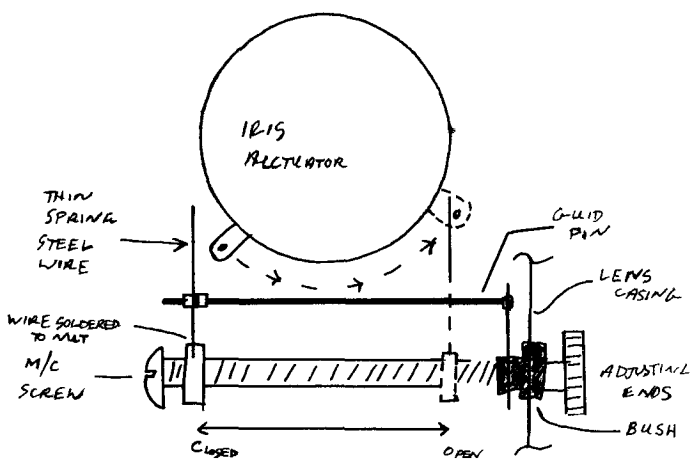


Fig.3 Principle of Operation.

Next, prise out the metal clip on the auto/manual knob and remove the screw in the centre of the knob. Remove the knob. Undo the screw and alloy pillar (caution, very soft alloy material) holding the potentiometer bracket. Take the wires from the potentiometer and and tuck well out of the way, remove the potentiometer from the lens.

THE MOD!

Referring to Fig's. 4 and 5 the details of the modification are as follows: Find yourself an old miniature volume control with a brass centre bush that is the right size to fit in the hole in the lens casing from where the auto/manual control has been removed. Take the potentiometer apart so that you are left with the bush and the plate still attached. Find a steel machine screw that is a snug fit inside the bush, with little or no side play (in my case a 2BA was found just right) and four nuts to fit. One nut, preferably brass, is run onto the screw fully up to the head. This nut must be a loose fit and easily spun on the screw. Thread a second nut onto the screw such that there is 15mm between the screw head and the nut. Lock this second nut to the screw, either by squeezing in a vice or by battering it with a hammer. As much as you might enjoy this bit please refrain from damaging the threads or bending the screw! The engineers amongst us may prefer to drill and pin the nut to the bolt).

A sleeve in the form of a plain brass spacer is needed which is a smooth sliding fit on a 6BA steel screw. Drill the plate attached to the bush (the one made from the potentiometer) and fix the 6BA screw to the plate using a lock nut so that the screw is 4 to 5mm away from the fixed nut on the 2BA screw (see Fig.5). Fit the 2BA screw into the bush a temporarily hold in place with a locknut. Insert the whole assembly into the lens as shown in Fig.4 and ensure that nothing fouls. Also ensure that the alloy pillar removed from the lens earlier can be refitted (if not do not worry at this point as the pillar is best left out whilst working on the lens).

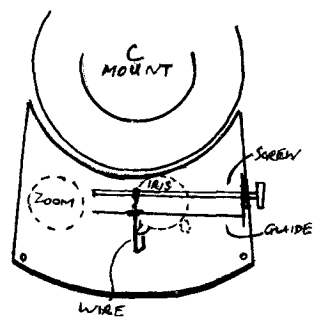


Fig.4 Fitted into Lens

Now for the tricky part! As the sides of the lens housing are not square or parallel, carefully bend the plate holding the 6BA screw so that the screw is parallel to the 2BA screw, and the same distance from the top of the servo at both its ends. In other words, confirm that the 6BA screw is the same distance from the iris lever in its open and closed positions.

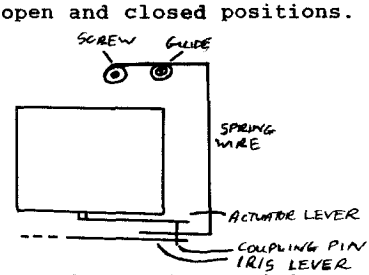


Fig.6 Wire Position

Bend a piece of the spring wire (paper clip) at right angles to form one end. CAREFULLY lower the wire into the lens and position it between the iris and servo levers. mark the wire at a point level with the top of the 6BA sleeve, remove and bend at right angles at the mark (see Fig.6). Check the position where the wire now lines up with the sleeve,, whilst just not touching the lens body. Lay the wire across the sleeve and the 2BA nut and solder in place.

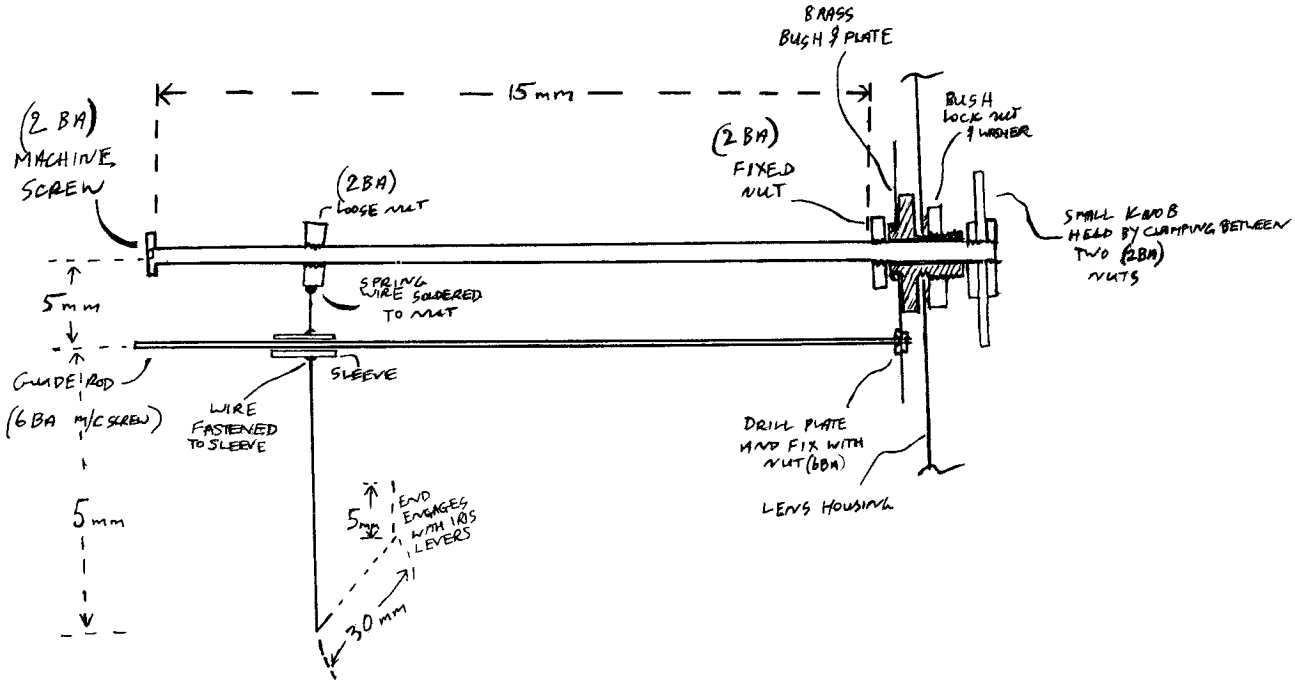


Fig.5 Construction details.

Very gingerly turn the 2BA screw and ensure that the iris lever is gently pushed open, not bent or forced vertically. Also check that at full travel to open that the wire is only giving a very small amount of tension to the lever. Adjust as necessary until all is perfect. In the fully closed position it does not matter if the wire moves away from the lever completely. When all is satisfactory fix a knob to the 2BA screw using locking nuts, so that the screw rotates freely but with minimal side movement.

Before refitting the covers and after confirming that all works correctly apply a minute drop of oil to both screws. If difficulty is experienced refitting the alloy pillar make a small bracket to line up with the screw holes in the lens and cover missing the obstructing modification. If the alloy pillar can be refitted add a washer under it to make up for the loss of the original bracket and bring it up to the same height as before.

ARCHIVE FILM APPEAL

Andy Emmerson G8PTH

The BATC has always been a progressive organisation, indeed our members have achieved an impressive collection of 'firsts' in the television field. All the same, in the club's 40th year it is also appropriate that we conserve the best of the past so we can see where we have come from.

We are particularly keen to borrow old video and film material on ATV and TV subjects. We know the club has been featured in films made by BATC members and on national TV, but none of this is in the club's archives.

If you have or know of anything like this, would you like to let us know? All expenses will be repaid andyour original material will be copied carefully and returned to you. Please get in touch with:

Andy Emmerson, 71 Falcutt Way, Northampton, NN2 8PH
or ring him on 0604-84413

ATV WORKING - 10.25GHZ

USING OSCILLOSCOPES

Part–1

The majority of the information contained in this series of articles has been gratefully supplied by Tektronix U.K. Ltd, and we wish to thank them for permission to reproduce it.

Mike Wooding G6IQM

If you watch an electrical engineer tackling a tough design project, or a service engineer troubleshooting a stubborn problem, you'll see them grab a scope, fit probes or cables, and start turning knobs and setting switches without ever seeming to glance at the front panel. To these experienced users, the oscilloscope is their most important tool, but their minds are focussed on solving the problem, not on using the scope. Making oscilloscope measurements is second nature to them. It can be for you too, but before you can duplicate the ease with which they use a scope, you will need to concentrate on learning about the scope itself; both how it works and how to make it work for you.

An oscilloscope is quite possibly the most important piece of test equipment in the ATV'ers shack, but unless you are versed with its correct operation and the full facilities available with it, then you will not be able to fully realise the scope's potential. The purpose of this series of articles will be to help you learn enough about oscilloscopes and oscilloscope measurements, so that you will be able use these measurements tools quickly, easily, and accurately.

In this series I shall describe the functional parts of scopes and the controls associated with those parts. I shall also cover the use of probes and the various types useful in the ATV shack. Later in the series I shall be looking at waveforms and discussing the various parts of waveforms important when using scopes. Finally, I shall be looking at measurement techniques and also examining the way in which oscilloscopes can affect the waveform being looked at.

The examples I shall be using, and the diagrams and photos etc that I shall be reproducing, will all be used courtesy of Tektronix Inc., and will feature either Tektronix models 2213 or 2215 oscilloscopes. However, the information will be general in nature and will be applicable to any oscilloscope in use.

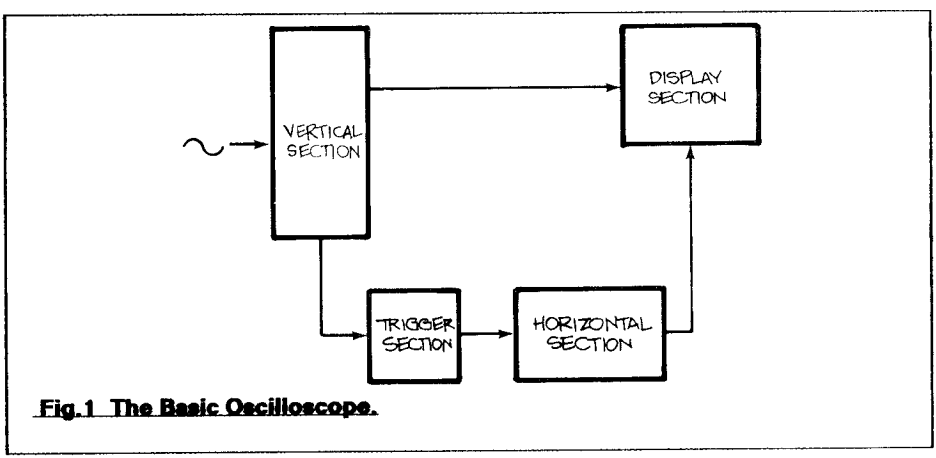


Fig.1 The Basic Oscilloscope.

INTRODUCTION

Almost anything can be measured using the two-dimensional graph drawn by an oscilloscope. In most applications the scope shows a graph of Voltage on the vertical axis, versus Time on the horizontal axis. This general purpose display presents far more information than is available from other test and measurement instruments, such as frequency counters or multimeters. For example: with a scope you can determine how much of a signal is DC, how much is AC, how much is noise (and whether or not the noise is changing with time) and what frequency the signal is as well. Using a scope lets everything be seen at once, rather than requiring several separate tests to be made.

Most electrical signals can be easily connected to the scope with either probes or cables, and then for measuring non-electrical phenomena transducers are available. Transducers change one kind of energy into another. Speakers and microphones are two examples; the first changes electrical energy to sound waves and the second converts sound into electricity. Other typical transducers can transform temperature, mechanical stress, pressure, light, or heat into electrical signals. It can be seen that given the correct transducer the test and measurement capabilities are almost endless with an oscilloscope.

Making measurements is easier if you understand the basics of how a scope works. The instrument can be thought of in terms of the functional blocks shown in Fig.1; vertical control section, trigger control section, horizontal control section and the display system. Each is named for its function. The vertical control section controls the vertical axis of the graph; any time the electron beam that draws the graph moves up or down it does so under control of the vertical section. The horizontal control section controls the left to right movement of the beam. The trigger control section determines when the oscilloscope draws; it triggers the beginning of the horizontal sweep across the screen. The display system contains the cathode-ray tube, where the graph is drawn.

THE DISPLAY SECTION

A simplified block diagram of the Sisplay Section is shown in Fig.2. The oscilloscope draws a graph by moving an electron beam across a phosphor coating on the inside of the Cathode Ray Tube (CRT). The result is a glow for a short time afterward tracing the path of the beam. To draw the graph the vertical control section of the oscilloscope supplies the Y (or vertical) coordinates and the horizontal control section the X (or horizontal) coordinates. There is also another control section known as the Z circuitry which controls whether or not the electron beam is on or off and how bright it is when on. A grid of lines etched on the inside of the faceplate serves as the reference for the measurements; this is the Graticule shown in Fig.3.

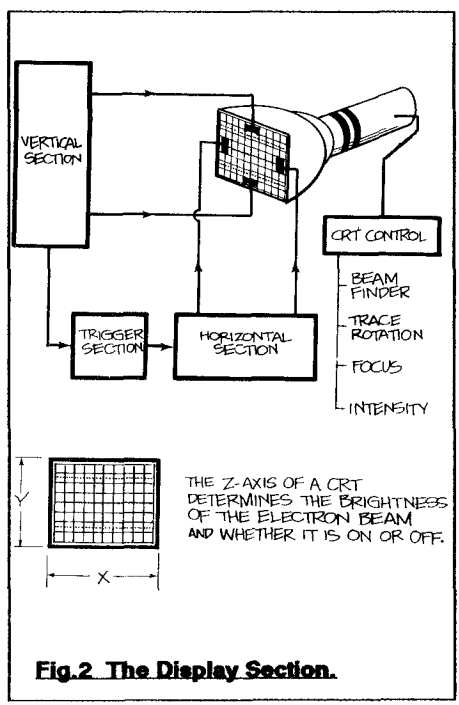


Fig.2 The Display Section.

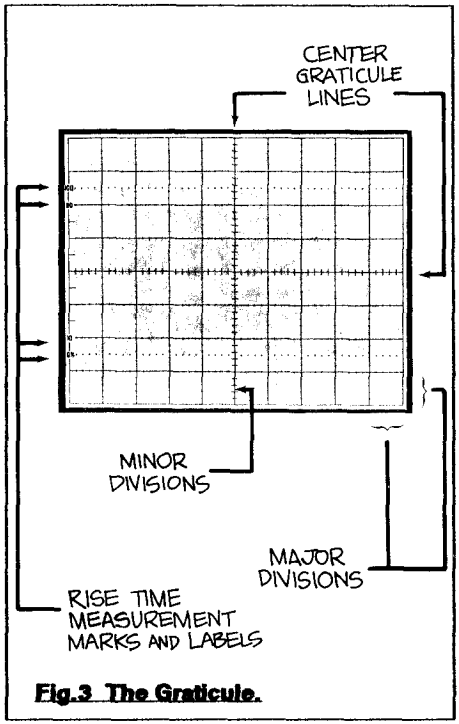


Fig.3 The Graticule.

The Graticule is etched on the inside of the faceplate to reduce parallax errors, which occur when the trace and the graticule are on different planes and the observer is shifted slightly from the direct line-of-sight. Though many different sizes of CRT are used in different scopes, graticules are usually laid out in an 8 x 10 pattern. Each of the eight vertical and ten horizontal lines block off major divisions of the screen. The labelling on scope controls always refers to these major divisions.

Common controls for display systems include Intensity and Focus; less often there will also be Trace Rotation and Finder controls.

INTENSITY ... The intensity control adjusts the brightness of the trace. It is necessary because the scope may be used in different ambient lighting conditions and with many kinds of signals. For instance, on square waves it will be necessary to change the intensity to view different parts of the waveform, because the slower horizontal components will always appear brighter than the faster vertical components.

Intensity controls are also useful because the intensity of a trace is a function of both how bright the beam is and and how long it is on screen. As different sweep speeds are selected (a sweep is one movement of the electron beam across the scope screen) by using the timebase controls the beam on and off times change, and the beam has more or less time accordingly to excite the phosphor.

On most scopes the intensity has to be turned up or down to restore the initial brightness. However, on some scopes an automatic intensity circuit is provided which compensates for these changes, maintaining the brightness at a manually preset level.

FOCUS ... The scope's electron beam is focussed on the CRT faceplate by an electrical grid within the tube. The focus control adjusts that grid for optimum trace focus. Again, some oscilloscopes have an automatic focus circuit, which maintains the focus settings over most of the intensity range.

TRACE ROTATION ... Available on some oscilloscopes is a trace rotation control. This control allows the user to electrically align the horizontal deflection of the trace with the fixed graticule. To avoid accidental misalignment this control is usually recessed and accessible only with a screwdriver. This adjustment may seem more of a calibration setting than a user one, however, the earth's magnetic field affects the trace alignment and, as a scope may be used in several different locations, then this control becomes a must for accurate measurements to be made.

TRACE FINDER ... As this control's name suggests it allows the user to locate the 'position' of the trace. It may at first seem difficult to lose the trace, but I can assure you that it is quite simple to so do. When

measuring waveforms with, say, large DC offsets and measuring with DC coupling, the trace may be offset vertically by a large amount, which may be beyond the dynamic range of the scope's input and vertical control circuitry. Or, if triggering on a particular point of a complex waveform then there may be a large horizontal offset. If this happens then it is impossible to actually get the trace on the screen.

So how do you know that this is the case and not that there is another reason why the trace is not visible (ie: wrong triggering or no waveform actually present)? The answer is, before severe twiddling of the scope controls sets in, to locate the trace and confirm that it is offset or whatever. The trace locate push-button allows just this by indicating on the screen whether the trace is offset above or below the centre of the display, or whether it is actually on the screen, but due to triggering problems is not being swept correctly or at all. With this button pressed in it is possible to adjust the vertical and horizontal position controls to place the trace in the required position on the screen.

This concludes part-1 of this series, in part-2 I shall be looking at the Vertical Control Section and the user controls associated with it.

BBC COMPUTER CONTROLLED SSTV

WITH THE G3WCY/G4ENA SCAN CONVERTER

Hardware: Brian Roberts G4VYG and Brian Shaw G6HFS
Software: Dave Gilday

The system described here allows the G3WCY/G4ENA Slow Scan TV scan converter system to be remotely controlled using a BBC computer. The system requirements are a BBC model B 32k or B+ and one or two disc drives.

The loss of picture quality when loading and saving SSTV pictures by using the usual cassette tape recorder is probably one of the morte annoying aspects of the system. If only the excellent pictures obtained from the camera and off-air could be saved from the scan converter's memory and then loaded back without any loss of definition.

INTRODUCTION

Having already made an interface that switched other signals into the scan converter's memory (see Grey/Colour Bars for the 'WCY Scan Converter, CQ-TV 139 p-38) we wondered if it would be possible to extract the four-bit picture data from the scan converter and save it to floppy disc via the shack computer.

A chance chat with a friend who is a software 'Guru' gave us the necessary impetus to carry on, and the resulting system, two of which have been working for over a year, has exceeded what we initially set out to do.

An important point with this modification is that once the interface board is fitted the scan converter will still perform as a stand-alone unit if the computer is disconnected or switched off. You do, however, still have the Grey/Colour Bar facility.

The scan converter interface connects to the BBC I/O port. The cassette port motor control connections can be used to switch the transceiver PTT line as they are toggled by the software.

The software is contained in an 8k E-prom in two parts. The first part is in Basic and is called-up by entering *SSTV. The second part is control code called by the Basic program. You can modify and save the downloaded program if required, but the E-prom must be fitted for the whole system to work.

When the program is running the computer takes control of the scan converter; you can load/save, receive/transmit in 8-sec mono or 24-sec colour (if RGB memories are fitted) and the loaded pictures are exactly the same quality as they were saved. There is a Menu of thirteen options displayed on the computer monitor showing the above options plus others, such as a character generator that will superimpose captions over the picture, and loading of BBC mode-2 images to the scan converter's memory.

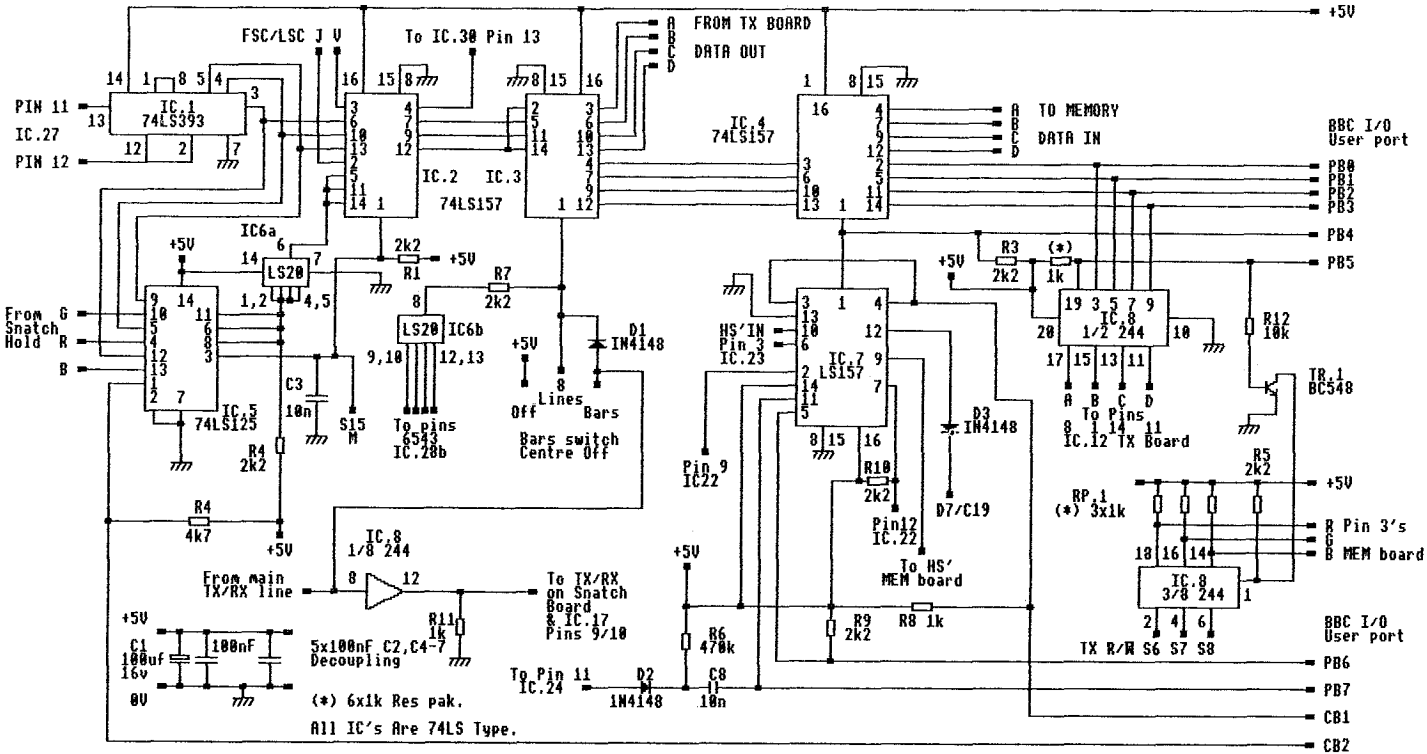


Fig.1 BBC Computer Interface Circuit for G4ENA/G3WCY SSTV Scan Converter... By G4VYG/G6HFS (C) 1988

CIRCUIT DESCRIPTION

Referring to the Interface circuit shown in Fig.1; IC's 1,2,3,5 and 6 perform the same functions as the original Grey/Colour Bar circuit. IC4, a quad 2 to 1 line data selector, channels data either from the transmit board, or from the computer, to the scan converter memories.

One half of IC8, an octal tri-state buffer, takes SSTV picture data from the memories to the computer port. Three quarters of the second half of this IC are used to control the memory read/write lines, and the last gate buffers and controls the SSTV transmit\receive changeover.

The remaining IC7 is used to control sync functions and to switch out of circuit the scan converter's line oscillator during computer load/save routines.

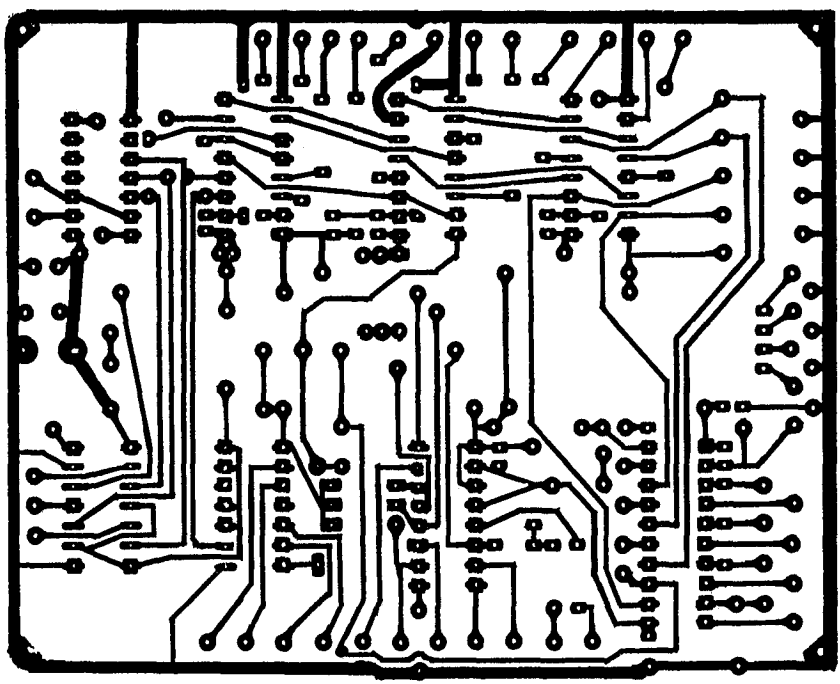


Fig.2 PCB Layout Component side (actual size).

CONSTRUCTION

Construction of the interface could be carried out using Veroboard, but a printed circuit board is a much neater option. Accordingly a PCB layout is shown actual size in Fig.2, with a component overlay in Fig.3.

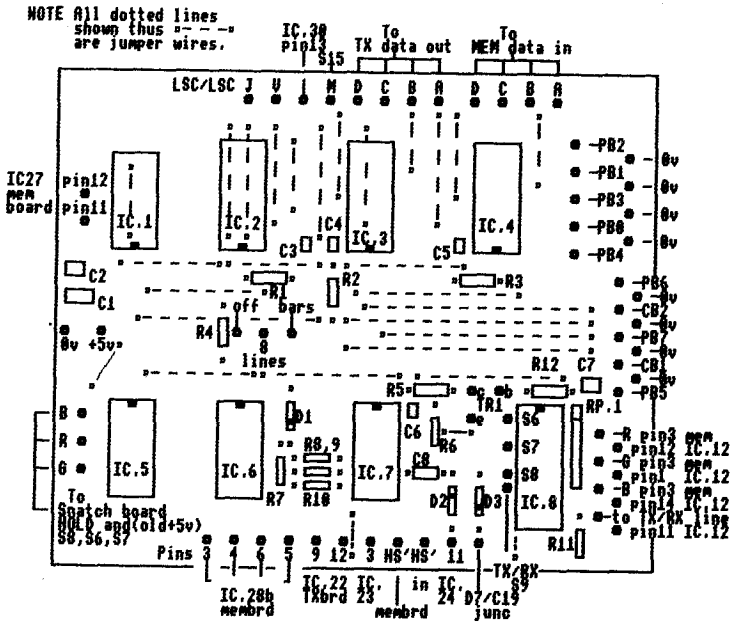


Fig.3 Component Overlay (actual size).

A point to note regarding SW1, the 'Bars' switch: this is a miniature centre-off type. In the UP position no bars are produced, in the MID position 8-lines of grey scale will be present at the bottom of a picture loaded from the camera. If an RGB picture is 'snatched', these bars will be colour. With the switch in the DOWN position, the whole frame will be loaded with either grey scale or colour bars, depending on the mode selected.

Connect the interface to the computer with a length of 20-way IDC cable, no longer than 1 metre.

INSTALLATION

Remove the three leads V,J and IC30 pin-13, from S15 and fit to the board. Break the ABCD data leads from the transmit board to memory and fit to TX DATA IN and MEMORY DATA OUT of the interface.

Break the leads from S6, S7 and S8 to pin-3's of the memory, and TX/RX

lead from S9, and route via the interface. Also break the connection at pin-12 of IC22 on the TX board of the scan converter and route via the interface.

Break the lead from HS on the transmit board to HS on the memory board and route via the interface. All other connections are direct.

SOFTWARE

Customised (your own callsign) software in an E-prom can be obtained from the addresses shown below, together with a comprehensive description of the software functions and how to drive the system. A scale print of the PCB layout, the component overlay, a larger (A4) print of the circuit and a function key-strip for the character generator are also included.

The total cost of the E-prom and the paperwork is £14.95, inc postage. The paperwork can only be supplied upon receipt of an A4 SAE.

Brian Roberts G4VYG, 52 School Lane, Toft, Cambridge, CB3 7RE.
Tel: 0223 262895

Brian Shaw G6HFS, 10 Merton Walk, Hardwick, Cambridge
Tel: 0954 210980

ATV & THE ELECTRON COMPUTER

Bob Platts G8OZP

The Acorn Electron computer, like its larger brother the BBC, has many uses in the ATV shack. Both use the same language and many BBC programs will run, or can be adapted to run, on the Electron. The main limitation is the Electron's smaller memory, though expansion packs have been produced. Electrons' can now be found on the surplus market for around £10.

The machine is designed to be powered from an external 18V AC supply. The switch-mode PSU within the computer converts this to the supplies required by the logic etc. A simple modification allows the machine to be operated from a DC source in the range 9 to 20V, thus enabling it to be used in portable applications.

Remove the four screws from the underside of the computer and separate the case, taking care not to damage the keyboard ribbon cable that plugs into the PCB. After marvelling at the low IC count (most of the work is done by the VLSI device next to the PSU) unplug the PSU from the main board. Remove the three securing screws and lift out the PSU PCB. Locate and remove D2, D3 and D4. Fit a wire link in place of D4. Re-assemble the PSU onto the main board.

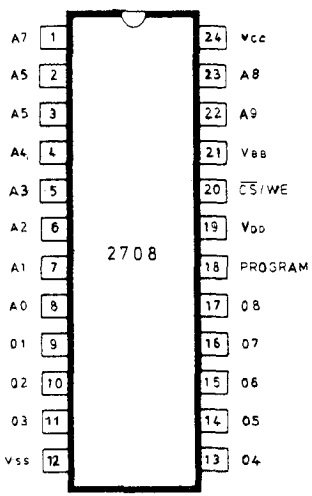
The supply connector should be wired to give +ve on the outer and -ve on the inner of the plug. The machine will not be damaged by incorrect polarity.

As with its larger brother the BBC, the Electron does not provide a composite video colour output as standard. To obtain this output locate and short out LINK-4, located below the keyboard connector.

E-PROMS

Trevor Brown G8CJS

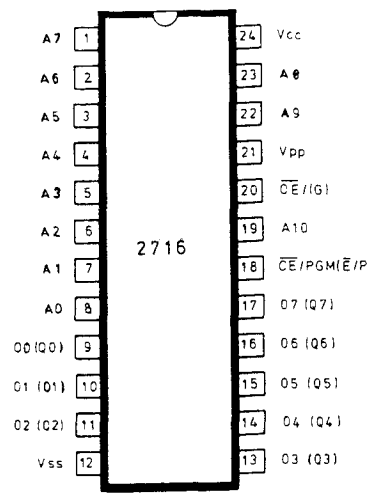
E-proms are very useful building blocks for any circuit and should not necessarily be reserved as devices that are used solely in computers. The new 'ATV Compendium' has several projects within its pages that make extensive use of E-proms, projects such as a 'Caption Superimposition Generator'. This is a modern version of the very popular 2513 based unit which first appeared in the original blue 'ATV Handbook. E-proms are also used in the 'Teletext Pattern Generator' and again in the 'Electronic Test Card', both projects also featured in the Compendium. These are all E-prom based units that don't have a micro-chip in sight! Fig.1 shows the pin-outs of the most popularly available devices: 2708, 2716, 2732, 2764 and 27128 E-proms.



2708 E-PROMS

The 2708 devices have been around for quite a long time now. Although at the time of their original manufacture they created sweeping changes in circuit design, bringing within the grasp of everyone the first home micro-computers, they have in the light of later device specifications two major disadvantages. Firstly, they require a split rail power supply, with a negative voltage on pin-19. Secondly, the device is limited by only having 1k bytes of memory storage. This is a commonplace complaint these days, but it still feels strange; after all, only two or three years ago, we did it all with 2k RAM in a ZX81!

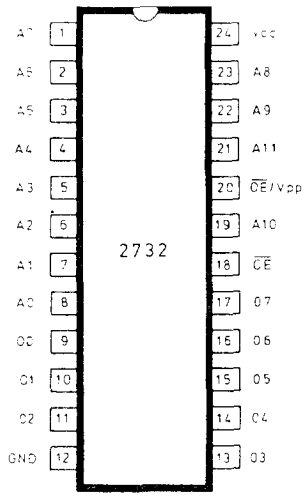
2716 & 2732 E-PROMS



The 2716 and 2732 devices are read compatible, and can be interchanged simply by altering the voltage condition on pin-21. The 2716 can store 2k bytes and the 2732 4k bytes. Whilst this may still not sound a vast amount, 2k bytes is enough to store the information for one test card pattern etc.

The interchangeability of these devices may of course be one-sided, in that if one wishes to replace a 2732 with a 2716 device this can only be done if the amount of memory used

is less than 2k bytes (any more wouldn't fit!). However, if the memory used does not cause a problem then the only change required is to the condition on pin-21. For a 2716 device pin-21 must be grounded, for a 2732 it must be held at +5V, these conditions could easily be satisfied by installing a switch or solder link in units using these devices.

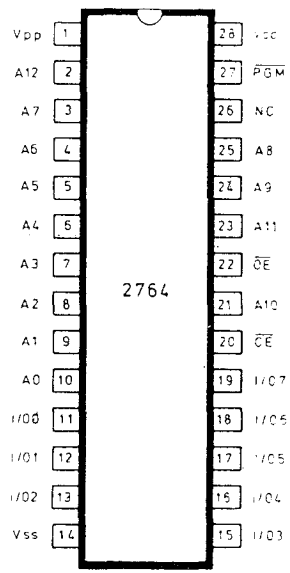


A simple method of determining how much memory in a 2732 device is being utilised is to look at which of the address line are being used. If A11 is grounded (pin-21) then 4k bytes are being used (ie: the entire memory store within the device), if A10 is grounded then only 2k bytes are being read (ie: only half of the available memory within the 2732).

2764 E-PROMS

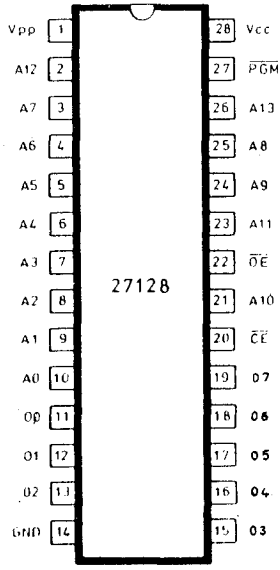
The next E-prom up is the 2764. This chip can store up to 8k bytes of information and is housed in a 28-pin package, whereas the previous devices are in 24-pin packages. Pin-26 of the 2764 has no internal connection which makes interchangeability relatively simple. By connecting pin-26 to +5V and bringing pin-23 out to a solder link then the smaller packaged 2716/2732 devices can be accommodated. The smaller E-proms are fitted into the bottom of the socket so that the holes for pins-1, 2, 27 & 28 are left empty. Pin-23 of the socket becomes pin-21 of the smaller devices. The link at pin-23, of the socket will need to be connected to +5V for 2716 devices, and to A11 for 2732 and 2764 devices. The printed circuit boards for both the caption generator and the Teletext pattern generator are laid out for 28-pin sockets, with pin-23 having the option of being grounded or taken to +5V via a solder link, so that any of the above E-proms can be used in these projects.

If you ever need to use a 2764 to replace a 2732 or 2716 then you will have trouble getting it into the holder, but if you are desperate enough you can fit it with pins-1, 2, 27 and 28 protruding beyond the top of the socket. Pins-1, 27 and 28 will require hard-wiring to +5V and pin-2 to ground.



TELETRON

One project that does use a Micro-chip and an E-prom is Teletron. The unit works fine with 2716 and 2732 devices with the necessary adjustment to the link at pin-23. However, if you wish to use 2764's then pin-27 will need connecting to +5V and not A13,



which is a circuit and PCB error. There is a link in the path which needs omitting and pin-27 can be connected to the adjacent pin-28, which carries +5V. Should you ever be ambitious enough to use a 27128 in Teletron then pin-26 will need connecting to A13 of the Z80 CPU instead of to +5V. This modification would have to be reversed in order to use 2716 and 2732's.

PROGRAMMING EPROMS

For those of you who wish to programme their own E-proms then I can only draw your attention again to 'The ATV Compendium, which contains the circuit for a three chip E-prom programmer. A PCB for this project is available from Members' Services. The unit plugs directly into the port at the rear of a Spectrum computer.

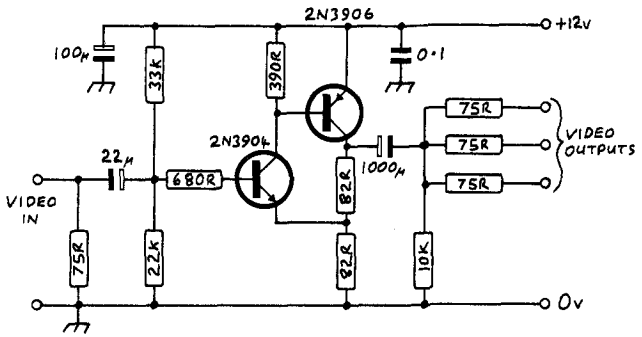
The east to use software for this unit is Menu driven. However, the programmer will only 'blow' 2764 and 27128 devices sufficient for all the projects in the book. It is unable to completely programme all the locations in these large devices. The software for this programme is available on cassette at a cost of £2 from me at the address shown on the 'Who To Write To' page. Should you want to take the easy way out then I can supply custom programmed E-proms for the Caption generator at £5 each, and for the Teletext Generator as per the picture on page-33 of the 'ATV Compendium', customised with your own call sign and details for £10 each. (All proceeds to the upkeep of GB3RT, the Emley Moor 24cm FM ATV Repeater).

VIDEO DISTRIBUTION AMPLIFIER

Anthony Fouracre

It's been some time since we saw a straightforward 1-in-3-out video distribution amplifier so, although this design has appeared on a number of occasions and in a number of versions in the past, newcomers to CQ-TV might like a re-run.

There's little to be said about the circuit itself. A standard 1v p-p video signal is presented to the input which is correctly terminated in 75-ohms. From the output may be taken up to three 1v signals, each of which may be terminated in 75-ohms. The circuit uses a single 12v DC supply and may be built on a little PC board or on Vero stripboard - whichever is most convenient.



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.....	ATV up-converter (TVA and CQ-TV112)	£2.25	0.30	.....
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.....	GaAs FET 24cm converter (CQ-TV144)	£3.50	0.20	.....
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.....	Gunn diode modulator (CQ-TV141)	£2.50	0.20	.....
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.....	6MHz audio generator (CQ-TV139)	£1.50	0.20	.....
.....	G3WCY SSTV to FSTV RX & reprint (COM)	£10.set	0.60	.....
.....	G4ENA mods for above (CQ'127 COM) set of 4	£5.set	0.30	.....
.....	G4ENA SSTV transmit board (CQ-TV129,COM) Add on to G3WCY - uses same memory	£6.00	0.30	.....
.....	G4ENA SSTV aux board (CQ-TV130,COM)	£2.00	0.20	.....
.....	G8CGK SSTV pattern gen. + notes (COM)	£3.00	0.35	.....
.....	SSTV pattern/sync generator HB2)	£3.00	0.35	.....
.....	2732 E-PROM. SSTV program (HB2)	£12.00	0.20	.....
.....	MC1445N Gated video amplifier i.c.	£3.50	0.20	.....
.....	TEA2014A video switch i.c.	£1.10	0.20	.....
.....	TEA5114A video switch i.c.	£1.50	0.20	.....
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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 at the foot of the 'Contents' page in each issue. Badges are distributed to members as soon as they have been engraved.

Some new boards are in preparation, including the PAL coder from CQTV134 and the Spectrum Freezer from Micro and Television Projects (which is usable with other types of computer). Details will be announced on the BATC Prestel pages, or you may send a suitably stamped and addressed postcard to Members Services, if you can't wait for the next CQ-TV.

VIDICONS

We have now arranged for an additional source of vidicons to be made 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 and 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 an equipment supplier.

NORTH AMERICAN MEMBERS

The BATC has an agency in North America where orders for Subscriptions, Publications and Members Services sales items may be placed and paid for. This should considerably ease the old problem of sending money overseas. A special Members Services sales form, priced in US Dollars, is available on request from our agent, as is a 7-page handout briefly describing the items and PC boards available. A large, stamped, self addressed envelope should be enclosed for these items.

Orders please to WYMAN RESEARCH Inc., Box 95, Waldron, IN.46182 and checks made payable to Wyman Research. All goods will normally be despatched from the UK so please allow sufficient time for delivery.

DIY ROBOT-1200

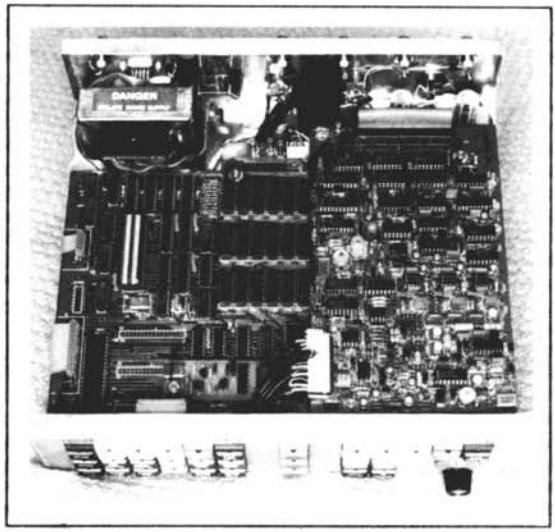
Peter Lockwood G8SLB

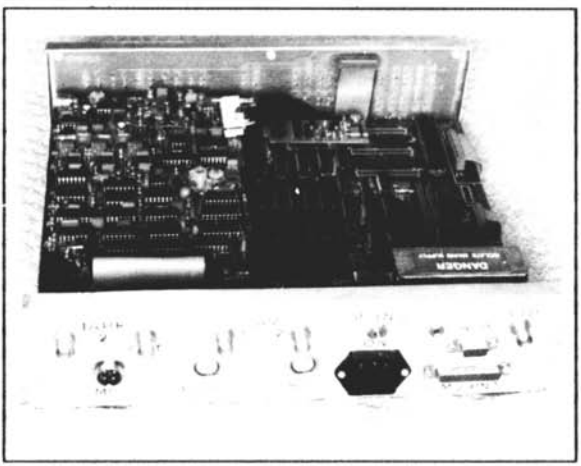
A couple of years ago Bronc, ZL4PJ, imported the Robot artwork for the 1200c via Canada, and later arranged with John Wilson, VK3LM, at the 'Wodonga College of TAFE' in Australia to make available the 'LM9000 SCANCONVERTER EDUCATIONAL TRAINING/CONSTRUCTION PROGRAMME', to both resident and external students of the college. By paying an enrolment fee of A$200 to the college it is possible to purchase from them a complete kit of parts for A$1300, to just the bare printed circuit boards for A$136. The LM9000 and a Robot 1200c perform identical functions.

I heard about the project from Robert, G4TUK, in Norfolk, during an SSTV contact on 2M, when I was using my homebrew G3YWC/G4ENA low resolution colour scanconverter. A few days later I received from Robert a copy of the brochure all about the college and the project, and from first reading I was hooked. Having a rather large spare parts source at my disposal I decided to build the piece of equipment that previously I had considered too expensive to purchase.

On Monday 23rd of January I arranged a bank draft for A$576 and sent off for the enrolment, bare boards, documentation, photographs of the build, front panel switches with engraved actuator flaps and sufficient to cover air freight and insurance. I had been informed that some time would elapse before the goodies would arrive so I was not too worried when my large bundle, wrapped in brown paper and tied up with string, turned up on the doorstep on Thursday 2nd of March.

There are two main circuit boards to stick bits on to, the digital board is about 30cm by 20cm, and the analogue board about half the size. A third board is used to mount the 'Digitast' front panel switch assemblies and a single rotary control onto. There is no power supply board supplied, but suitable circuits and layouts are suggested in the documentation, and these use standard regulators. All the connections between the boards are by ribbon cables or minicon plug and sockets, so the boards can be removed easily. The whole project is very straightforward and can be built with confidence, my only gripe was the number of short circuits found on inspecting the digital board, but it seems that I was unlucky with this board (hope I found them all).





Several 'black spiders' were donated by SSTV enthusiasts and colleagues for which I am grateful, the eighteen 256kbit ram chips are second hand devices which function well, most of the R's and C's came from scrap bandoliers bought at rallies, transistors used were nearest to hand and the mains transformer was rewound by hand for the extra couple of voltages required.

The box measures 30.5cm long by 9.5cm high (inc. feet) by 31.5cm deep (overall), and was cut down with a hacksaw from a much larger box, all the bending reshaping being done using two bits of angle iron and a vice (plus hammer, plus cussing). The result still looks reasonable, even after my metal bashing and has produced a very compact piece of equipment that does not look out of place with the rest of my shack.

After fitting G3OQD Martin's upgrade E-prom and the crystal oscillator jockey board, I can cope with the NEWMODE operation and be Wraase mode compatible. There is even a crude FAX receive only mode facility on the E-prom. There are FOUR full colour hi-res 256 by 256 by 64 level

memories to page through (or twenty four 128 x 128 by 64 level black/white low-res memories to get lost in). These extra facilities cost me £80, which I consider very well spent. The total cost of my project was about £530, inclusive of the G3OQD bits, which is well under half the price of the commercial 1200c, and the construction gives a good deal of satisfaction with the final equipment.

There is a graphics serial input port to connect to an RS232 4800-baud terminal, and this gives limited control as if the Robot 800c keyboard were attached. I have been using my BBC micro to good effect using this facility. Better still is the parallel input/output port that can be connected to a host computer to load/save picture data without error, and also manipulate the pixels and composition of the picture to produce any desired effect. The PC and BBC computers can be used, but I am on the look out for suitable interfacing and software for my Amiga 500 (1Meg) computer.

Further details of the current status of the project can be obtained from John Wilson VK3LM, T.V. Enterprises, RMB 4201a, Tallangatta Valley, Victoria, 3701, Australia. A full colour videotape of around 40 minutes duration is available in 3/4" UMATIC, 1/2" V.H.S., 1/2" BETA or 8mm VIDEO8 standards from John Wilson at the above address by sending a blank tape and A$12. It shows Bronc ZL4PJ and Brian Cattermole VK2BFC with their completed projects, tells the story behind the `Wodonga Project`, gives a demonstration of the machine in action and the operation of the front panel controls, shows a tour around the inside workings of the equipment and then some scope waveforms on various parts of the boards. An appendix to the tape shows G3OQD Martin, talking about his upgrade eprom and possible future facilities to be made available for the 1200c/LM9000. The tape concludes with some very nice high resolution colour pictures (stills) that can be useful as a test aid to set up the snatch converter etc.

If anyone wants a slightly edited version of the above in the VHS format, then send me a tape of at least 30 minutes duration and some stamps for the return postage, and I will produce a copy when time permits (address QTHR).

A NEW HAM TV MAGAZINE

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AND

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

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BROADCAST BAND DX-TV RECEPTION

Gary Smith and Keith Hamer

THE 1989 SPORADIC-E SEASON

Many DX-ers have felt that the 1989 Sporadic-E season was lacking in many respects with less activity than in other years. Having said that, the exotics were around as the collective logs will testify -only the juicy bits are shown! Every European country was logged at some stage or other but the number of openings to some of the Eastern bloc countries seemed noticeably down compared with other years. High m.u.f.'s were encountered regularly with instances of Band III Sporadic-E openings on at least six days. Albania was a regular signal this season, possibly due to increased vigilance or because of the higher m.u.f.s encountered generally.

Trans-Atlantic reception occurred on several occasions, usually as a co-channel signal with RUV Iceland, but its origin could not be identified. From the east Arabic stations were resolved at times but openings were fewer than anticipated. However, in Europe the situation was somewhat different with Saudi Arabia noted in the Low Countries plus many unidentifed test cards and programmes of Arabic origin. In Finland Israeli FM signals were heard.

There was a long period of tropospheric reception with many of the new Danish UHF stations and West German "local" programme relays being received. The use of on-screen logos by many of the broadcasters made station identification much easier. For example, Spain now uses stylised logos for the TVE-1 and TVE-2 networks which can be clearly made out, even on weak signals.

ITALIAN STATIONS

The Italian private stations created a lot of interest. The one just below E2 was identified as Tele Radio Ercolano (Naples area) with various telephone numbers to ring for music requests, etc. Tele Radio Ercolano was using E2 last year and not its present allocation, which was originally used by Telemarket. Perhaps the two stations have merged! Incidentally, the Torino outlet of RAI UNO on channel IC is still in operation.

BAND III GOES BESERK

Remember the north African Band III SpE of June 7th, 1988? Well, history repeated itself. Simon Hamer had considerable success with Band III SpE during the summer. RTM Morocco was seen *three* times on channels M4 (163,25 MHz)! Sunday June 11th was the best day with TVE-1 E7, RTM M4, 5 and 7, Libya E6, RTA E5, 6 and 7 plus Tunisia on E5 and E6. Roger Bunney comments that JRT has also been noted on E7 but we do not have the date of this reception.

Simon tells his own story about June 11th -"I was trying out FM Band II which was absolutely congested. Apart from the elusive BFBS and GBC Gibraltar, Arabic and French-speaking stations were noted from Morocco and Tunisia. So I thought I'd try Band III -this turned out to be an Aladdin's Cave! FubK test patterns (some floating over one another on some channels) were noted at the lower end of Band III, though not noise free. They were slow fading and changing. Upon examination there was RTT (Tunisia) on FuBK with Arabic script on E5 and E6, Libya on FuBK with clock insert on E6. A PM5544 was observed on channels M4, 5 and 7 which was RTM Morocco and an Arabic programme on E5, 6 and 7 which could well be RTA Algeria. All the "E" channels had line pairing indication offsets in frequency. Although the opening was already in progress when I tried I was fortunate enough to see the last 26 minutes of it".

JUNE LOG

03.06.89:	0145	E3 Prog suspect YLE (Finland)	(IM)
04.06.89:	1405	E4 RTT (Tunisia) news until 1440	(BP)
05.06.89:	0709	E3 E.P.T. (Greece)PM5534 with tone	(MV)
	1504	E4 RTT (Tunisia) FuBK and progs until 1700	(MV)
	1830	E4 RTT with traditional Arabic orchestra	(BP)
06.06.89:	0941	E3 E.P.T. PM5534 with tone	(MV)
	1104	E2* Radio Tele Ercalano (Italy) ident caption	(BP), (KJ)
07.06.89:	2300	E3 and E4 YLE	(IM)
08.06.89:	0448	E3 Unid PM5534/44	(MV)
		E3 ORF (Austria)100W relay	(SH)
10.06.89:		E2* Telemarket (Italian private station)	(SH)
		E2* Football with lower LH logo (Tele Radio Ercalano?)	(SH)
		R1 EESTI TV (Estonia)	(SH)
		IC RTS (Albania) progs	(SH), (MV)
		E3 Unid Arabic station	(SH)
		E5 Unid Arabic station (different times to above)	(SH)
		E3 EPT (Greece)	(SH)
		IA Canal-3 (Italian private station)	(SH)
	2123	IA Tele Uno test card with pop music	(MV)
	2145	IC RAI UNO, also IA and IB	(IM)
	2300	IC sound channel 87.75 MHz until 2330	(DG)
	Trops include Denmark (DR and TV2), Sweden BIII and UHF, East Germany, West Germany, AFN-TV Soesterberg A80		(SH)
	Auroral activity noted in Scotland at 1530		(IM), (DG)
11.06.89:	0810	IA PM5534 without ident.	(BB)
		IA Tele Uno (Italy) test card	(SH)
		E7 TVE-1 progs! Also E2, E3 and E4	(SH)
		E5 and E6 RTT (Tunisia) FuBK	(SH)
		E5, E6 and E7 progs RTA Algeria	(SH)
		E6 Libya on FuBK test card	(SH)
		M4, M5 and M7 RTM (Morocco) PM5544	(SH)
	Trops inc. W. Ger. RTL+ E59 on PM5534 (0020-0130) and SAT-1 E49		(DG)
12.06.89:		E2* Tele Radio Ercalano caption at 1115 approx	(GS)
		IA Teletext heading (not RAI)	(GS)
		IA Radio Planto Zero (Italy) caption/text	(GS)
		IB RAI UNO progs at 1118 approx	(GS)
		E3 RTBF-1 (Belgium) "LIEGE CANAL 3" PM5544	(BB)
	1735	R3 TVR (Rumania) in PAL colour	(DG)
	1712	E3 Unid Arab tx with news about Beyrouth	(MV)
	1705	R1, R2 and R3 TSS (USSR) progs	(GS)
	1705	R4 prog different from above	(GS)
	1705	R5 strong vision buzz -audio different from above stations	(GS)
	1800	R5 News intro music (not TSS)	(CH), (GS)
	1830	R4 GOSTELERADIO caption -TSS	(GS)
		R5 TSS also R1, R2, R3 and R4	(SH)
		E3 and E4 RUV PM5544	(SH)
		E3 JTV (Jordan) on "JTV SUWEILEH" PM5534	(SH)
		A2 Unid 525-line signal	(SH)
	1913	E2* Unid private station -no logo	(KJ)
13.06.89:		E3 Coloured news reader from south	(SH)

15.06.89: 0623 E3 Unid PM5534/44 (MV)
1626 IC RTS PM5534 and opening (MV)
1730 E4 RTT (Tunisia) (BP)
1745 R2 TVR FuBK then opening sequence at 1800 (BP)

16.06.89: 1305 R1 0249 test card TSS (GS)
1555 R2 EESTI TV PM5537 test card and opening sequence (GS)
R5 TSS also R1, R2, R3 and R4 (SH)
IC RTS (SH)
R2 and R3 TVR (SH)
M4 RTM (Morocco) progs with Arabic script (SH)

17.06.89: 0825 E4 YLE Fubk (KB)
0840 R3 TSS UEIT test card with "OPnC" and "Mn" idents (MV)
R2 EESTI TV PM5537 and "1989" UEIT (MV), (KJ), (BP)
E4 YLE FuBK (BB), (BP)
1620 R2 and R3 TVR colour bars with FuBK at 1645 (KJ), (GS), (MV)
1745 R5 Unid signals (GS)
2006 IC RTS song contest (no corner ident) (SH), (GS), (MV)
R4 TSS also R1, R2 and R3 (SH)
E3 and E4 YLE (SH)
E2 RAI Telegiornale news (Campione d'Italia 40W relay) (SH)
Trops inc. AFN-TV Soesterberg A80, RTL+ E29, 35, 36 and 59 (DG)
SAT-1 E21, 38, 40, 49 and 51 (?), also TELE-5 E36, 46, 58 and 65 (DG)
Trops inc. SAT-1 E50, Danish TV-2 UHF (KB)

18.06.89: 0400 A80 AFN-TV Soesterberg 525-line prog -tropo (DG), (GS)
E21 SAT-1 colour bars -tropo (DG), (GS)
E38 SAT-1 (DG)
E36 TELE-5 progs (Dusseldorf tx) -tropo (GS), (KJ), (DG)
A34 AFN-TV Shape (Belgium) (KJ)
E48 BFBS "SSVC GERMANY" PM5534 from 2400-0138 (DG)
0845 IA Tele Uno test card (BB)

19.06.89: 1045 E2* Tele Radio Ercalano ident. caption until 1215 (BP)
1345 E4 RTT FuBK until 1435 (BP)
French, Belgian, Dutch, W. Ger. trops, inc. RTL+ E36, AFN-TV A80 (KJ)
21.06.89: 1758 E4 RTM (Morocco) PM5544 then opening/Koran, etc (GS), (CH)
22.06.89: 2000 E4 RTM progs (CH)
25.06.89: E3 and E4 RUV (Iceland) PM5544 (SH)
1848 IC RTS film (MV)
26.06.89: E3 E.P.T. PM5534 (GS)
E2* Radio Tele Ercalano ident. (GS)
IA Text page co-channel to RAI-1 PM5544 (GS)
27.06.89: E2* Prog with logo in lower LH (GS)
1640 E3 and E4 RUV PM5544 (GS), (BB)
1640 Unid rolling picture A2/E3 with above (GS)
2209 R2 TVR progs (KJ)

BULGARIAN SIGNAL?

There's a strong possibility that Bulgaria (extremely rare) on channel R5 was received on June 12th. Unfortunately the vision could not be resolved because of the closeness of the FM radio channels. From 1730 strong R5 sound was heard at 99.75MHz while checking for FM DX. At 1759 the TSS clock appeared on R1 and R2 accompanied by a silence on R5. As soon as the BPEMR news intro sequence appeared, music was heard but it was not the usual signature piece. Then a female voice was heard as the two newsreaders appeared on TSS. Initial thoughts suggested that the R5 signal was TSS but later the woman's voice was still present when the male newreader should have been speaking! At 1830 approx. reference was made to Bulgaria.

JULY LOG

03.07.89: 1750 E3 Prog with Arab (GS)
Trops inc. RTL+ E36, SAT-1 E49, WDR1 E8 (1kW), DR E5, E5v (KJ)
04.07.89: 1530 E3 Unid multiburst test pattern (BB)
Trops inc. RTL+ E36, SAT-1 E49, DR E5, E5v, TV-2 E28v and E52 (KJ)
Trops inc. RTL+ E24, 36 & 59, SAT-1 E21, 48, 49 & 52, 3-SAT E46 (DG)
Trops inc. SAT-1 E50, Denmark TV-2 UHF, NRK E5 and E9 (KB)
05.07.89: Trops inc. RTL+ E36, SAT-1 E49 (KJ)
Trops inc. BFBS E48, SAT-1 E21, 38, 48, 49 and 52 (DG)
06.07.89: IC RTS PM5534 followed by opening and news (GS), (MV)
1644 R2 PM5544 with dark background -TVP? (GS)
Trops inc. SAT-1 E49, E52, DR E31, TV-2 E53, NRK E11 (KJ)
Trops inc. SAT-1 E21, 40, 48, 49 & 52, 3-SAT E30, TELE-5 E46 (DG)
Trops inc. RTL+ E36, Radio Bremen E45, 3-SAT E46, SAT-1 E49 &56 (KB)
Trops inc. SVT-1 E8, SVT-2 E31, Danish VHF/UHF (KB)

07.07.89: 2017 R2 EESTI-TV prog in colour (KB), (BB)
10.07.89: E2* Prog with corner logo lower LH GS
12.07.89: 1529 E4 RTT (Tunisia) cartoon (MV)
1920 IC RTS news (GS), (MV)
13.07.89: 1243 E3 Unid PM5534 from south-east (GS)
IC RAI UNO programme, also IA (GS)
1645 E4 RTT (Tunisia) music prog (MV)
1925 IC RTS weather forecast (GS)
14.07.89: 1243 E3 TVE-1 prog. suspect Izana (Canary Islands) (KJ)
1253 E4 RTT Koran reading and film at 1832 (MV)
15.07.89: 1115 E2* Unid Italian private station (KJ)
1115 IA Unid Italian private station (KJ)
16.07.89: 0840 E2 TVE test card old type (BB)
17.06.89: 0740 R3 TSS UEIT test card with "OPnC" and "Mn" idents (MV)
15.07.89: 1820 IC RAI UNO progs (GS)
E3 and E4 Unid Arabic stations (SH)
1925 E4 RTM Morocco on progs (SH)
1925 M4 RTM progs (SH)
FM signals inc. Spanish, Portuguese and Arabic (SH)
19.07.89: 1215 R2 TVP PM5544 with "TVP NTD" ident. -via MS! (GS)
20.07.89: 1402 E3 RUV PM5544 (BB)

21.07.89: E3 E.P.T. PM5534 (SH)
R4 CST progs, also R1 and R2 (SH)
R2 TVR progs (SH)
R5 TSS progs, also R1, R2, R3 and R4 (SH)
1750 R4 Prog (GS)
R5 Vision buzz (GS)
1850 IC RTS progs followed by clock and news at 1900 (SH), (GS), (MV)

22.07.89: 0544 R2 EESTI-TV PM5537 (MV)
0650 E4 Unid PM5544 with Arabic at top (MV)
0735 E3 Unid news programme with CNN caption (GS), (BB)
0741 IA Tele Uno test card (also at 1303) (GS), (KJ)
0850 R4 MTV clock followed by film (MV)
1030 R2 TVR FuBK and opening (KH), (KJ)
1131 E3 and E4 RUV PM5544 (MV)
1226 E3 JTV (Jordan) PM5534 with "JTV SUWEILEH" ident. (KJ)
1336 IC RAI film also IB (VR)
IC RTS progs (SH)
R2 and R3 TVR progs (SH)

		Trops inc. Unid PM5544 on E9 at 1645 (no ident. or very dark one)	(DG)
		Trops inc. Radio Bremen E22, various West German UHF txs	(KB)
23.07.89:		E3 and E4 RUV PM5544	(SH)
24.07.89:	0556	E2 Unid FuBK just before TVE-1 came on the air	(MV)
27.07.89:	0743	R1 TSS clock showing "1143"	(BB)
	1115	E3 Unid PM5534/44 followed by colour bars co-ch TVE-1	(KB)
	1413	IA Tele Uno test card	(KJ)
	1800	R2 Choir singing with ident, at 1828	(SP)
	1805	E4 RUV PM5544	(SP)

N.B. E2* denotes channel allocation just below 48.25MHz

AUGUST LOG

02.08.89:	0900	E3 E.P.T. PM5534	(GS)
		E3 Unid coloured newscaster -Nigeria?	(SH)
03.08.89:		E7 and E9 TVE-1 (Spain) via tropo	(SH)
06.08.89:	0805	A80 AFN-TV Soesterberg (525 lines) by tropo	(GS)
08.08.89:		E2 RAI UNO (40W relay in Swiss Ticino)	(SH)
		E3 E.P.T. PM5534	(SH)
		R1, R2 and R4 MTV-1 (Hungary)	(SH)
		E3 Unid Arabic programme	(SH)
		IC RTS progs	(SH)
		R2 and R3 TVR progs	(SH)
09.08.89:		E4 RUV (Iceland)	(SH)
10.08.89:		R2 EESTI TV PM5537 test pattern	(GS)
16.08.89:		E5 DR (Denmark) via Meteor Scatter DX (Perseids)	(SH)
		E8 SVT-1 (Sweden) via Meteor Scatter DX (Perseids)	(SH)
17.08.89:		E4 and E9 YLE (Finland) via MS DX (Perseids)	(SH)
		R7 TSS (USSR) via MS DX (Perseids)	(SH)
		R8 TVP (Poland) via MS DX (Perseids)	(SH)
18.08.89:		IC RTS progs	(SH)
		R1, R2, R3, R4 and R5 TSS	(SH)
		E3 E.P.T. (Greece)	(SH)
		A80 AFN-TV Soesterberg via tropo	(SH)
		E22 RB-1 (Radio Bremen -West Germany) via tropo	(SH)
19.08.89:		E3 and E4 RUV (Iceland)	(SH)
		A2 Unid 525-line signal at 0030 GMT (USA/Canada)	(SH)

Note: Perseids meteor shower produces spectacular DX well into Band III. Peak activity usually occurs around 10th-12th August.

Many thanks to the following who have supplied logs and reception reports:- Garry Smith (GS), Derby; Keith Hamer (KH), Derby; Steve Poole (SP), Enfield; Vince Richardson (VR), Conwy; Simon Hamer (SH), New Radnor; Marc Vissers (MV), Belgium; Kevin Jackson (KJ), Leeds; Bob Brooks (BB), South Wirral; David Glenday (DG), Arbroath; Bertrand Prince (BP), France; Chris Howles (CH), Lichfield; Kevin Bolger (KB), Scarborough; Iain Menzies (IM), Aberdeen; Dalibor Frkovik, Yugoslavia; Lt. Col. Rana Roy, India.

DX-TV AROUND THE WORLD

DX-ers in other parts of the world have been seeing their fair share of exotics over the past few months which are worth noting. In India 525-line signals were noted from the west in Band I on April 8th from an unidentified source. In Yugoslavia many Arabic stations have been received via Sporadic-E propagation. These include Saudi Arabia, Dubai and Lebanon. A mystery PM5544 test pattern (without identification) on channels E3 and E4 has been traced to Egypt. There are no longer any official listings of the E3 outlet which subsequently created the mystery!

Finally, if F2 conditions are as good as last year there should be plenty of activity by the time you read this issue of CQTV.

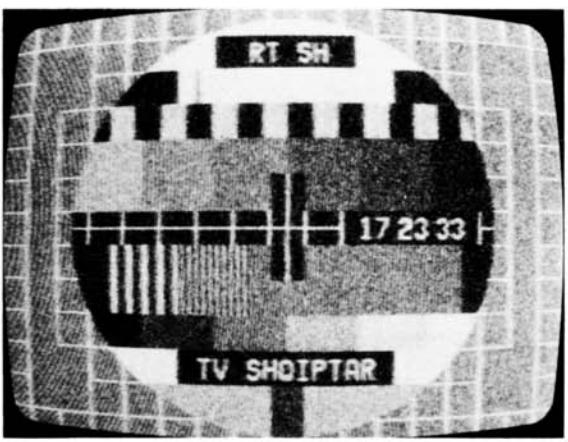
PHOTOS

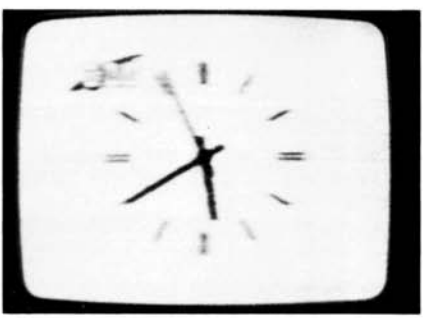
Fig.1: The Albanian PM5534 test card received at 82.25 MHz.

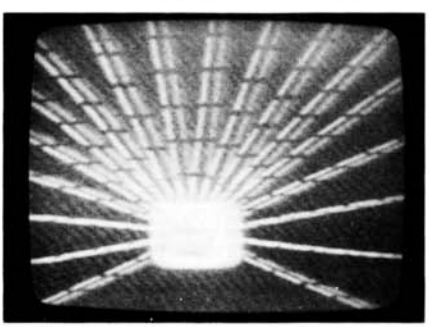
Fig.2: Hungarian clock with new "TV1" logo in the upper left-hand area.

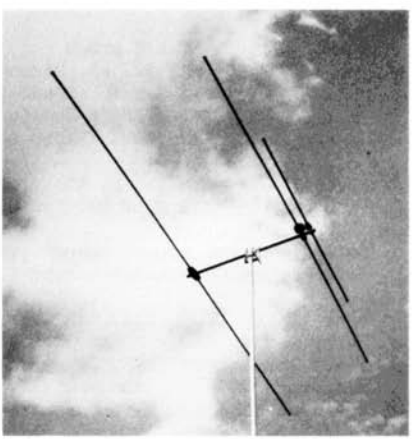
Fig.3: EESTI-TV station opening logo.

Fig.4: New compact wideband Bands I/II array in use by Garry Smith. Good signals from Morocco and Albania have been received at only 25ft.









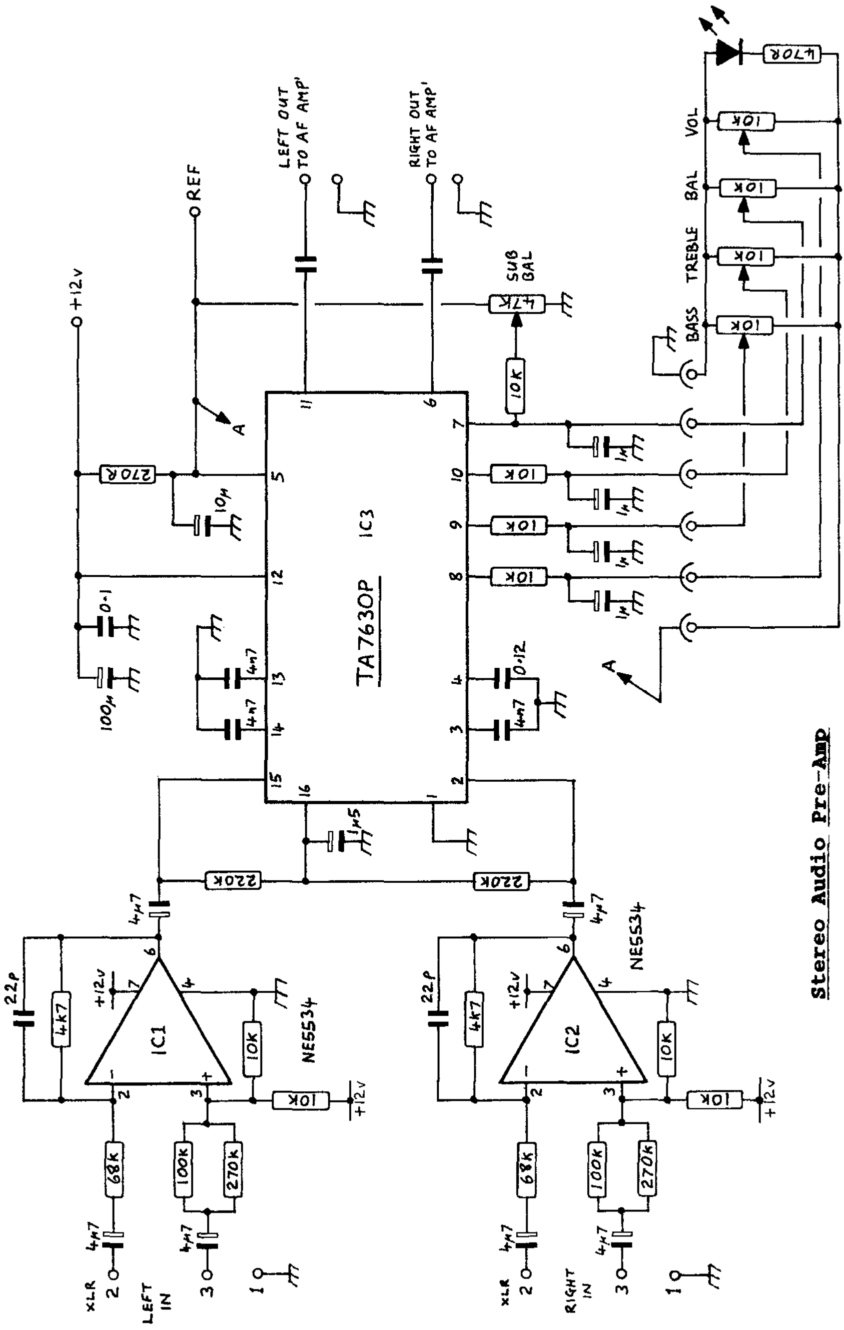
STEREO AUDIO PRE-AMP

Anthony Fouracre

Here is a useful stereo audio pre-amplifier which many of you may be able to use in your video systems. It runs from a single 12v DC supply which is very convenient.

The unit uses a dual operational amplifier chip (NE5534) whose audio inputs are balanced. IC1 and IC2 are wired as summing amplifiers with a gain of one-fifth. IC3 is in fact an integrated stereo pre-amplifier chip designed for television receivers. This IC has DC control over tone, balance and volume and therefore uses ordinary potentiometers which, of course, may be remotely mounted.

Adjustment is simplicity itself; Apply a mono signal to both channels and set all controls to mid-position. Now adjust the `sub bal` control so that identical output levels are obtained from both channels.



Stereo Audio Pre-Amp

CONTEST NEWS

Bob Platts G8OZP

The excellent weather we have been having here in the UK has finally, it appears, broken. Why this should be just a couple of days before the International I don't know. Perhaps it has something to do with Mr.Sod and one of his well known laws of probability. More about the Inter in the next issue, when hopefully I shall have all the results in.

Logs submitted for this years Summer Fun contest were a bit thin on the ground, but judging from comments received those who did enter had an enjoyable contest.

SUMMER FUN CONTEST 1989. Results 70CM

Callsign	Pts	QSO,s	Best DX	@Km
GW7ATG/P	10523	32	FC1AGO	674
G7ATV/P	5571	34	ON4YZ	515
G7AVU	1787	13	G7ATV/P	267
G6YKC	1183	8	G7ATV/P	216
G4EIX	292	4	G4DVN/P	62

SUMMER FUN CONTEST 1989. Results 24CM

Callsign	Pts	QSO,s	Best DX	@Km
G7ATV/P	2092	19	G6YKC	215
G6YKC	1183	8	G7ATV/P	215

Congratulations to the ATG group and the ATV (Severnside) group for their respective 70 and 24Cms wins.

Activity started rather slowly, but picked up later. As GW7ATG'S log shows there were 30+ stations on the bands. Tony G6YKC found 24 so quiet that decided to 'dig out' the old 70Cms gear (your shack must be like mine Tony) to obtain a good score. After the wet conditions of the Spring Vision contest Viv G1IXE of the Severnside group decided to buy a new pair of size... wellies. She reports that they worked very well as they did not see a drop of rain. Viv also asks me to pass on thanks to all involved with the group for equipment loaned and help given. A possible move over to GW land is being considered for future events as is a larger antenna system. (If it gets much bigger they'll never get it across the bridge).

Dave G4EIX reports that he had a most enjoyable day. 292 points when only running 750mW is highly commendable. Dave also found the start a bit quiet, but after pluging in the antenna things improved. (It happens to all of us at sometime Dave).

G7AVU reports seeing signals from Ireland (possibly Craig EI3FW from Co.Wicklow) and Bob queries if this would count for points, SURE DOES BOB. I am sure we will be seeing a lot more of our Irish friends in the future, so don't forget point west next contest time. All in all

the Summerfun appears to have been enjoyed by all, which really is what the event is all about.

FUTURE EVENTS

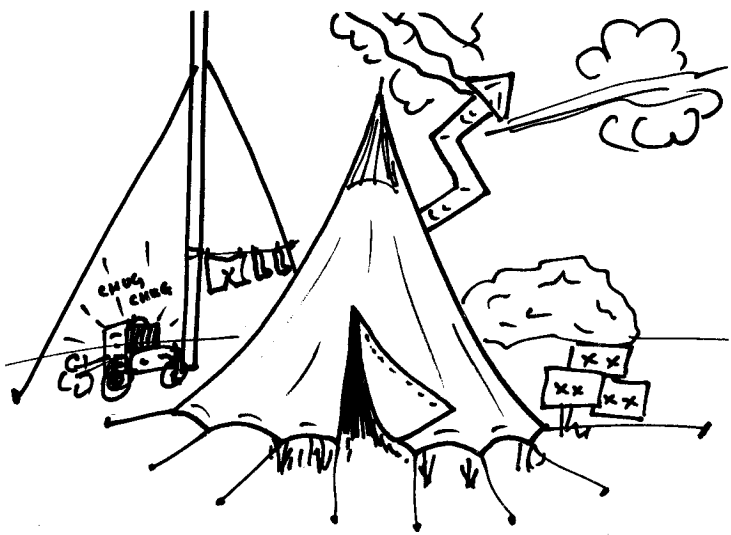
SLOW SCAN TV	Nov 12th	Slow scan
AUTUMN VISION	0001-2359hrs	FSTV
COMBINED	local time	All bands
WINTER ATV	Dec 9th - Dec 10th	FSTV
JOINT EUROPEAN	1800-1200hrs GMT	All bands
WINTER	4th JAN	All modes
CUMULATIVE	12th JAN	All bands
1990	20th JAN	
	28th JAN	
	1900 - 2359hrs GMT	

This year I hope to see a few more entries for the Slow Scan section of the Autumn combined this year. Why not dig out the Spectrum or the Beeb and have a go. Usual contest rules apply, ie, 1Point per Km, Times two for a 2 way contact. Video exchange should be a four digit number, enter number in the log, add up the digits for confirmation back to originating station.

For the winter cumulative, operate as many sessions as you can. Totalise the scores for a maximum of three sessions and send in as one log.

Log sheets, contest entry forms can be ontained from and returned to: Bob Platts G8OZP, 8 Station Road, Rolleston-on-Dove, Burton-on-Trent, DE13 9AA.

Right, It's back to kicking the 70Cms beam about the garden after the International. All will be revealed next time.... 73s Bob



TUNABLE INTERCARRIER SOUND IF FOR DX-TV

This article first appeared in issue 41 of Teleradio news and we thank the editors for their permission to reproduce it here.

Dave Lauder MIEE G1OSC

This circuit, shown in Fig.1, is an intercarrier TV sound IF amplifier and FM detector, which is continuously tunable between 4.3MHz and 6.8MHz, using ganged varicap diode tuning of the IF bandpass filters and the detector quadrature coil. For terrestial TVDX, it can be used for reception of FM sound spaced at 4.5, 5.5, 5.77 (German second language/2 channel), 6.0 or 6.5MHz from the vision carrier. For satellite TV it could be made to tune to 5.0 - 8.0MHz by using coils with lower inductance.

INTRODUCTION

The relative merits of intercarrier versus 'split' TV sound IF's have been discussed many times in the past. An example of a 'split' system is the use of a sound converter which takes the IF output from the TV tuner at around 33.5MHz, and converts it to around 100MHz for reception on an FM broadcast receiver. This 'split' approach has the advantages of good sensitivity, it can cope with system 'L' AM sound (if an AM VHF receiver is available) and sound is still available even when vision selectivity modules are used to reduce vision IF bandwidth.

The 'split' technique has two disadvantages however. The first is that it is less convenient to use, as any adjustment to the main TV tuning also requires the sound receiver tuning to be adjusted. The second is that both the sound converter and the FM broadcast receiver contain a local oscillator which produces harmonics that can cause interference on some channels.

The intercarrier technique has the advantage that it is more convenient to use. Once set for a particular intercarrier spacing (e.g: 5.5MHz) the main TV tuning can be adjusted to receive various TV signals with 5.5MHz spacing, without any need to adjust the sound tuning. A major advantage with this design is that it has no local oscillator, and therefore does not cause any interference to the vision signal.

One disadvantage of the intercarrier technique is that if the vision IF bandwidth is reduced using selectivity modules the sound is lost, although this can be overcome by using a separate wide bandwidth vision IF amplifier/detector solely to produce an intercarrier sound signal. This technique is called 'Quasi split' by Philips. A second disadvantage of the intercarrier technique is that it is not suitable for system 'L' AM sound, unless a synchronous vision detector is used.

CIRCUIT DESCRIPTION AND CONSTRUCTION

This construction project consists of two small add-on modules, a varicap tunable bandpass filter, and a varicap tunable quadrature coil module. These can either be added to a Cirkit 7020 FM IF, or to any other FM IF which uses ceramic filters and the CA3089 type of IC (including CA3189, KB4402 and HA1137).

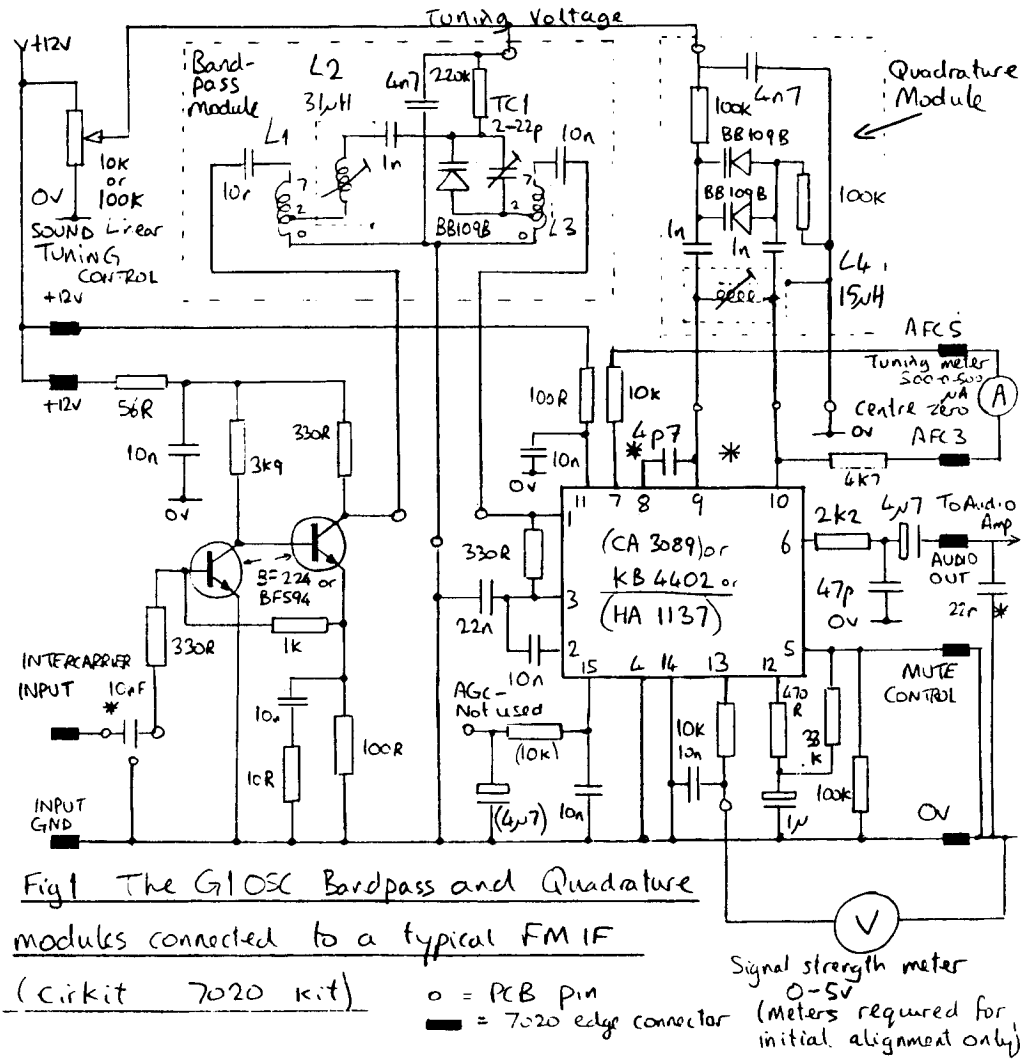


Fig1 The G1OSC Bandpass and Quadrature modules connected to a typical FM IF (Cirkit 7020 kit)

Fig.1 Bandpass and Quadrature Modules Connected to a Typical FM IF (Circit 7020 FM).

The tunable bandpass filter module is designed to replace a ceramic IF filter with 330-ohm input and output impedances. The transformers L1 and L3 step the impedance down to 27-ohms and back up to 330-ohms respectively. The unloaded Q of the varicap tuned series resonant circuit is about 20. This gives a -3dB bandwidth of 300kHz at 6MHz, although the selectivity is poorer than that of a ceramic filter. The insertion loss is 12dB, which is about 8dB more than for a ceramic filter, but the CA3089 type of FM IF has far greater sensitivity than is required for TV intercarrier sound.

Transformers L1 and L3 each consist of 7 turns of 38 SWG enamelled copper wire wound on an FX1115 ferrite bead, with a tap 2 turns from the grounded end. In the prototype, L2 was made by modifying the TOKO KACS586HM coil supplied with the Cirkit 7020 FM IF kit, although any Toko 10K series 10.7Mhz coil should give identical results. The internal capacitor was removed, the coil was unwound and replaced with 45 turns of 38 SWG enamelled copper wire (10 turns in each slot and 5 turns at the bottom of the former). Any adjustable coil which tunes to 6MHz with 22pF and has a Q of 50 or more should be suitable. Fig.2 shows a suggested layout for the module using a small piece of Veroboard.

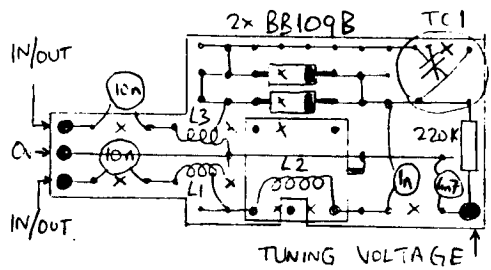


Fig.2 Bandpass Module Layout.

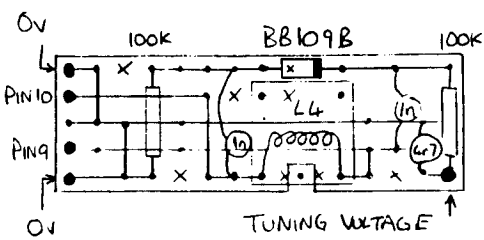


Fig.3 Quadrature Module layout.

The quadrature module module replaces the quadrature coil of the FM detector IC. In the prototype L4 was similar to L2 but with only 32 turns. L4 should tune to 6MHz with 44pF. It is not essential for it to be adjustable, and a fixed 14uH inductor such as TOKO 283AS-150 may be suitable. Fig.3 shows a suggested layout for the quadrature module on a small piece of Veroboard.

These two modules should be suitable for any FM IF using a CA3089 type of IC. If the Cirkit 7020 FM kit is used as in Fig.1, the following points should be noted: The input ceramic filter is replaced by a 10nF capacitor. The second ceramic filter is replaced by the bandpass filter module. The 22nH inductor between pins-8 and 9 of the IC is replaced by a 47pF capacitor. The KACS586HM coil and the 3.3k resistor between pins-9 and 10 of the IC are not fitted. The quadrature module is fitted instead. The MUTE connection of the 7020 PCB should be grounded to disable the mute (unless the mute is required as a signal warning alarm). A 22nF de-emphasis capacitor is fitted externally between the Audio output of the 7020 and 0 volts. Various components of the 7020 kit associated with AFC are not needed and are not shown in Fig.1.

ALIGNMENT

For testing a DC voltmeter should be connected to the signal strength output (pin-13 of the IC via a 10k resistor) and a centre-zero meter between AFC3 and AFC5 on the 7020. Set the cores of L2 and L4 flush with the top of the can, then screw each one in 2-turns. Set TC1 with its vanes half meshed. Set the tuning voltage to 9.25V for 6MHz sound (7V for 5.5MHz, or 12V for 6.5MHz). Adjust L2/TC1 for maximum deflection on the signal strength meter. Adjust L4 for zero on the centre-zero meter (or adjust the tuning voltage slightly if L4 is fixed). Set the tuning voltage to around 1.5V so that the 4.43MHz PAL colour subcarrier gives zero on the centre-zero meter. Adjust only L2 for maximum reading on the signal strength meter (beware, the colour subcarrier level fluctuates). Go back to 6MHz and adjust TC1 only, then back to 4.43Mhz and adjust L2 only. Repeat until neither L2 nor TC1 needs any more adjustment.

TV ON THE AIR

Andy Emmerson G8PTH

Some new ATV records this time, plus lots of on-the-air news from all over the world! So set comfortably, take a deep breath and read all the news.

UK - GERMANY ON 24CM

And good news it is - the first two-way amateur television contact with Germany on 24 cm! There's more, too, so I'll let Tony Bowman G6YKC take up the story from his Nottingham QTH.

"I would like to inform you of the happenings on the 17th June. Conditions seemed pretty flat on two metres so I decided to have a look round on 24cm. To my surprise I detected weak syncs about halfway up the band. Over a period of an hour the signal improved to a P3 and I could read the callsign PI6ATE; unfortunately I could rouse nobody on two metres.

On the 18th there was a lift on two metres and there again was PI6ATE: it was a repeater, being used by DJ7JG! I gave a call and contacted him on two metres. We then worked a two-way on 24cm! He was using 7 watts into a dish, with P3 results here, and I was sending 50 watts into a 38-element quad loop, getting a P4. At 617km is this a record for a two-way on 24cm?

Later that night I worked two-ways with PE1LRS, PE3DEE and PE1MQC at good signal strengths and managed to find out more about the repeater.

A VERSATILE REPEATER: PI6ATE is located on the control tower of an airport near Groningen (JO33GD). The output frequency is 1280MHz FM and there are inputs on 434.250 AM and 2335MHz. On 13cm it uses four dipoles, on 23cm four PCB panels, on 70cm a halo and it also has a 2m antenna for control signals. The testcard is not continuous but the repeater can be put into test mode by a toneburst on 144.750. During contests it can be switched off by audio tones, so as not to cause interference. When there's a lift on and no locals are using the box, the repeater tends to pick up the 13cm output of DB0LO, a repeater in Germany. This in turn sends Meteosat pictures when not in use - super pix!

I was also informed that UK stations have been seen through the repeater using 435 MHz. I last saw the repeater on the 19th at a good P4 and have recordings of all the contacts made.

Changing the subject, I would like to inform everybody that GB3NV, the Nottingham TV repeater, is on RMT2R, which has its input on 1249MHz and output on 1316MHz (not 1318). It runs 25 watts ERP into Alford Slot aerials. Coverage is mainly limited to the Nottingham and Derby area, but we have had reports from G1GST (Birmingham), G3DFL (Warley), G1APD (Southampton) and also from one of the stations I spoke to in Holland (sorry I can't remember which one but thank you for the P3 report!)."

WHICH COUNTRY NEXT?

Well done Tony! Although this is not a record for two-way television transmission on 24cm (the Australians have sent TV over 2000km) but it is the first recorded G-DL contact of its kind. So congratulations Tony: France, Holland and now Germany have now been worked on 24. Which will be the next country?!?

And what does this all show? For a start it proves once again (if proof were needed) that it's not just the coastal stations who work continental DX. Nottingham is about as far inland as you can get in England, and Tony has a location which does not favour UHF under flat conditions. As always, listening to two metres is no guide to conditions on the UHF bands. After all, if you imagine a duct as a piece of naturally-occurring waveguide it's pretty obvious that it must have a lower cutoff frequency.

It is even more astounding to **hear** that British ATVers have been going through Dutch TV repeaters without even realising it! Beyond that, I am amazed no-one else took advantage of this opening. I can't believe everyone else has given up ATV in favour of some other frightful mode. ATV is fun - I'm even building again for ATV transmitting myself!

RECORDED ATV RECORDS

With all this excitement it is probably worth taking time out to remind ourselves what the various records are for fast-scan television transmission by amateurs.

On 70cm there is a little confusion and I have written to our colleagues in Europe and the USA to see if there are any higher claims. However, these are the best DX distances claimed in publications. USA: W5VDS (Wimberley, Texas) and WD4GRK (Pinellas Park, Florida), 900 miles or 1440 km. Europe: G8LIR/P to DK1PZ in the 1988 International Contest, which is 556 miles or 889km. The Spanish station EA1CR has been seen by F3YX near Paris, but I don't have a date or distance claim for this contact. The same station was also seen by the noted TV DXer Ryn Muntjewerff in the Beemster, Netherlands but I don't think it was ever established whether he saw EA1CR direct or a videotape 'action replay' from F3YX.

On 24cm two American stations recently claimed a record with a two-way contact over 941 miles or 1506km; they are W5VDS (EM00) and WA4GRK (EL87) and this excellent hookup was made on 13th March 1989. However, they are outclassed by VK5QR in Adelaide, Australia, who on 19th November 1982 sent 1290MHz pictures over 2000km to VK6WG (Albany).

It is may be noted that the world distance records on both 70cm and 23cm were both mainly water paths, across large bays or gulfs. Thanks to Spec-Com and ATV Quarterly magazines for useful info.

As far as 24cm firsts from the UK are concerned, they are as follows. France: G3YQC (Rugby) and G8VBC (Burton) to F1EDM (Le Havre), 23.1.1983. Netherlands: G8PTH (Northampton) to PE1DWQ, 25.8.1984. Germany: G6YKC (Nottingham) to DJ7JG, 18.6.1989. Does anyone wish to register any other claims?

70CM LIVES

Well, it has to. Many folk have to use 'good old 70' and I hope to be back on this band this autumn. In the USA there has been a lot of interest in a commercial 70cm ATV transceiver made by AEA. It looks quite smart and boasts a genuine vestigial sideband output. Very good until you note that this output is just one watt and there is categorically no way this can be amplified with amateur grade transistorised linears without restoring the other sideband. A 2C39 valve might just do it but no way with solid state - what a waste of effort!

MORE DX ON 24

Another person who has worked DJ7JG on 24cm is Ron G6GHP in Westgate on the Isle of Thanet - but he did it a day after the first contact! Never mind missing the record, it is an excellent achievement. Because of his location on the 'edge' of the country, Ron doesn't normally see many people on ATV (G3OGX and G4IMO across the water in Essex having gone QRT - apparently). But from June 15 onwards throughout the hot weather Ron managed to work a fair number of stations, including PE1DWA, PD0MNO, PE1HLR, PE1LRS, PE1GVS, PA3DEE, PA3BJC, PE1MQC, PE1LEC, PE1MPT, PE1JPD and G6YKC. Most were in the Groningen/Leeuwarden area and were P5 two-way contacts.

In addition, Ron saw the PE1ATE repeater as well as DB0NC and DB0OV in Germany, plus British repeaters at Dunstable, Leicester, Stoke and Nottingham. The two German 'boxes' were AM machines, but were so strong that they were resolvable on an FM receiver.

In east Kent ATV activity has died down a bit since its headiest days but Roy G6OKB and John G8UWS are still active. On Monday July 2 Michael PA1AIG (JO33fd) managed to pick up a P3 picture from the Emley Moor repeater GB3ET. PE1JAM in JO22xr also got it at P1, while GB3VR was also seen.

Back to Britain and in fact to the East Coast where Clive G8EQZ says things are starting to hot up on 24cm. He is working on a twin 2C39 power amplifier with water cooling: this should poke out 100 watts at the antenna input! As well as this he is working on a sub-1dB noise figure preamplifier and rebuilding the GB3ET repeater's receiver. Not satisfied with this workload, he is also pulling apart some Amstrad satellite receivers and doing some amazing things to them. 'Watch this space', he says. How does he find time to sleep - or go to work?

Comparisons of the FM receiver portions of various satellite receivers has turned up some interesting facts, says Clive. Some, for instance, are far more robust in the face of radar interference and are not so affected. He is carrying out a number of experiments and thinks it may be possible to improve 24cm reception quite significantly using optimised receivers and super-quiet preamps.

G3ZTR is a new recruit to 24cm, by the way. Located in Bridlington, he manages to get a watchable picture with 1 watt to Clive 21 miles away.

ODDITIES

Ron mentioned some odd effects. During the lift a German-style FUBK testcard was noted at the bottom of the 24cm band: this seemed to peak in the direction of Hamburg. On the PE1ATE repeater the German broadcast station ZDF was seen a number of times: apparently this is picking up a broadcast link circuit on its 13cm input. Closer at hand a very strong video signal was received from the Canterbury direction: this was a colour camera which seemed to be on 24 hour surveillance duty. There was a nice picture of a car park during the day and absolutely nothing after dark! Silly but not funny, as this was right in the phone section around 1296MHz. I know we share the band with law enforcement agencies but normally these have the sense to operate right down at the bottom of the band where they cause no interference and are less likely to be noticed by keen amateurs. Anyway, this intruder went away after a few days.

Incidentally, traffic surveillance cameras on the M25 motorway near Addlestone send their pictures in Band III, and some pole-mounted cameras on road islands in the Wembley, Middlesex area have little horn antennas to send their pictures.

Another thought on microwaves, courtesy of Dave G4NJU. Why is there so little ATV activity in metropolitan areas, where the biggest concentrations of human beings are? Probably, Dave thinks, because of rooftop clutter, the risk of QRMing your neighbours and the high level of amateur band occupation on other modes. So here's the perfect antidote - move up to 10GHZ! We should be thinking about ATV repeaters on 3cm, says Dave. There must be enough people interested in ATV in, say, London or Birmingham to make this work, and a high-profile project like this might well get permission for space atop a tall building or structure. Alexandra Palace, London Weekend Television and the Telecom Tower are obvious candidates in London - who's going to start a new trend and get this off the ground? The equipment is cheap now - a Solfan head for transmitting is around #10 and a 11GHz dish, LNB and receiver (easily converted for 10GHz) can be had for about #99 if you ask in the right places apparently. It just needs someone to get the ball rolling!

ATV IN AUCKLAND

Our regular ATV contact, Mike Sheffield ZL1ABS writes with plenty of news on the NZ scene. Starting with something exotic to us in Region One, 610MHz is alive and well in Gisborne. During a trip David Andrews ZL2SX was invited to visit the shack of Hamish Dobson ZL2TNN to view his 50cm ATV setup. Hamish is currently transmitting in black and white but hopes to get a colour camera soon. He is also active on packet and on the Gisborne ATV repeater.

The Nelson and Motueka branches of NZART are working together to bring access to the Wellington ATV repeater to their region. Steve Fogerty ZL2ASF has been doing a power of work to get the necessary approvals for this exciting project.

Auckland and Wellington VHF groups now have monthly ATV users meetings separate from the reports, minutes and finances of regular meetings, This means they can now talk ATV, swap ideas and demonstrate equipment informally in an ATV shack. They can also bring along items for

checking: not all of them have a Bird wattmeter or 30MHz scope. After a few weeks on the air the Auckland ATV repeater is on the bench of Quentin ZL1BPW for the addition of a further high-power 614MHz amplifier. The driver is getting a rebuild too.

The regular Sunday night net on 70cm simplex is proceeding fine and some receive-only stations have joined the two metres talkback. Ian ZL1TOQ has returned after a few months absence. Newcomer Trevor ZL1BKG is transmitting SSTV on two metres as he does not have 70cm ATV transmitting gear, but some 'standards problems' are occurring as diehard FSTV chaps (like Mike) have only the old black-and-white 8 second scan converters - none of your fancy colour stuff that takes 3 minutes per picture!

After seeing the results of a good linear transistor amp that Mike had built (12V, two BLU45), Ray ZL1BXC and Bruce ZL3HU decided to build the same to follow their MHW710 and M57716 rigs.

Mike says to further his efforts in VHF/UHF construction he has bought a second-hand FRG9600 receiver. An AM video IF has been ordered and a FM-TV IF is to be built. With a tuning range of 60 to 905MHz this receiver makes an ideal tunable IF for SHF work. Local oscillators and frequency multipliers can also be checked with the FRG9600. He has heard of some hams in Wellington using it to set up VSB filters on the output of 70cm transmitters.

On the magazine front, Mike is editor this year of Spectrum, the magazine of the Auckland VHF Group, so lots of good BATC material is finding its way in. He says the German VHF Communications has an interesting series on ATV at the moment, with a line analyser and PLL sound subcarrier generator in the current 2/89 issue.

SIGNOFF

Well, it's interesting to know that SSTV is still practised in some parts of the world. And once more that's all for this time. Please let me have all your reports in good time for the next article and send them to 71 Falcutt Way, Northampton, NN2 8PH. Thanks.

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**

IN RETROSPECT

TELETEXT PATTERN GENERATOR, THE ATV COMPENDIUM

Clive G8EQZ informs us that there has been an error in the paperwork sent out with the 'Teletext Pattern Generator' from the Amateur television Compendium. Below the 74LS04 is shown a 1k resistor, two links and another 1k resistor. This should be shown as 1 link, two 1k resistors and the other link. Corrected paperwork has been sent out since August 1989.

PRECISION MEASURING BOX, CQ-TV 147

Peter Carliell, the designer of this project, has advised me of an error in the write-up that may lead to some confusion, and also that one of the photographs does not quite show what was intended.

When the box is switched into the Calibrate mode its output is a mixture of equal amplitudes of the measuring squarewave (about 3kHz) and PAL subcarrier at 4.433MHz. If this is displayed on an oscilloscope with a free-running timebase at 20us/division the result may be similar to photograph-4. This shows two bands of subcarrier frequency squarewave with a slight gap between them, which is caused by the gain of the oscilloscope's Y-amplifier falling off at PAL subcarrier frequency.

If your scope shows this, with the box terminated in 75-ohms, then replace the 75-ohm termination with the equaliser shown in Fig.5. Adjust the potentiometer until the two bands touch with no gap and nc overlap. This is the result that photograph-3 should have shown, using a very high quality oscilloscope.

Build the equaliser in a very small box or tube, with BNC sockets at each end. A male-male coupling will then allow the equaliser to be mounted onto the scope's input socket. If cable has to be used between the equaliser and the measuring box, then it should be no longer than 6".

Should any further confusion arise please phone Peter on 01 337 9688.

A TALK ON ATV AND RELATED SUBJECTS

TO BE HELD ON THE 24th NOVEMBER IN MALTBY, YORKSHIRE

ALL WELCOME - PLEASE PHONE/WRITE FOR FURTHER DETAILS TO:

TREVOR BROWN G8CJS, 14 STAIRFOOT CLOSE, ADEL, LEEDS, LS16 8JR

TEL: 0532 670115

MORE ON THE AMIGA

Andy Emmerson G8PTH,

BARGAINS AHOY!

First of all is a price drop (of sorts) for the computer itself. The official list price of the A500 (entry level) model is $399 and most retailers throw in a pack of games programs and a UHF modulator. Discounts can sometimes be negotiated too, and many people would consider this fair value for money. But if you frequent the radio rallies you can buy the A500, with the latest version 1.3 ROM, for just £250, and at this price the computer becomes a very realistic proposition.

Of course, you may be able to persuade a high street retailer to match this price, but if not look out for A1 Electrics (or ring them on 0952-620188 to find out where they'll be next). These particular computers are apparently dealers' overstocks and come with six months' guarantee.

VIDEOSTUDIO REVAMPED

The VideoStudio titling program we reviewed in CQ-TV 147 (pp 68-71) has been improved, sufficient to place it in the 'highly recommended' category. David Wilson and I have been taking a new look at the program and a brief description of the upgrade may be of interest.

The first change is the new instruction book. The old manual was frankly atrocious and this is a great improvement. The new version is attractively printed with a plastic, lay-flat binder instead of the earlier typed and photocopied manual.

The program itself has also been smartened up. Most of the main changes are in the caption writing part of this package but there are a few other changes. The VT clock now cuts to black at zero minus 3 seconds instead of a fade at - 5. There is a flash frame at -10 together with 10 seconds worth of 1 kHz tone between -20 and -10 seconds, as on many professional VT clocks.

The mouse pointer (cursor) now disappears when not required since most inputs are made using the keyboard. With the earlier version you had to move the mouse off screen to avoid it appearing on your captions. The mouse is still required when setting up the captions but it is not used for displaying the final results.

On time-function displays, the 'insert time & date' function appears to have a box of constant width now and not the varying size of the top half of the box as seen last time. The seconds figures do not break up as occurred with version-1 of the program.

The stopwatch displays minutes, seconds and tenths of seconds although the menu still suggests that two figures after the decimal point will be displayed.

To load the program, place the vs1 disk in drive df0 and the vs2 disk in drive df1 and reboot. After the workbench has loaded, the vs1 and vs2 icons appear under the RAM disk icon on the right hand side of the screen. Double click the vs2 disk icon. The disk window shows various drawers and the two main icons, 'enter' and 'depts'. If you just want to browse through the facilities, you can double click on 'enter' to get to the main menu. If you know what function is required, double click 'depts' and then double click the icon for the desired program.

Thankfully, the new version (fonts disk dated 20-3-89) cuts out the 20 second wait after loading the VideoStudio title page. The 'preparing VideoStudio' legend now only appears for a fraction of a second. The following improvements have been made to the captioning segment of the program.

1) SEQUENCE TITLE: The menu has extra functions and extra information displayed. There is an information file selected by typing I on the keyboard which explains the steps required to enter a title page of your own or to run one of the 5 demo files supplied.

When a job is selected, four boxes at the top of the screen show the colours in use and the panel below these describes the sequence, i.e. running time (only appears after the job has been run!), number of pages, type of transition, type of mask etc. This panel also tells you into which mode to set your genlock (if you can! The Rendale genlocks offer an extra mode which the cheaper Minigen cannot.).

2) SCROLL: This uses a window with a yellow bar whose length depends on the amount of text loaded. There are six demo files using both scroll directions and various masks.

3) SUBTITLE: Four demos on this part of the program.

4) COPYRIGHT NOTICE: This is run from option-5, Captor.

5) CAPTOR: Eleven demonstration files on this one. These have various background pictures to show some effects possible. The one entitled 'news' has a sequence of 12 pages running for 5 minutes showing an example of using various fonts and colours. It also explains the changes that have been introduced to the Captor program in this new version.

This program gives you a choice of three run modes:

i) Normal (black background)
ii) Bluescreen (blue background)
iii) Background mode (displayed over IFF picture, if supplied)

The Captor program allows you to make up your own captions using a choice of the 20 fonts on the disk.

If you go back to the main menu and select option 4 (Picture in Picture) you will find that there are only two demonstration logos but, as the 'news' file in the Captor demonstration explains, the new vs2 disk is really full and you will have to delete unwanted files from your working copy of the program disk (don't use the original!) to make room for your own caption files.

STILL SOME BUGS!

A couple of words of warning might be useful here! The full-screen clock with logo is very impressive when superimposed on a video background. It is full of bright colours with a neat drop-shadow effect. It can be faded in and out using the + and - keys on the keypad but (and this is a big but) when it is faded out there is still the 'black hole' where the graphics should be. A similar effect occurs when the VT clock cuts to black, the black 'shadow' stays superimposed over the video background. In addition the program may misbehave if you feed it with less than perfect video signals. I was testing the program with a Rendale 8802 genlock unit (mainly using the background mode) and it appears that you get some strange effects if you do not feed it with a good clean video signal. I was using a rather noisy signal from an old VCR and found that when genlocked to this the real time clocks ran at approximately half speed. Everything was normal when the VCR replayed a still frame. The digital countdown, stopwatch and frame counter speeds were not affected. I cannot say whether this is just a peculiarity of my combination of equipment or not but it is certainly a reproducible fault and occurs every time this combination of equipment is used.

CONCLUSIONS

While the look and feel of the program have been improved significantly, the use of print styles and messages is still not consistent. No doubt this is because different parts of the program were written at different times but it detracts from the otherwise professional 'feel' of the program. It deserves better! That said, all these points have been made to the programmer,who has been extremely receptive. Watch out for version 3!

BEST BUY?

Notwithstanding the moans, VideoStudio is streets ahead of its American competitors. The new instruction manual is better written, while the user interface is more friendly (full-screen keyboard-choice menus instead of enigmatic pull-down mouse-menus). The actual shape of the titling fonts far surpasses those of the American programs, even if a few of the latter have cleverer enhancement effects (neon halos and the like!). Perhaps version-3 can incorporate these suggestions!

In the meantime, if you thought the earlier program would have been a handy combination of titling and graphics functions then this improved version will be even more useful as it is a lot more user-friendly. While pricey, it is still cheaper than the American competition.

What on earth is a photo of a Communications Receiver doing in CQ-TV?, I hear you ask. Well, it is rather a nice looking piece of kit you have to admit, all those knobs and switches. The real reason is a little more subtle as you will find out if you read on!

This latest offering from Icom, the IC-R9000, is a general coverage receiver continuously tunable from 100kHz to 1998.8MHz, - pretty wide what! Another unique feature is the display, not one of these all singing and dancing LCD displays, instead it is actually a CRT.

I bet that made a few of you sit up! Perhaps the light is dawning? Yes you have it in one, AM television can be received on this unit and the pictures displayed on its screen. All the broadcast TV stations, 70cm Amateur TV, and I imagine that quite reasonable pictures could be obtained slope-detecting 24cm FM ATV as well.

Like most modern radio equipment this receiver is controlled by the ubiquitous micro-processor, with a bank of E-proms and specialist digital circuits providing all the features you could think of, and more! Reading through the brochure and the 67 page instruction manual the mind boggles at what it can do, it almost makes the operator obsolete. However, there is one disadvantage - it aint cheap - I shall say no more than its in the thousands. For further information contact:

Dennis Goodwin, Icom (UK) Ltd, Sea Street, Herne Bay, Kent, CT6 8LD
Tel: 0227 363859. Fax: 0227 360155

CAMERA TUBES EXPLAINED

Part-3

Peter Delaney G8KZG

In the first two parts of this series we considered the vidicon tube and its variants. Another family of camera tubes still found in amateur use, the **Image Orthicons**, we can now briefly consider in this final part.

There are basically two versions of the Image Orthicon - a 3 inch and a 4.5 inch tube. These figures refer to the diameter of the glass at its widest point. The 3 inch tube is about 15.5 inches long, whilst the 4.5 inch version is almost 20 inches long. They are not interchangeable, nor, of course, can they be exchanged with tubes of the vidicon (etc) family.

The principle of operation of both tubes is essentially the same. Referring to the diagram in Fig.1 the image section is on the left. The picture is formed on the photocathode. The pattern of photo electrons this forms is focused onto the target layer, causing secondary emission, There is, as a result, a net positive charge left on the target.

The electron beam scans the target, leaving electrons on the more positively charged areas. The remainder of the beam, thus modulated with the light information, returns back down the tube to an electron multiplier which surrounds the electron gun. The anode current of this electron multiplier becomes the image orthicon output signal for feeding to the head amplifier. The 4.5 inch tube has a better signal-to-noise ratio, and better resolution, compared to the 3 inch variety.

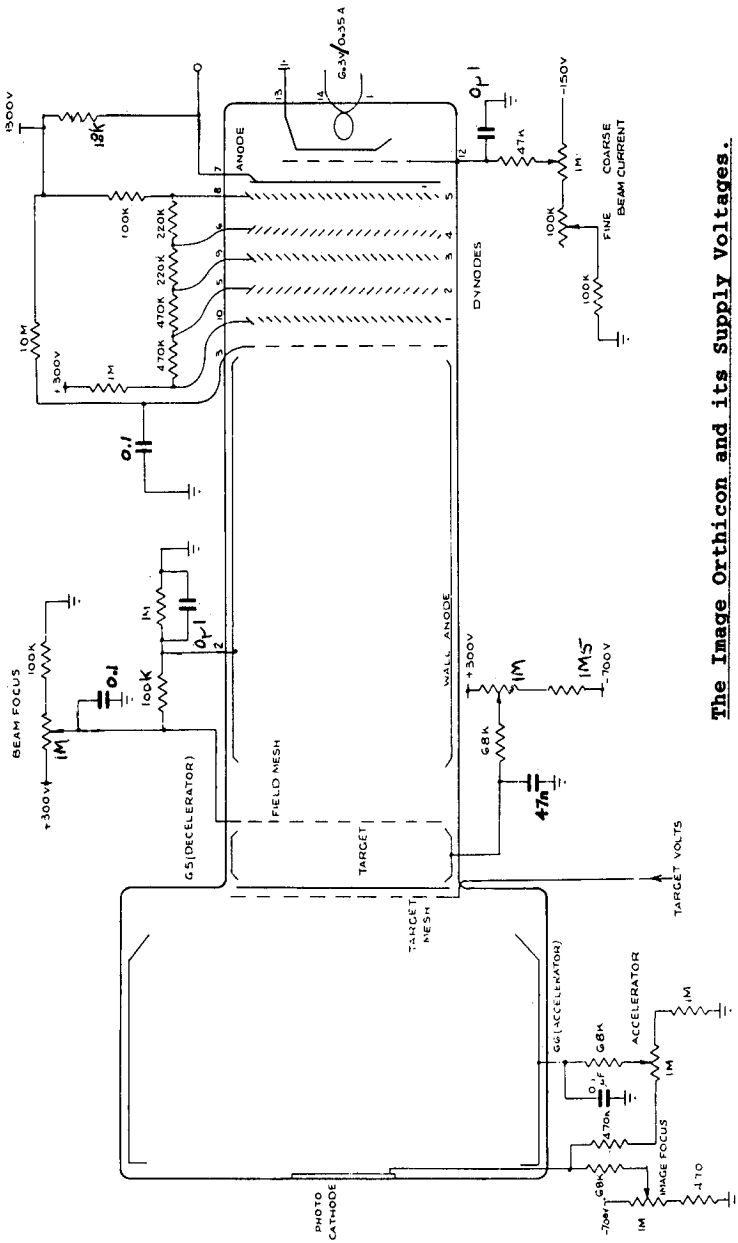
ALIGNMENT

The alignment procedure when a new tube is fitted is rather different to that for a vidicon tube, and is as follows:

1) ... Insert the tube into the yoke correctly orientated (for 3 inch tubes pin-7 of the image section, and for 4.5 inch tubes pin-3 of the image section, should be centred at the bottom), connect the face focus coil and the tube base. Line up the camera on a lit blank screen. or defocus the image.

2) ... Set the beam (G1) control for minimum beam and the scans to oversacn the target. Turn on the tube heater and allow it to warm up for two minutes or so. Only at this stage should the various potentials be applied to the tube electrodes - typical operating voltages and the pin connections for the two types are given in the table at the end of this article.

3) ... By adjusting the beam control a signal will appear on the monitor, and an even white picture with minimum shading obtained by correct setting of the two alignment controls. At this stage the gain of the electron multiplier should be set to avoid overloading, by adjusting the voltage on the Dynodes. In some cases there will also be a fine control which alters the inter-dynode potential, which may also need attention.



The Image Orthicon and its Supply Voltages.

4) ... For best performance, particularly in respect of lag and stability, the tube should be allowed to warm up for about twenty minutes, with beam left on but tube is otherwise capped. This allows the target layer to be stabilised and is a procedure that is advised by the manufacturers for every time the tube is turned on.

5) ... The three sets of focus - optical, image and beam - should next be optimised, preferably using a normal test card. If one is not available, then an image with straight line black-to-white transitions will do.

6) ... The target ring should now be made to just appear in the corners by altering the three scan controls - height, width and centering. The target cut-off point is found by reducing the target potential until the picture highlights just disappear. The correct setting is 2.7 volts more positive than cut-off potential.

7) ... Set the beam control and the lens iris so that the whites are just beginning to be crushed if the exposure is increased. the beam current should be sufficient to fully discharge the whites. Check that the setting is correct by opening the iris by half a stop and seeing that the beam is just discharging the whites in the picture.

8) ... The potential on grid-3 should be set for maximum signal and uniform shading of the picture. The grid-5 potential will be a compromise between best picture geometry and the shading in the picture corners when the lens is capped.

9) ... In some cases the signal voltage will drop slightly in value as the beam is focussed. If this happens, reduce the focus voltage below the value when the minimum signal amplitude occurs. This will give the best signal that can be obtained without losing resolution, whilst keeping a uniform white.

10) .. Readjust the three focus controls and steps 6 to 9 until no further improvement can be obtained.

There are a few "Dont's" that are applicable to all types of camera, tube to help obtain the maximum best performance from the tube.

1) Don't operate a tube without the scans on.
2) Don't underscan the target.
3) Don't operate the tube at less than 20° to the vertical, with the target layer lower than the cathode.
4) Don't allow the heater to run at a higher voltage or current than specified.
5) Don't use a higher beam current than necessary.
6) Don't allow the photosensitive layer to be exposed to an overload of light, even for a short time.
7) Don't operate the electrodes at voltages higher than the design specifications.
8) Don't use anything except a proper lens tissue to clean the tube faceplate.

In addition for Image Orthicons:

9) Don't turn off the beam current when the electrodes still have a potential on them.

TUBE TYPE → / PIN NO. ↓	3" OR 4.5" TUBE BASE	3" SHOULDER	4.5" SHOULDER
1	Heater	Grid 6	Field mesh
2	Grid 4	Photocathode	Photocathode
3	Grid 3	Internal Conn.	Grid 6
4	Internal Conn.	Internal Conn.	Grid 5
5	Dynode 2	Grid 5	Target
6	Dynode 4	Target	
7	Anode	Internal Conn.	
8	Dynode 5		
9	Dynode 3		
10	Grid 2 + Dynode 1	Pin-1 of shoulder aligns between pins-2 and 3 of base connector.	
11	Internal Conn.		
12	Grid 1		
13	Cathode		
14	Heater		

TABLE OF PIN CONNECTIONS FOR IMAGE ORTHICON TUBES.

For those interested in the Image Orthicon camera a design for one using a 4.5 inch tube appeared in CQ-TV's 88 - 91. The last part of that series describes details of the construction of the scan and focus coils - about 7 inches in diameter and 13 inches long, full of copper wire. It is heavy and not an easy task to make!

There are, of course, other types of camera tube in use by amateurs, but hopefully the information in these articles will help. in the majority of cases. It is hoped to include a table of tube types in a future edition of CQ-TV, to help in identifying tubes.

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.

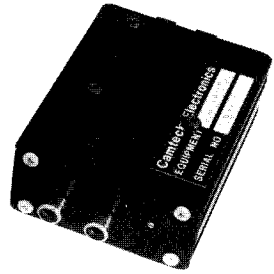
CAMTECH ELECTRONICS CE

NEW.. 24cm COLOUR TV TRANSMITTER

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

Specification

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



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

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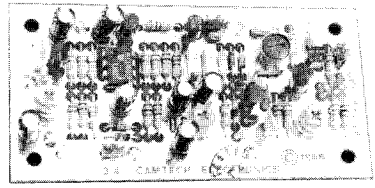
Our Audio sub carrier + vogad unit is a complete audio modulation system designed for amateur television. The circuit consists of a microphone amplifier with speech compressor,audio filtering and a 6MHz oscillator / FM modulator.

Specification

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



Kit £23.00 P&P £1.00
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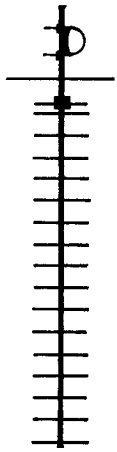
SEVERNSIDE TELEVISION GROUP



As over 200 users from all over the UK will know, the Severnside Television Group 18 element wideband yagi is the affordable aerial for 23 cm ATV. Just look at some of its star features ;

* Frequency coverage 1240 to 1325 MHz.
* Gain 10 dB across the band.
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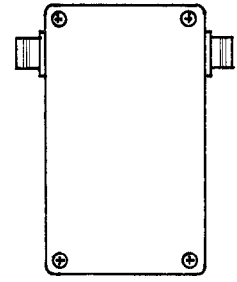
* Length only 900 mm, weight only 300 g.
* Supplied with clamp for masts up to 55 mm in diameter. End mounting design.
* Neat, unobtrusive design, looks similar to but smaller than a domestic TV aerial.
* Price only £14.00, plus £2.50 postage.

The aerial is ideal for repeater or portable use. At this low cost, many stations use a second aerial for repeater "look through". Delivery ex-stock.

The Group is now pleased to offer G4BVK's superb high performance 1.3 GHz GaAsFET pre-amp. As used on GB3ZZ and by our band winning contest station G7ATV/P, the specification is very impressive ;

* Gain up to 17 dB, noise figure only 1 dB
* Optimised for ATV use.
* Fully assembled in die-cast box size 110 x 60 x 30 mm, with quality N sockets.
* Filtered input helps provide some protection from out of band signals.
* Powered from 12 V dc.
* Cost only £52.00, plus £1.50 postage.



Please note that the unit is not waterproof as supplied, and does not contain RF change over circuitry. Supplied with full instructions and specification sheets, or please send SAE for a full specification sheet now. Custom versions for commercial use also available.

Cheques should be made payable to "SEVERNSIDE TELEVISION GROUP". Please allow 28 days for delivery. Send your order to Severnside Television Group, c/o 15, Witney Close, Saltford, Bristol BS18 3DX. Tel. 0225 873 098, evenings and weekends only please.

THE WORTHING AND DISTRICT VIDEO REPEATER GROUP

GB3VR ATV REPEATER BRIGHTON

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GB3VR ATV REPEATER BRIGHTON

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1W FM-TV 24cm TRANSMITTER SOLENT SCIENTIFIC KIT

THE 1WATT TRANSMITTER WAS DESIGNED BY ALAM LATHAM G8CMQ AND HAS PROVED ITSELF TO BE VERY POPULAR AMONGST ATV CONSTRUCTORS. WE RECEIVE MANY QUESTIONS ABOUT IT AND I HOPE TO BE ABLE TO ANSWER A FEW OF THEM.

THE TX IS SUPPLIED IN KIT FORM AND CONTAINS ALL THE ON BOARD COMPONENTS, A PROFESSIONAL MADE PCB WITH PLATED THROUGH HOLES, THE ALUMINIUM HEATSINKS FOR THE PA AND THE CORRECT SIZE DI-CAST BOX. THE ONLY PARTS NOT INCLUDED ARE THE CONNECTORS (3 REQUIRED) AND 1 TUNING POT (4K7 LIN).

THE TX HAS BUILT IN INTERCARRIER SOUND AND THIS IS ADJUSTABLE FROM ABOUT 5.5MHz TO 6.5MHz BY THE TURNING OF A SINGLE TRIMMER. IT IS POSSIBLE TO PUT IN A SWITCH IF REQUIRED AND BY THE ADDITION OF ANOTHER SOUND STAGE 5.5MHz AND 6.0MHz CAN BE RUN AT THE SAME TIME.

THE KIT IS SUPPLIED WITH THE CORRECT SIZE DI-CAST BOX AND THE TX MUST BE BUILT IN THIS TO MAINTAIN STABILITY, BUT OF COURSE CAN THEN BE PUT IN YOUR OWN CASE. WE CAN NOW SUPPLY THIS BOX SEPARATELY IF REQUIRED.

WE CAN ALSO SUPPLY A PHASE LOCK LOOP KIT THAT FITS INSIDE THE TX CASE ON TOP OF THE TX BOARD & YOU DONT HAVE TO REMOVE THE TX BOARD FROM THE CASE TO FIT IT. THERE ARE JUST A FEW CONNECTIONS TO THE TX BOARD AND IT DOES NOT TAKE THAT LONG TO FIT.

THE TX KIT IS NOT FOR THE BEGINNER BUT THEY SHOULD NOT BE PUT OFF AS MANY ATV HOT-SPOTS SEEM TO HAVE SOMEONE WHO PRIDES THEMSELVES IN BUILDING THESE UNITS FOR OTHERS. FOR THE AVERAGE CONSTRUCTOR, THEY CAN BE QUITE EASILY BUILT IN A FEW EVENINGS. THE AVERAGE CONSTRUCTION TIME SEEMS TO BE ABOUT 10 HOURS ALTHOUGH MANY HAVE HALVED THIS. YOU WILL REQUIRE A SOLDERING IRON SCREWDRIVERS PLIERS SPANNERS A METER A DRILL FOR THE CASE AND HEATSINK AND ABOVE ALL PATIENCE. GOOD LUCK.

WE DO OF COURSE OFFER A FULL BACK UP SERVICE TO ALL OF OUR KITS AND TO THE TX'S AND RX'S SOLD BY G8CMQ. IF YOU BREAK ANY COMPONENT OR BLOW SOMETHING UP, THEN JUST PHONE UP OR WRITE AND WE WILL TRY AND SORT IT OUT FOR YOU.

OTHER NEWS

THE REPEATER GROUP NOW HAS IT'S OWN PACKET RADIO NODE (G6WOR-2) AT BRIGHTON ALONGSIDE THE ATV REPEATER GB3VR AND A FULL MAILBOX SYSTEM WHICH IS LOCATED IN LANCING (GB7VRB-2) THE MAILBOX IS ACCESSABLE VIA THE NODE G6WOR-2 OR DIRECT IF LOCAL. IT IS ITENDED TO HAVE THE MAILBOX CONNECTED BY A 23cms LINK USING, YES YOU GUESSED IT, THE 1W FM-TV TX. WE WILL KEEP YOU INFORMED OF THE PROGRESS OF THIS PROJECT. DO FEEL FREE HOWEVER TO LEAVE US ANY MESSAGES ON IT.

WHEN ORDERING PLEASE MAKE CHEQUES PAYABLE TO THE "WORTHING & DISTRICT VIDEO REPEATER GROUP" OR "W&DVRG" AND SEND IT TO:-

R.STEPHENS G8XEU, TOFTWOOD, MILL LANE, HIGH SALVINGTON, WORTHING, SUSSEX, BN13 3DF

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US NOW OR SEE US AT MOST
OF THE MAJOR RADIO RALLIES.

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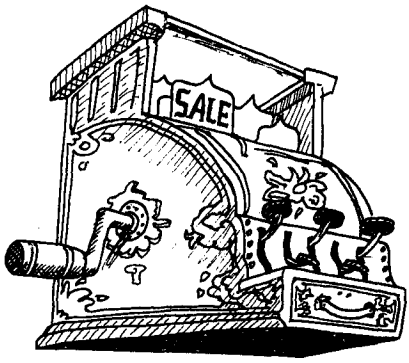

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ADVERTISING RATES:

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

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

FOR SALE

HALF PRICE SALE!! NEVER TO BE REPEATED!!
A handful of boards remain at the time this is written. Please phone to snap up the last few bargain boards.
Video Aperture Corrector (HB1), SPG Genlock (CQ-TV 77), P100 SPG (CQ-TV 100) ... these are all £1.50 each inc VAT, plus postage at 30p.
Video Modulator, VSB Filter, 39MHz Oscillator (all in ATV Hbk 2) ... all 75p each inc VAT, plus postage at 20p.
Rush your order now, to avoid disappointment, to BATC, 6 East View Close, Wargrave, Berks. Tel: 073522 3121

SONY SEG370P PAL SPECIAL EFFECTS GENERATOR. 19" rack or bench mounting professional PAL SEG made during 1970 by Shintron in the USA for Sony. Provides 6 video inputs, dissolve between any 2, 8 wipe patterns including circles and ellipses. Internal/external keying and matte, colouriser with luminance, hue and saturation controls. Preview and programme, video outputs and tally light switching. To utilise all features requires sync, blanking, PAL ID, burst flag and reference subcarrier inputs. Complete with operating manual, service manual and all circuit diagrams (copies available separately)...£375 plus carriage. A Kitching, 67 High street, Great Broughton, Middlesborough, Cleveland, TS9 7EF. Tel: 0642 710955 any time.

TRIPLE STANDARD RECEIVER-MONITOR, Sharp DV202SPN, remote control, with service manual. Excellent picture, in good working order ... Offers please. DECCA RECEIVER-MONITOR type CS2245/AL, with service manual ... £25. P.Morrison Tel: 0283 790747

High grade used TEST EQUIPMENT for professional and amateur requirements. RACAL receivers and a comprehensive range of RF equipment. 24cm 39-element LOOP YAGI AERIALS for ATV. 23/24cm LINEAR VALVE AMPLIFIERS, single and two stage using ceramic 3CX100A5/7289 type of valves. Also in stock a range of sundries allied to the RF world. Details write to MICROMAX RF SYSTEMS, 5 Pinfold Crescent, Penn, Wolverhampton, WV4 4ET. Tel: 0902 343746.

EX BT stock of CCTV equipment for disposal, much of it new and most in good working order. Each item in the list has the following information in brackets after the entry: trade price (where known) and condition. Please ring for further details.

CAMERAS:	2 off	BAXALL V3404N 2/3" NEWVICON (435/new)	£120
	1 off	BAXALL V5204N 1" NEWVICON (739/new)	£240
	1 off	BAXALL V5205U 1" ULTRACON (806/ex-dem)	£260
	1 off	GRUNDIG FA123 2/3" VIDICON (180/used) ..... (new tube fitted, needs setting up)	£ 30
	1 off	GRUNDIG FA70B 1" NEWVICON (900+/ex-dem) ..... (c/w f0.95 Schneider auto iris lens)	£300
	1 off	COTRON VANGUARD 1" VIDICON (350/used) ..... (new tube fitted, needs setting up)	£ 50
SWITCHERS:	2 off	VICON 4-WAY AUTO SEQUENCING (90/ex-dem) ..... with alarm.	£ 25
	1 off	BAXALL DS1/6 6-WAY AUTO (70/new)	£ 25
	1 off	BAXALL DS1/4A 4-WAY AUTO (95/new) ..... (with alarm)	£ 30
	1 off	BAXALL DS1/2 2-WAY AUTO (43/ex-dem)	£ 10
	1 off	BAXALL DS2/8 8-WAY AUTO 2-OUTPUT (93/new)	£ 30
LENSES:	3 off	TARCUS 12.5mm f1.3 MANUAL IRIS (42/new)	£ 12
	3 off	TARCUS 25mm f1.4 MANUAL IRIS (28/new)	£ 10
	4 off	TARCUS 50mm f1.3 MANUAL IRIS (49/new)	£ 15
	5 off	TARCUS 16mm f1.4 MANUAL IRIS (22/new)	£ 8
	1 off	COMPUTAR 16-160mm MOTOR ZOOM A/I (988/new)	£300
	1 off	COMPUTAR 17-102mm MOTOR ZOOM A/I (464/ex-dem) ..	£140
	1 off	SCHNEIDER 10mm f1.8 AUTO IRIS (190/ex-dem)	£ 50
	1 off	COSMICAR 75mm f1.9 MANUAL IRIS (90/new)	£ 30
	1 off	TAMRON 12.5-50mm f2 MANUAL ZOOM (120/used)	£ 25
	1 off	VICON 50mm f1.4 AUTO IRIS (80/used)	£ 20
	1 off	COSMICAR 50mm f1.8 MANUAL IRIS (45/used)	£ 10
	1 off	COMPUTAR 5.5mm f1.5 MANUAL IRIS (90/used)	£ 30
	1 off	SOM BERTHIOT 25mm f1.4 MANUAL IRIS (80/ex-dem) .	£ 25
MISC:	1 off	BAXALL TDG2 TIME & DATE GENERATOR (280/new)	£ 75
	2 off	VICON TIME & DATE GENERATOR (250/ex-dem)	£ 30
	2 off	VICON VIDEO MOVEMENT DETECTORS (200/ex-dem)	£ 25
	1 off	BAXALL ZT5 8-WAY AUTO SWITCHER c/w TELEMETRY CONTROL FOR PAN/TILT ETC. & ALARM (400/new)	£120
	1 off	BAXALL ZR4 TELEMETRY RECEIVER FOR USE WITH ZT5 inc PSU, RELAYS, ETC. (323/new)	£100
	1 off	150W INFRA-RED ILLUMINATOR (225/ex-dem)	£ 75
	1 off	BAXALL M9R2, HAS TWO 9" MONO MONITORS MOUNTED SIDE BY SIDE FOR 19" RACK-MOUNTING (310/new) ...	£100
	2 off	RCA 9" MONO MONITORS AS ABOVE (350/ex-dem)	£ 75
	2 off	BAXALL 12" MONO MONITORS, CASES SLIGHTLY DAMAGED, OTHERWISE OK (140/new)	£ 25

PLUS: miscellaneous camera housings, brackets, etc.

All prices plus postage.

Denis Hoare, 104 The Greenway, Colindale, London N9. Tel: 01 205 5431

YAESU FT490R 2M MULTIMODE RADIO in mint condition, 18W output, listen on input for repeater working, 12.5kHz steps for split working...£300. YAESU FT790R 70CM PORTABLE MULTIMODE RADIO in mint condition, 2.5W output c/w matching YAESU 10W LINEAR AMPLIFIER...£300. Barry Trigger G6IKQ, 2 Stocking Lane, Shenington, Nr.Banbury. Tel: 029 587 684.

MONOCHROME PROCESSING AMPLIFIER, complete with power supply, in smart 19" rack-mount case ... £10. Buyer collect or pay carriage.
Peter Delaney. 6 East View Close, Wargrave, Berks. Tel: 073522 3121

PYE LYNX: I have quite a few scrap Lynx cameras, also some faulty circuit boards, so let me know if you need any cheap spares.
SONY CV-2100 VIDEO RECORDER, I have one here, not guaranteed but ideal as a source of spares. #5 (heavy, must be collected).
Andy Emmerson, 71 Falcutt Way, Northampton, NN2 8PH. Tel: 0604 844130

1.2 METRE OFFSET DISH ... £50. Dave Lawton Tel: 0494 28899

TWIN FULL HEIGHT DISC DRIVE UNITS c/w power supply, in plastic case, These are adjustable 40 or 80 track. new ... £70. Single full height DISC DRIVES, uncased 80 track, tested ... £10. POWER UNIT invertor - input 5V DC, output 12V DC at 0.5A. 2" x 2" x ½" ... £2. PHILIPS N1700 VCR ... £10. All plus carriage or collect. COMPUTER CHIPS, mostly ex-units, CPU + support, Eproms to 27256, Dynamic RAMs to 256k, Static RAMs to 64k. Programming service for Eproms. SAE for list. D.Hemingway, Ivanhoe, Glen Road, Hindhead, Surrey, GU26 6QE

2 off **VARIABLE CAPACITORS 13-250pF**, max power 2kW. These are Cirkit cat. no. TC-250 ... £5 each. 1 off 2C39 VALVE, new and in original packaging, ideal for 24CM ... £15. 10 MEG HARD CARD + software to fill disc. This will fit any IBM PC, IBM PC XT, Compaq portable, Compaq plus, AT&T PC6300 and Amstrad PC's. It is a bit noisy hence the price ... £65. Numbers 1 to 11 of the Remote Imaging Group's newsletter and numbers 137 to 145 of CQ-TV ... Offers. SSTV SPG plus Eprom ... £5. GW8PBX PAL CODER ... £4. CHARACTER GENERATOR ... £5. 2 off NI-CAD CHARGERS (R.S type 591-405). Dennis Anderson G6YBC, 97 Leigh Road, Atherton, Gt.Manchester, M29 0LX. Tel: 0942 891140.

COLOUR RGB monitor chassis ... £40. Farnell PSU 0-30V @ 1A ... £15. Farnell SM PSU 5V @ 60A ... £10. PSU 24V @ 2A ... £10. Philips CAMERA HEAD ... £5. Philips EL8000 CAMERA MANUAL (copy) ... £2.50. OSCILLOSCOPE 1" tube, no timebase ... £10. CQ-TV 95 CROSSHATCH UNIT ... £4.50. D Smith Tel: 01 695 6651.

24CM SOLID STATE POWER AMPLIFIER, 1 watt input, 4 watts output. Built from an LMW kit and used for some time on GB3ET. Boxed and complete with power supply ... £25. Trevor Brown 0532 670115.

WANG MINI MAIN FRAME COMPUTER circa 1975. Three terminals, 10Mb hard disc drive and 8" floppy disc drive. Buyer must collect ... £20.
Jeremy Power, Tel: Berkhamsted (0442) 871386.

APPLE II PLUS COMPUTER, Kaga monitor, colour board, serial/parallel, "SUP 'R'" terminal (80 column display), cards etc. Two disc drives, software, joysticks and manuals ... £250. Will consider swopping/PX for a 2M transceiver. **KW 2000B HF TRANSCEIVER** c/w microphone, PSU/speaker, handbook, full circuit diagram, spares etc. VGC ... £220 Keith Johnson GØHRM Tel: 0788 832115.

EXCHANGE & WANTED

Information wanted on TOSHIBA IK83P COLOUR CAMERA which has been got at by the 'phantom twiddler'. I need information sheets on set-up procedure. The usual channels for information have proved useless as the camera was imported into the country. Have pity if you can help a chap with on screen green skin and blue hair! All expenses met. Tel: Peter Bruce G4WPB 01 689 2813.

PYE SUPER LYNX CAMERA HANDBOOK or photocopy of same, or even just the mechanical and electrical setting up will do. A 2/3 inch vidicon type 20PE20 or equivalent and any old C-mount lens, to get a rally bargain operational. John Blackburn, 36 Talbot Road, Albrighton, Wolverhampton, WV7 3HH. Tel: 090 722 2349.

JVC REMOTE AND SYNCHRONISING UNIT TYPE RS-8800E and AC adaptor type AA-C88E for CY-8800E series camera. Also any spares, accessories and interconnecting cables for all units, working or not. Service manual also required for RS-8800E. Robin Dakin, 8 Baddow Hall Crescent, Great Baddow, Chelmsford, Essex, CM2 7BY. Tel: 0245 75250.

EXCHANGE: Having just bought two boxes full of old magazines, I now have loads of Practical Televisions and some Practical Wirelesses to dispose of. I have most issues of PT and a few of PW, both for the years between 1950 and 1960. It's worth sending me your wants lists (plus a SAE please); I can sell you these mags at 25p each (plus post) or, preferably, swap them for issues I am missing. Act now, while I still have them! In the meantime I am looking for PT April, November 1950; March, April, November 1956; July 1960; February-December 1961; February 1962; March 1965. Also PW May, June 1955. Andy Emmerson, 71 Falcutt Way, Northampton, NN2 8PH. Tel: 0604 844130

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

MANUAL FOR AMPEX VPR 5803 VTR. Copy to borrow for selective photocopying would be satisfactory. VISION MIXER/FADERS, any resistance or size, either split or joined. Jeremy Power 0442 871386

ELECTRONIC VIEWFINDER for Hitachi VKC200 colour camera, non-worker or other makes of viewfinder for repair or conversion considered. Also required a source of rewirable miniature 8-pin circular connectors of the type used for AV outputs on JVC camcorders. Chris Maxwell G8MKT, 24 Jensen, Tamworth, Staffs, B77 2RH. Tel: 0827 285949.

WANTED: Circuit diagram and manual for Telequipment WG44 test pattern generator (buy or borrow); CIRCUIT AND MANUAL for Link 101 camera (will pay for copies); SONY CV-2000 recorder; BAND I SET-TOP ANTENNA, the type with a large loop and a walnut bakelite base. All old TV literature, especially CCTV sales leaflets and catalogues. Odhams Television Annuals of the 50s and 60s. 2" x 2" slides of test cards and captions to borrow and copy or buy. Callsign generator or similar using real diodes in a matrix.
Andy Emmerson, 71 Falcutt Way, Northampton, NN2 8PH. Tel:0604 844130

Wanted 24CM RECEIVE equipment ... D.Smith Tel: 01 695 6651.

Old MICROPHONES wanted for my collection, especially STC, Reslo, Neuman, Shure, Beyer, AKG, Philips, etc. From the 30's, 40's and 50's. Will take non-working items - what have you?. Chris G4RBR Tel: 01 891 1263 (evenings).

STOP PRESS:

FOR SALE: VIDEO SET-UP including partially completed system in caravan. All must go. Ring for details.
Simon Gough Tel: 0234 852789

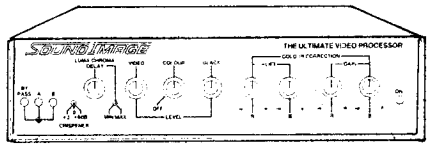
FORTOP REPAIRS AND RE-TUNES to original performance by ex-Fortop man. Ring Steve G4DVN 0781 305153.

FOR SALE COSSOR CDU150 DUAL-TRACE 35MHZ OSCILLOSCOPE, transistorised and working, minor attention needed ... £150 ono.
Barry Swain. Tel: 0840 213308.

WANTED SERVICE MANUAL/CIRCUIT DIAGRAM for Marconi 625-line picture and waveform monitor MU5. Identity BB00-3901-02M, s/n 405. Also required any information on high resolution linear RGB colour monitor chassis CH20U-64-, s/n R5H021, manufactured August 85 by Totoku Electric Co., Japan. Barry Swain. Tel: 0840 213308.

THE SOUNDIMAGE RANGE

● VIDEO ACCESSORIES ●



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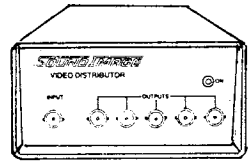

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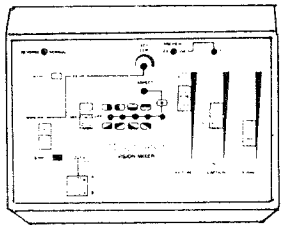

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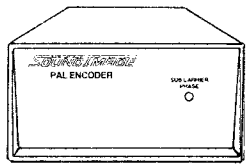

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for Computer or Camera Input
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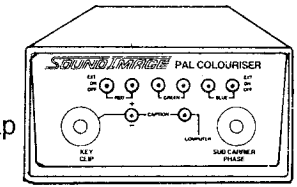

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This set of photographs represent a colour reporting chart, with P0 at top left, P1 top right and so on to P5 at the bottom.

FM ATV behaves in a different way to AM television in that the signal-to-noise is worst at low signal levels, but improves far faster than AM as the signal level increases. the noise itself looks different and the picture often locks at signal levels so low that video cannot be seen on the screen. the higher video frequencies are noisier than an AM system and this shows up as chroma noise. The point at which the colour is lost is dependant on the monitor, and can be over-ridden by removing the colour killer circuitry within the monitor. In practice, when the picture is very noisy it is best viewed in monochrome.