

CQ-TV

MAGAZINE

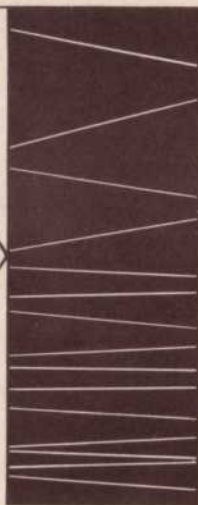
No. 118

BRITISH AMATEUR TELEVISION CLUB

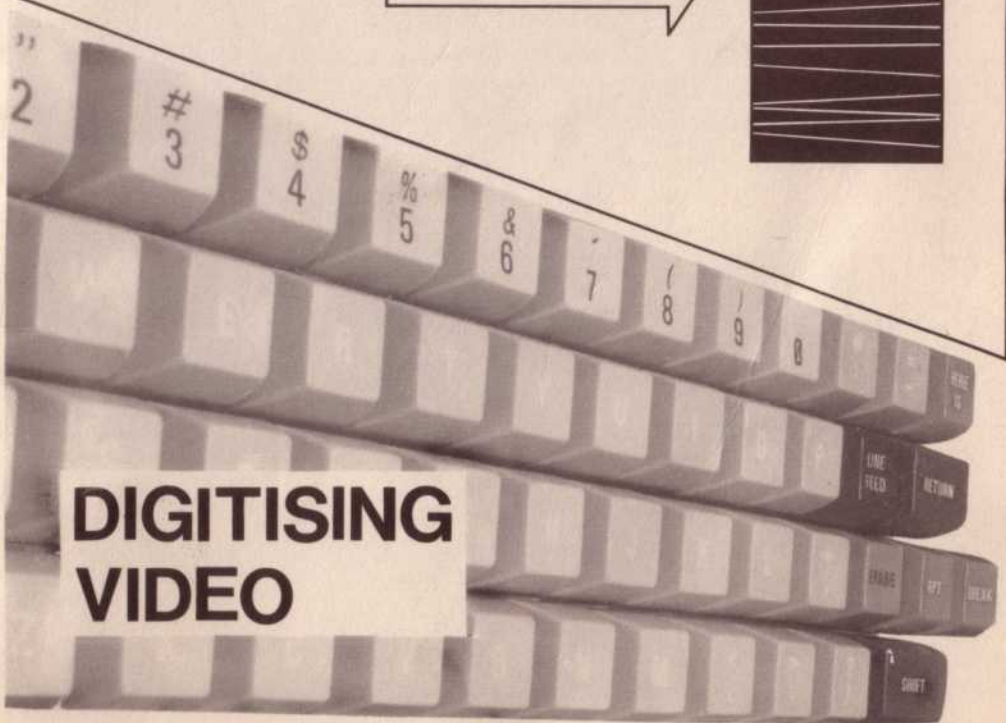
MAY 1982

**FM
TV**

NE564



**DIGITISING
VIDEO**



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WHO TO WRITE TO:

CQ-TV copy and advertisements	J.L.Wood. 47 Crick Road, Hillmorton, Rugby CV21 4DU. Tel: 0788 846220
Subscriptions and change of address	BATC SUBS. 16 Percival Road, Rugby, Warwickshire.
Membership enquiries and applications	B.Summers. 13 Church Street, Gainsborough, Lincs. Tel: 0427 3940
Orders for components and printed circuit boards	P.Delaney. 6 East View Close, Wargrave, Berks. Tel: 073 522 3121
Orders for books and other publications	I.Pawson. 14 Lilac Avenue, Leicester, LE5 1FN. Tel: 0533 769425
General Correspondence	T.Brown. 25 Gainsbro Drive, Adel, Leeds, LS16 7PF. Tel: 0532 670115

PLEASE NOTE: If, when writing to a committee member, a reply is required, please enclose a stamped addressed envelope or, in the case of an overseas member, an International Reply Coupon.

MEMBERSHIP

Enrolment fee .50p. This applies also to persons re-joining the club after an elapsed subscription. Full year (1982 only) £3. April to December £2.25p. July to December £1.50p. October to December 0.75p. All subscriptions fall due on the first of January each year. Overseas applicants should not send foreign cheques please.

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CLOSE FOR PRESS DATE FOR THE AUGUST 1982 ISSUE.....20th June 1982



EDITORS POSTBAG

Dear Ed,

I think you should be congratulated on your collection of 24cm ATV articles in CQ-TV117. What does worry me is that all the circuitry is for the AM TV mode. I believe that FM is really the system we ought to be looking at for 24cm since linearity can be quite a problem at these frequencies.

FM TV has several major advantages:-

- 1) Much greater power levels are available from any device once you don't need to de-rate it in order to achieve linearity.
- 2) The question of whether to use a VSB filter or not does not arise.
- 3) The addition of 6MHz sound is very easy in that all you need to do is mix 6MHz in with the video signal.
- 4) For small portable and walk-round rigs FM does not give the effect of rapid QSB on pictures which is very prominent on AM.
- 5) The transmitter designs themselves are often simpler, using free running oscillators locked by an AFC loop which can make life a lot easier than crystal oscillators and numerous frequency multipliers.

I believe all these facts outweigh the single disadvantage of needing to use a separate IF strip and demodulator for receiving (although experience has proved that an FM ATV signal can be received on an unmodified AM TV by slope detecting the signal, this causes a slight weakening of the signal only).

The French have already adopted the FM system and rumours are that the Germans may be switching over from their AM TV repeater system in the not too distant future.

Trevor Brown, G8CJS

Dear Ed,

CQ-TV117 contains some good stuff on 24cm TV, there is however one aspect that has not been discussed and thought about enough and that is using FM TV instead of AM.

AM had the advantage of being able to be used with "domestic" type IF/demod. circuits - very attractive, but is this as attractive as it sounds? Not long from now satellite TV will be with us and so will FM IF strips and demods.

FM offers considerable advantages at the TX end - linear amplification has never been easy (even on 70cm) and efficiencies are usually very low. With FM it's "class 'C'". No problems with linearity and lower input required for a given output.

I highly suspect that most linear amplifiers are not linear in any case, the problem of TV through such amplifiers can be great, witness to this is the Ch21 problems for the broadcasters.

Other people in this area are thinking the same as I am. Now is the time to decide or at least discuss fully the FM mode before the A5 myth creeps to bands above 70cm.

D.J Long, G3PTU

Dear Ed,

I am a member of several clubs and societies some of which have a regular news service or skeds for members who want the latest news and information. Would it be possible for the BATC to provide one for their members who can not wait for the CQ-TV magazine so that news and information - particularly those of an urgent nature - may be available to members.

P.A.K Dunstall.

Reply from the Chairman:

This subject has been raised in the past and was discussed at the last BATC committee meeting. IF there were

sufficient interest in such a service the committee would be prepared to install a 'phone in' news service similar to that operated by the RSGB. The machine would probably be located in the centre of the country on a main STD network.

News tapes would be changed once per week or - as in the case of the recent licensing scare - more frequently as required. The service could also carry items of news from members and groups.

Members comments on this subject would be welcome and should be sent to:

Mr. M. Crampton, G8DLX
16 Percival Road,
Rugby, Warwickshire.

Dear Ed,

Regarding the newly-formed 'South Australian Amateur Television Group', I regret to advise that certain local difficulties have forced us to change the form of our magazine. However, we still intend to publish four times a year under a new title.

It is with some considerable pride that I can report that the SA ATV Group has just won permission from the Australian Government Department of Communication to 'interlink' our two ATV repeaters VK5RTV and VK5RCN. This is the first in VK and probably among the first such installations in the world.

A Fascinating aspect of our repeaters is that each is at the opposite end of the technology spectrum, VK5RTV having two microcomputer controllers capable of almost every conceivable function and VK5RCN running entirely on wind and solar energy with minimal remote control capability. Therefore in designing the interlinking control system we concentrated all the intelligence at VK5RTV with the chief responsibility of avoiding either "feedback" or "lockout" situations.

When fully operational, users at either end will be able to establish the interlink between repeaters by the use of a "touch tone" signal on their inter-carrier sound; thereafter, directional control will be as simple as keying your ATV TX!

J.F. Ingham. Hon. Sec SAATG

Dear Ed,

I am at present the only transmitting ATV station in Auckland. My equipment is a TC1 and a Sharp XC33Z camera. The antenna is a copy of a KLM, 27 elements at 35feet. The frequencies I transmit on are:

ATV2	Video	425.75MHz
	Sound	443.25
ATV1	Video	443.25
	Sound	448.75

Last year I demonstrated the equipment at the Auckland VHF club and offered cameras at trade price, but no takers so far. One way contacts have been made are by people ringing me up to ask that the gear be switched on. They receive me mainly on the Wellington UHF converter.

Keith, ZL1AVO.

Dear Ed,

I note with interest that there is an A/D chip which will run at 15MHz and could be used to digitise standard video signals. This is the RCA CA3300D which is in an 18pin DIL package. It gives a 6 bit digitisation which, of course, means 64 levels of grey which are enough for anyone except the broadcasting authorities. You can use 2 chips in series to get a 7 bit digitisation at 15MHz or you can use two chips in parallel to digitise to 6 bits at 30MHz! Of course there is a snag and that is that the price is £66.44p each. The chip may be obtained from: VSI Electronics (UK) Ltd., Raydonbury Industrial Park, Horsecroft Road, Harlow, Essex, CM19 5BY.

Grant Dixon, GBCGK



PLEASE WRITE CLEARLY!

All BATC officers at some time have difficulty in reading some of their correspondence due to the poor writing of some people. This will invariably cause mistakes to occur and in some cases long delays. Please therefore be sure to PRINT CLEARLY any particular instructions, particularly things like changes of address so that your letter may be dealt with speedily.

MEMBERS SERVICES

With the introduction of the order form in each issue of CQ-TV for members services and publications, it is not now necessary to include a recent address label from your magazine envelope as proof of membership, providing the form is used. This also applies to BATC publications.

The pull-out form is in two parts, please detach and send only the half which is required. One or two members have been ordering both sales items and publications from the same department, this means that one part of your order has to be forwarded causing much expense and delay.

BATC CONVENTION 1982

By popular request the BATC bi-annual convention will again be held at the Post House Hotel, Leicester on the 5th of September 1982. Would anyone requiring exhibition space or trade stand facilities please contact the Secretary.

Members are required who can give a short lecture - say, half an hour or so - on a subject related to amateur TV.

Please note that if accommodation is required at the Post House on either Saturday the 4th or Sunday the 5th, please inform the Post House that you are attending our convention whereupon you will be entitled to a 50% reduction on accommodation, these terms have been negotiated by the convention organiser.

The Post House serve Sunday lunch at approximately £5 per head on which there are no concessions.

It is advisable to book in advance to ensure a table.

The Leicester Post House telephone number is: 0533 896688

All information from:
Trevor Brown G8CJS
25 Gainsbro Drive,
Adel,
Leeds LS16 7PF

EX-BROADCAST EQUIPMENT

Periodically the BATC receives donations of ex-broadcast equipment from the television industry. Because of storage difficulties (XYL can't get the car in the garage!) it is necessary to distribute the equipment as soon as possible. Any member wishing to receive a price list (proceeds to club funds) should send an SAE to the Equipment Registry marking the top left hand corner "Equipment Donation". It should be noted that nothing may happen for some time as donations are of course of a sporadic nature.

The BATC would like to express their grateful thanks to London Weekend Television and to their Director of Engineering, Mr. Roger Appleton (BATC President) for making equipment available to BATC members.

Equipment Registry.
"Somerby View",
Bigby,
Barnetby,
Lincs.

24cm AMATEUR TV AERIALS

Random Electronics are now able to supply a 24cm version of their popular 23cm aerial which is centred around 1260MHz. The price is the same as the 23cm one but it should be made clear which type is required when ordering.

Suitable power splitters are also available.

2 way £26.04p

4 way £30.00p

The range of Tonna aerials are available from: Random Electronics, 12 Conduit Road, Abingdon, Oxon, OX14 1DB. Tel: 0235 23080

J.V.C. B & W CAMERAS CHEAP!

Peter Ward, G4GYI advises us that Video City of 227 Tottenham Court Road, London, (Tel: 01 631 1491 Or 01 580 7353) are selling JVC GS1000EK vidicon cameras, brand new and guaranteed for just £79.95p. The camera runs off 12 volts although it is supplied with a mains power unit. Automatic aperture compensation is built in. Lens is f2.5 16 - 32mm zoom. The lens is fixed focus and as it stands will not focus closer than about 5feet, but the addition of a standard 1 diopetre photographic close-up lens enables much closer work to be accomplished. The camera also has a built in electret microphone.

HISTORY OF AMATEUR TELEVISION

The Editor of CQ-TV magazine is attempting to document the complete history of amateur television and the BATC. To that end any type of related material (except CQ-TV magazines which are in our library) is required. All material will be promptly returned with expenses after being copied. Particular requirements are photographs, magazine articles, old adverts etc. Also if any 'old timers' from the early days would like to contact me I may like to pick their brains!

The intention is to start with the very earliest days of television before broadcasting and document the progress of amateur TV up to the present day. Research will take a long time but it is hoped to publish the results in the future.

John L. Wood, G3YQC
47 Crick Road,
Hillmorton,
Rugby, CV21 4DU

Tel: 0788 846220 (after 4.30pm)

TRANSISTORS

If difficulty is experienced in obtaining BFR34A transistors for CQ-TV projects, we have been advised that the following may be used instead:
BFR91, NE021, NE219.
These devices are all available from Wood & Douglas.

ERRATA TO CQ-TV117

An unfortunate error was written into the alignment procedure on page 15 of the last issue. The second paragraph under "alignment" should read:
'Re-connect the 180 Ohm resistor and connect a milliammeter in series with the +12v supply to TR1, adjust P1 for around 3.5mA.....'

If you proceed as stated in the article you will be trying to obtain 3.5mA of base current! Sorry. G3YQC.

Page 17.

TR2 should have its emitter and collector connections reversed. This error was perpetuated from the original German circuit.

ANOTHER TV REPEATER APPLICATION

An application has been received for an ATV repeater to be located at Bath. The repeaters' provisional callsign is GB3UT.

A Leicester ATV group are also working on a TV repeater for their area.

CQ-TV MATERIAL

As you can see this is a bumper issue. I have taken the opportunity of including some items that have been held over for some time and which therefore leaves the file a bit thin.

I am always in need of articles and other material for publication and in particular, since there is so much talk about FM-TV, I would like to see items (particularly circuits) on suitable FM gear.

My thanks to all the contributors for making the magazine what it is and I look forward to receiving more copy from you.

John L. Wood, G3YQC
Editor, CQ-TV

TX-2 TV TRANSMITTER

by Rod Timms, G8VBC

INTRODUCTION.

This ready built and aligned 70cm ATV transmitter is available by mail order from R.M Webb Television Services. It is designed and manufactured by G80ZP and represents a first entry into the ATV market.

Because the transmitter is supplied as a module and not as a "black box", it can be used in a variety of situations, ie:

- a) built into a TV camera,
- b) in its own box as a self-contained unit,
- c) as a basis for a more powerful station (feeding this unit into a Motorola modular amplifier and then into a SD1434 will produce around 40W of vision).

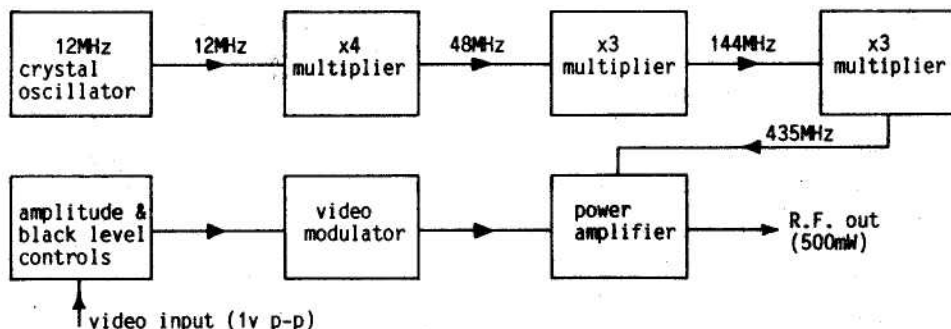
SPECIFICATION.

Output power	500mW
Supply voltage	12 - 13.8v DC
Current consumption	180mA
Video input	1v p-p across 75 Ohms
Carrier frequency	435MHz (or different to order)

DESCRIPTION.

The complete transmitter is accommodated on a single printed circuit board measuring 110mm x 50mm. Connections are clearly marked for video input, RF output and supply voltage. Two presets provide adjustment of video gain and black level. The board is well laid-out and uses good quality components. The alignment trimmers are mostly in the "half meshed" position indicating a well designed unit.

A block diagram of the transmitter is shown below.



TESTS AND MEASUREMENTS.

Normal amateur equipment was used to check the performance of the transmitter, this comprised:

- 1 GHz frequency meter
- Home built spectrum analyser from 400 to 900MHz
- Thruline power meter
- Oscilloscope with a variety of probes
- Avo meter
- Various TV's and radios covering frequencies from 100KHz to 1300MHz

The transmitter was first checked for spectral purity. The 435MHz carrier was clean and unwanted products from the oscillator and multipliers were well down from the carrier. Power output was measured at just over 500mW with a total consumption of 180mA. The unit was left running for three hours into a dummy load, no reduction in power output was noted and the board was barely warm to the touch.

ON-AIR TESTS.

A colour bar signal was radiated to a station 35 miles away and a P3 picture was reported with excellent depth of modulation. However, no colour could be resolved, a look at the output waveform with a diode probe showed the waveform to be excellent with no distortion of a staircase waveform or of sync signals, the colour burst signal though had disappeared. It transpired that the modulator was limiting the video bandwidth to about 3MHz (no bad thing for monochrome). I consulted the designer and was advised that if full bandwidth was required a 2,000pF capacitor fitted in the emitter of the modulator transistor was necessary. Fitting the capacitor gave full bandwidth and the report from the same receiving station was still P3 but with excellent colour.

It was noticed that a buzz was apparent on a 2 meter receiver due to the fact that the final frequency is produced by tripling a 144MHz signal. This could be annoying when working DX, however it is fair to say that this is not the only commercially available TV transmitter to exhibit the problem.

The transmitter was checked to ascertain how easy it would be to realign. All the trimmers were moved out of their normal positions and a complete realignment was started. It turned out to be quite easy and within about fifteen minutes the unit was back to full specification.

CONCLUSIONS.

The TX2 proved to be reliable and very stable. The picture quality was excellent with good depth of modulation. It should be very popular with amateurs who want a 'happy medium' between total homebrew and black box. The only criticism is the use of a 144MHz stage in the multiplier chain. At the time of writing this review the TX2 was the cheapest commercially available TV transmitter on the UK market.

The instructions and circuits provided give adequate information on installation and operation, and as long as they are followed carefully no problems should be experienced. Attention is drawn in the notes regarding the use of wideband video sources such as computer graphics as this could lead to radiation outside the band edges.

Finally, it should be noted that the 35 mile path used for the air test is virtual line of sight and therefore a P3 report for 500mw of video over that distance is exceptional.

The transmitter is available price £54.00 plus .75p postage from:
R.R Webb Television Services, 57 New Street, Burton-on-Trent, Staffs.

Companion 4 and 12Watt linear amplifiers and an ATV up-converter are also available.

CIRCUIT NOTEBOOK

John Lawrence, GW3JGA

No.33

I am most grateful to David Ellis, GW8PBX for providing all the material for this edition of Circuit Notebook.

The circuits were originally built to drive the GW8PBX PAL colour coder (described in the Amateur Television Handbook) from a "monochrome" sync pulse generator.

The circuit in Fig.2 produces two extra sets of pulses, Burst Gate and Vertical Axis Switch and the circuit in Fig.1 generates the colour subcarrier and provides six outputs of 1v dpp into 75 Ohms. For simplicity, the BG pulses are blanked using field drive and hence do not conform to the broadcast spec. also there is no relationship between CSC and line frequency. In practice neither of these shortcomings result in any problems.

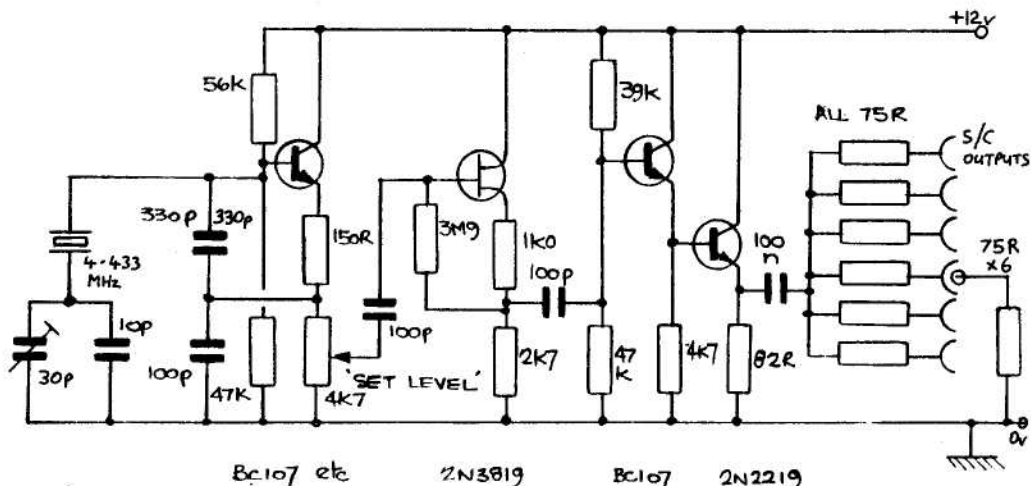


FIG. 1. COLOUR SUB-CARRIER GENERATOR

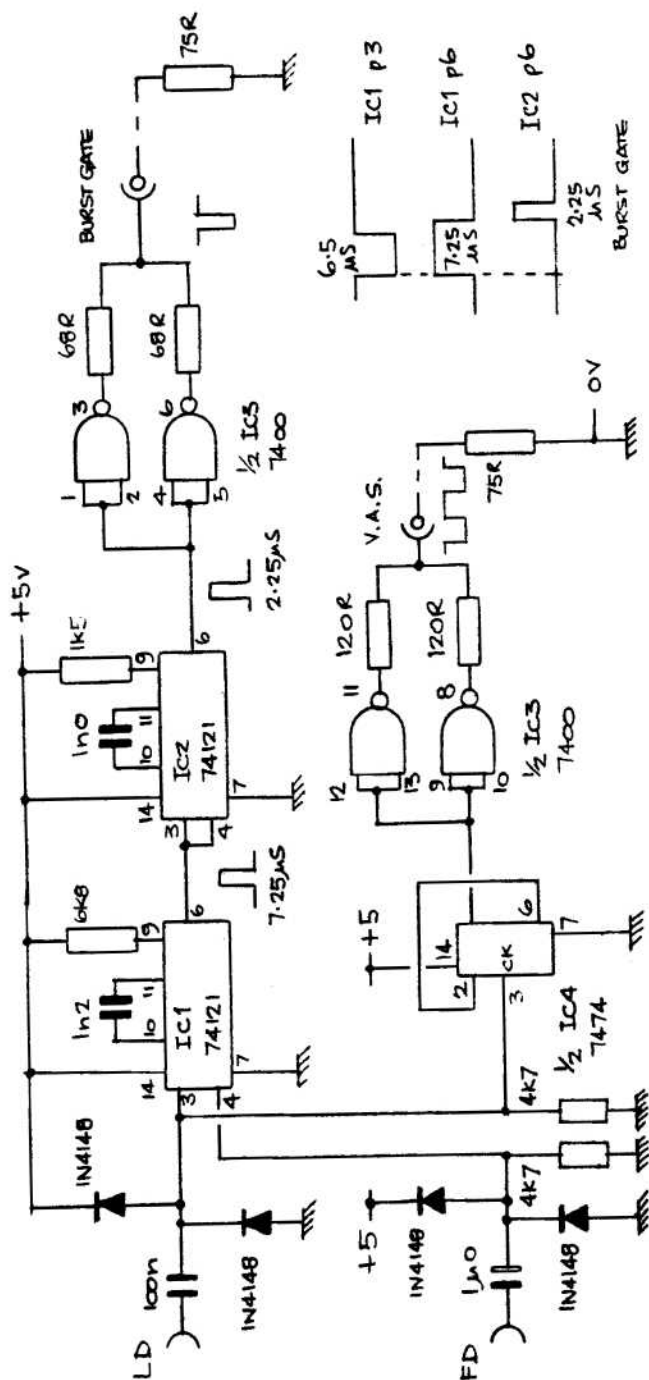


FIG.2. BURST GATE & VERTICAL AXIS SWITCH PULSE GENERATOR

30 YEARS AGO

It was exactly thirty years ago that the first ever two-way television QSO was made by British amateurs. This is how this memorable occasion was reported in CQ-TV magazine No13 - June 1952:

Success! They did it!



YES, SIR!! They really did the job at last.... Just remember the date, you fellows:

Thursday, May 1st 1952: The First Two-way TV Contact on 70 cms.

Both stations are active BATCs who have been with the Club right from the start. Well done, men; I know all BATCs will join in congratulating you on this fine performance. Let's have a look at the record of these two:

Harold Jones, G5ZT/T of Plymouth. Joined the Club in early 1949. Started off with DX TV receivers, then bought a 5527. Was on the stand at the 1950 ESGB show. A bad fire in 1950 set him back a bit, but by this Spring he had the video amp built, using seven EF50s, EF50 TBs, VCR137 Monitor, 12" mgto monitor, all the FSUs, sync mixing units, etc. The RF side comprises 6V6 6V6 832 832 trebler to 427 Mc/s. His rx used an Xtal mixer, 9002 osc and 62.5Mc/s IF. First reception reports were obtained on April 3rd.

Fred Rose, G3BLV/T, of Sunderland. Also joined the Club in 1949, building DX rx's for Sutton Coldfield, then building the first really good telestill unit in the Club. Then on to telecine, and bigger and better pulse generators. Fred, like Harold, is a professional Service engineer, and has been much snowed under by commercial business after the opening of the newer TV stations. Nevertheless, Fred has taken every opportunity to visit other BATCs and to swap ideas and schemes. Armed with his trusty small car, Fred made the journey down to Plymouth in 18 hrs, taking his telestill scanner. This uses a Mazda 30C2 5" CRT, 6H6 DC restorer, 6J5 inverter, 6AC7s in Sync Separator, Line and Frame T.Bs, 6SN7s as p-p amplifiers, and a 2.5kV HFT supply as per Inexpensive TV. The 931A video amp uses three 6AC7s into a 6SN7 cathode follower, with output positive for white. The pulse equipment employs a 100kc/s Xtal divided by HFs to 12.5kc/s. Line pulses formed by feeding 12.5 kc/s to flip-flop trigger oct; frame pulses derived from the mains. These go to another flip-flop, the output from which is used to open a gate oct and allow 8 25kc/s pulses to pass. Another flip-flop driven from the frame pulses gives a rectangular blanking pulse of approx 15 lines duration. Line and frame pulses are mixed and clipped, and output of sync and blanking is via cathode followers. The video/sync mixer consists of two 6F32s. The first has video on G1, with DC clamp, and blanking (frame only) on G3. Variable bias on G1, output to 6AC7 inverter. Second 6F32 similar, with output from 6AC7 on G1. Mixed sync on G3; another 6AC7 inverter and 6J5 cathode follower completes the unit. About 30V signal is available, again positive for white. The RF section consists of an SCR522 driving a QQV06/40 to about 20 watts. Some 9 watts of RF are produced, being modulated by screen mod of the PA with a 6AC7. The Sunderland antenna consists of two vertical corner reflectors topped by a unipole, but for the Plymouth tests 6 element Yagis were used. Definition over the 3 mile path was around 2 Mc/s, although there was much modulator trouble. Back home, Fred is now trying out tests with G3ACK at Blyth, 18 miles away.

Well, that is the story. These two started from scratch, built the TV equipment, then did the RF side, then paid the fee..... 3 yrs work!!

T.V. ON THE AIR

COMPILED BY ANDY EMMERSON, G8PTH.

More activity on 24 cm and new stations in Sussex are the headlines this time, so let's go through the mail.

Twenty four centimetres is where it's at these days and our editor John G3YQC in Rugby is setting the pace with a 2C39 transmitter which delivers 35 watts to the aerial. Under the new regulations that leaves another 65 watts to go! Three others are proceeding along similar lines, G8DLX, G4LRT and G8VBC. Steve G4LRT is well sited on a 700 ft hill about 13 km east of Rugby and has received good pictures from the two stations in Rugby at grade 4. The other station in Rugby is Mike G8DLX and he uses a Wood & Douglas microwave driver source and 3W PA feeding a varactor tripler and BFR94 PA, both from VHF Communications. This then is amplified by a 2C39 PA (Jan 76 Rad Com) to a J-Beam 15/15 antenna. Power out is about 10 watts. On the receive side Mike uses a 3x BFR34A preamp (VHF Comms) and the converter in CQ-TV 117.

The trend in 24 cm on the Continent seems to be FM and with this in mind Trevor G8CJS is building the F3YX FM transmitter and receiver package. Marc F3YX supplies p.c. boards and sets of coils for this very successful design. Talking of things (slightly) foreign, I have received another consignment of specimen copies of A5 Magazine. This excellent periodical from the USA goes from strength to strength, and you can have a specimen copy and details of subscription rates for £1 if you write to me.

A couple of lifts enabled some stations to work some 'fascinating DX' as the Japanese advertisement puts it. Rod G8VBC says things really opened up on January 13th: stations worked that evening included G4IMO, G8GGP, G3CDK, G8PFFK, G3UMF, G8AER, G8GLQ, G8DTQ, G8JBQ and GB4NEW (who he?). Conditions were so good that P4 and P5 pictures, some in colour were the order of the day. On 14.1.82 PA3BIC came onto the screen. "We established contact on 2 metres but it was very difficult to maintain contact due to severe QSB." It ended in a P2 one-way contact, followed by another one-way, the other way round with PE1AYT. Rod is located at Woodville, near Burton on Trent.

A second lift on the 9th February enabled John G8UWS in Folkestone to make two unusual relayed contacts. Not content with working Marc F3YX on 435 MHz (B5, colour) John was patched through on 24 cm to two other stations. In this way he worked Michel F1MV on 1255 MHz (St Georges, Auxerre) and Jean F1AQJ on 1227 MHz (Neuvy-Sautour). Other more conventional contacts were with Laurent F1BJB at Amiens, and Jean-Marie F1FKP at Lens. One that 'got away was Georges F3LP at Le Havre. Another person watching that evening was well-known TV DXer Hugh Cocks near Robertsbridge: he also saw F3YX and also F6EBI in a south westerly direction.

New activity in the Wealden area includes Keith G3TLB (Crowborough), G4GPK (also Crowborough), Nick G4NAJ (Hadlow Down), Dennis G8WZK (Tonbridge) and Geoff G8PPQ (Ide Hill, near Sevenoaks). Receiving stations include Brian G3GSI (near Heathfield) and Larry G3YCM at Pembury.

Final port of call is Essex and on slow scan at that. Dick G3LUI tells us that a weekly activity session will be found every Wednesday evening on 144.500 FM. Stations to look out for are G4KXN, G4MYQ, G4IMO, G4JIE, G8RAN and G3LUI.

That's it - more letters please, to 4 Mount Pleasant, Blean Common, Canterbury, Kent, CT2 9EU.

AM - v - FM FOR 24

by D.J. Long, G3PTU

For ATV on 24cm and above, a fundamental decision has to be made whether the mode shall be amplitude or frequency modulated.

It is my intend to try and put forward the argument for both sides for whichever is eventually adopted either through design or circumstance will set the pattern for the growing interest in 24cm and to a large extent the allocations beyond.

THE CASE FOR AM

AM has been the traditional mode of operation since the invention of the Marconi-EMI system, it has proved itself over the years being a fairly easy mode to produce. It occupies a bandwidth of 2 times the highest modulating frequency, however, this can usually be reduced by attenuating one sideband. This is done by filtering which can be difficult to achieve successfully. On 70cm very few stations adopt true vestigial sideband (VSB) operation because of the technical problems in suppressing the unwanted spectral products.

To amplify AM a linear amplifier is necessary, as the frequency increases, such amplifiers become very expensive and very inefficient. To amplify a VSB signal, the requirements are even more stringent as the suppressed parts of the signal tend to become reinstated during amplification. An amplitude modulated TV signal can be demodulated using domestic equipment. This is obviously a big plus and TV 'graveyards' can usually provide all ones needs for an ATV receiver.

Sound is a problem, the bandwidth for UK system I is only just within the 70cm band - with VSB. Common amplification of sound and vision is possible but very difficult to attain good results. The modulation for the vision must supply the 'sideband' power. Interference from SSB can be severe as the modes are essentially the same. Mode for mode, with the same power, AM probably has the edge on FM for DX copy.

There is very little equipment for ATV at this time for 24cm and above so a change would not be out of the question - economically speaking.

THE CASE FOR FM

This is the mode of the future! All satellite transmissions will be on FM. In theory, the bandwidth necessary is very large but in practice the deviation produced by the modulation can be kept as low as the highest modulating frequency. VSB is possible but not usually attempted - VCRs use VSB very successfully.

In FM the carrier is dertated in frequency, its amplitude remains constant, amplification is by class C, even frequency multiplying is possible within the amplifying stages. Linearity is unimportant - Varactor PAs are perfectly practical. On bands higher than 70cm reasonable power can be obtained from simple devices.

With the coming of the Satellite TV age, domestic FM equipment will be available; in the meantime all the chips and technology are with us now.

Sound is no problem. In system I the subcarrier for the sound is produced by beating the sound and vision to produce 5.9996MHz. With FM a 5.9996MHz subcarrier is added to the vision component before modulation at a low level, this produces say 5-10% of the maximum deviation. This can then be carried in common amplification. The vision modulation is simple and low power consuming as it is confined to a sweeping of the master oscillator in the TX.

In common with broadcast reception, amplitude limiting can be used within the receiver - this considerably reduces interference from other sources.

Mode for mode and with the same power FM may lose out slightly for DX. However as already stated more power can be produced on FM for a given size of PA. Therefore the ERP would be greater with an overall effect of at least holding its own. Probably some advantage being obtained.

So far amateur radio manufacturers have been more favourable towards FM for 24cm than AM.

The Author believes that a serious study of FM on 24cm should be undertaken including the holding in abeyance of the repeater applications until a study has been made of the questions put forward in this article. To start now on a difficult to engineer arrangement would be folly.

Already we read in CQ-TV117 that our French Brothers are backing the FM system, with good reason, for although the practice of FM-TV may be slightly revolutionary to the staunch 'Ally Pally' man, my own conviction is that ATV should lead the way with the FM mode.

A.B.C. COLOUR MIXER

PART 3

by John Goode.

This final part of the ABC colour vision mixer featured in CQ-TV115 and 116 gives one or two notes and final thoughts on the design.

Experience in use has shown that the 'C' bank input on the video effects and mix board (Fig.6) suffers from occasional "bounce" when cutting. This is eliminated by modifying the circuit to use a keyed clamp (as the A and B inputs) instead of the DC restorer, (see Fig.1).

Fig.2 shows the complete circuit for a tally-switching system for use with the mixer. Since it is fairly self-explanatory a detailed discussion will not be included. Various important notes are included on the drawing as are references to the various circuits from the above magazines.

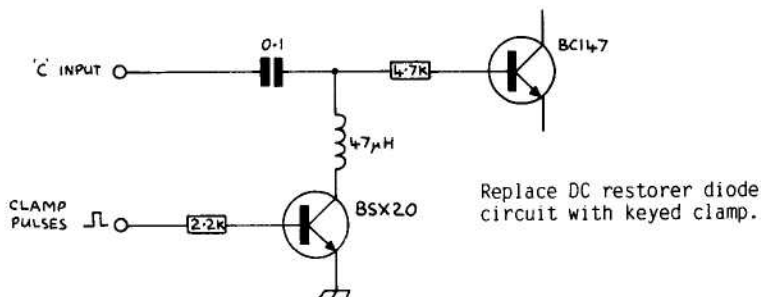


Fig.1 ABC MIXER 'C' INPUT. (CQ-TV 116, p35, Fig.6)

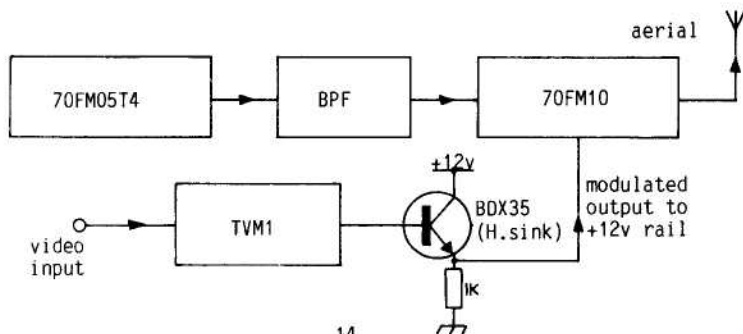
continued on next page →

WOOD AND DOUGLAS

As you are no doubt aware messrs Wood & Douglas produce an ATV modulator (TVM1) for use with their excellent $\frac{1}{2}$ W 70cm transmitter board (70FM05T4). What you may not know is that there is a modification to enable the unit to modulate the companion 10W PA module (70FM10). The modification is very simple and is detailed in the figure. Cs 3, 8, 9, 10, and 15 should be removed. C3 and C9 should be replaced with 100pF ceramics. R3 should also be removed. The ferrite bead should be retained and a further bead may be added if required.

Wood & Douglas also manufacture an RF switched 70cm pre-amp which has facilities to allow it to be mounted at mast head, a complete, boxed 3W ATV transmitter plus many other useful modules for the ATV enthusiast. Among the new items shortly to become available are a 70cm TV up-converter and a TV pattern generator giving grey scale, cross hatch, H & V lines etc. output can be composite video at 1v p-p into 75 Ohms.

Further information may be obtained from the press or by sending a SAE to: Wood & Douglas. 9 Hillcrest, Tadley, Basingstoke, Hants. RG26 6JB.



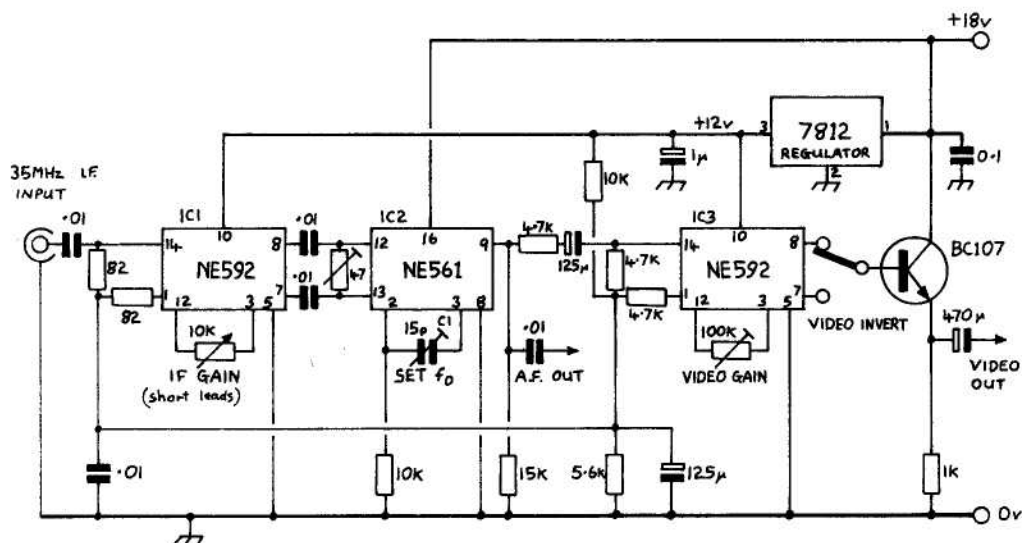
FM-TV DEMODULATOR

This circuit - reproduced by kind permission of Bernard Babani (publishing) Ltd. (see below) - is part of a complete satellite receiving station used by Peter Jansen.

As you can see the circuit is quite straightforward and is designed to follow a domestic 'varicap' tuner. IC1 is a NE592 IF amplifier giving high gain which is variable by the inclusion of a 10k gain pot. The balanced output goes to a NE561 Phase Lock Loop which demodulates the FM signal. Capacitor C1 sets the loop free run frequency. Another NE592 is used as a video amplifier, again with variable gain, and has both positive and negative video outputs either of which may be switched to the single transistor emitter follower.

The video output is around 1v p-p across 750hms and may be fed to a TV monitor or re-modulated up to UHF.

This circuit comes from BP52 "LONG DISTANCE TELEVISION RECEPTION (TV-DX) FOR THE ENTHUSIAST" by Mr. Roger Bunney, price £1.95. This book is available through all good bookshops, radio component dealers and mail order companies. However, in case of difficulty, please contact the publishers: BERNARD BABANI (publishing) Ltd, THE GRAMPIANS, SHEPHERDS BUSH ROAD, LONDON W6 7NF.



IF STRIP AND FM DEMODULATOR FOR FM ATV RECEPTION. Fig.1

M.D.T.V. FOR MICROWAVE TV

by Peter Blakeborough, G3PYB

Considerable discussion has taken place recently about the use of television above the magical frequency of 1,000MHz.

The choice of mode for transmitting conventional television raises a number of questions. Should the system chosen offer picture quality as the prime objective? Or should other factors dominate such as range or cost of construction? In this article the merits of using medium deviation FM will be examined.

WHAT IS M.D.T.V?

The term 'medium Deviation' means a frequency modulated RF carrier with a modulation under or near to unity. Channel bandwidth required for such a system are in the range 10 - 15MHz depending on the choice of auxiliary subcarrier for sound transmission. Colour and black and white transmissions are equally applicable to the mode, though care must be taken when choosing subcarrier frequencies to avoid intermodulation products.

WHY F.M?

The principle advantage of FM is the ease with which high power may be generated throughout the microwave range using relatively simple equipment whilst maintaining pictures of excellent quality.

Traditional FM-TV systems are used throughout the professional world of television, but most of the equipment is designed for wide deviation of the order of 30-40 MHz or higher. These system bandwidths create a number of design problems not the least of which is the linearity of the modulating and de-modulating circuitry. Fortunately, for a modest sacrifice in signal-to-noise in the upper video bandwidth, the deviation/bandwidth can be considerably reduced. Acceptable results can be obtained with very low deviations, your home helical-scan video recorder testifies to this.

EQUIPMENT NOTES

Transmitters normally consist of a medium or low power oscillator at the signal or sub-harmonic output, followed by inexpensive non-linear power amplifiers/multipliers to suit.

Stability of the main oscillator is of prime importance, the normal precautions should be taken in construction to obtain the least drift. To further improve frequency stability a very simple narrow band FM demodulator can be added to provide an AFC input to the master oscillator. A second varicap diode is normally loosely coupled to the oscillator to obtain frequency control (Fig.2)

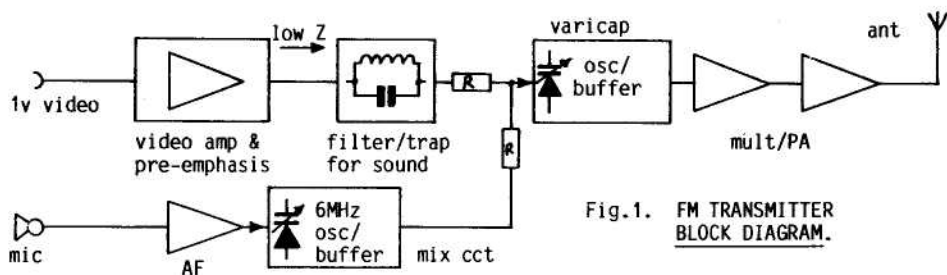


Fig.1. FM TRANSMITTER BLOCK DIAGRAM.

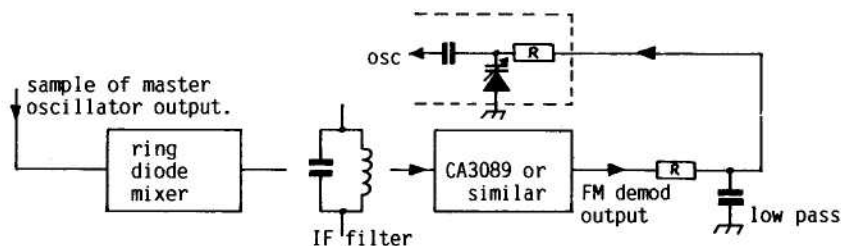


Fig.2. GENERATING AN AFC SIGNAL FOR OSCILLATOR STABILISATION

RECEIVERS

With the introduction of high quality ICs for use up to 60MHz in IF stages of television receivers, many constructional problems have been reduced. Single chip Phase-Locked Loop devices are now capable of producing very linear demodulation over a bandwidth of 15MHz (NE564). The circuitry required has been considerably reduced.

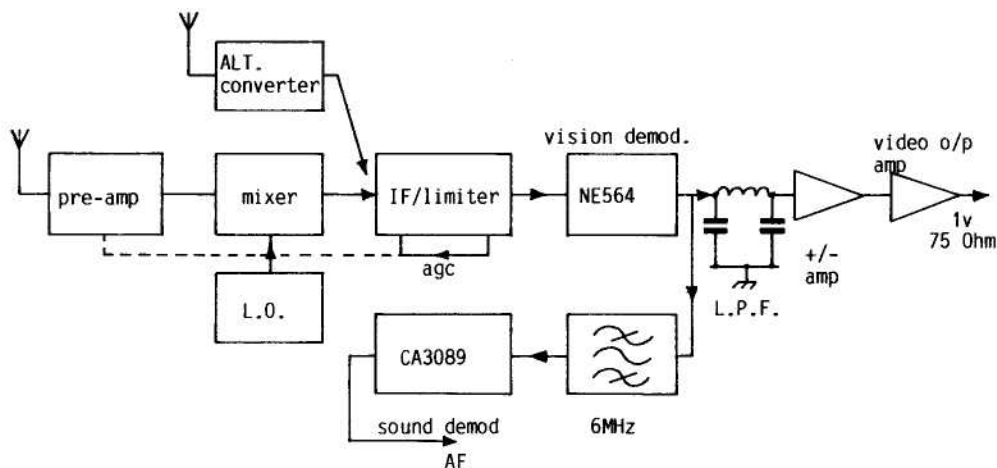


Fig.3. TYPICAL FM-TV RECEIVER BLOCK DIAGRAM.

I would like to propose a practical working specification for use above 1GHz:

M.D.TV SPECIFICATION

- 1) Channel spacing of 15MHz.
- 2) Positive modulation sense.
- 3) Deviation - sync to peak white - 8MHz.
- 4) Video pre-emphasis such that the amplitude of 4.43MHz components are increased by 50%.
- 5) (UK) Inter-carrier sound of 6MHz, Sound deviation of 50KHz max.

CONCLUSION

I believe that FM TV using medium deviation is capable of producing first class picture quality from straightforward cost effective equipment. MDTV should form the basis of any serious proposal for transmission of television in the microwave bands for home and repeater stations alike.

Editors note.

The author kindly loaned me a demonstration M.D.TV rig which he had constructed. The results were every bit as good as those obtained with AM modulation. The signal was transmitted through a valve tripler and amplifier at 24cm with excellent results. No trouble was experienced by a distant receiving station in slope detecting the signal on a domestic TV set. Even under quite weak signal conditions the performance was excellent.

F3YXs WORKSHOP

THE MAVICA CAMERA

by N.McDonald, GM4BVU

While glancing through "Electronics Times" recently I came across a "revolution in photographic history". This statement about Sony's new video still camera heralded something which readers of CQ-TV may find of interest. The Mavica is due to retail at around £300 in a few months time and is based on a floppy disc giving 50 frames for around £1.50p.

In size and style the Mavica resembles a single lens reflex camera, the image is sensed by a CCD device. It is then stored on a tiny floppy disc. Various shutter modes allow single frame or animation through to continuous filming (or should it be discing?)

The normal playback, via a £125 viewer, will allow colour pictures on a TV set. The original article does not actually mention colour, but I think this can be assumed these days. The resolution at 350 lines means it will not compete with film for the serious photographer but it is another approach to image recording and will open up another new market for consumer products.

Optically the camera resembles a conventional unit, with interchangeable lenses, through the lens viewing and manual focussing, but there the resemblance ends. Inside the body are a pair of circuit boards, a single chip CCD, the floppy disc and its drive mechanism and three nicads. 200 pictures can be taken before re-charge. The camera in use is very much like a conventional SLR with 200asa film. It has automatic exposure control and a flash can be used.

One of the major advantages is that a half-used disc can be removed and then replaced later to automatically start at the correct place, -you can't do that with ordinary film. For ATV use, one disc could have shots of the shack and gear, another last weeks amateur radio convention and so on. Even captions on disc.

Although it's early days yet, Sony have produced further evidence that the potential for variety in amateur television picture content is limitless. I wonder if it can be genlocked?.

With acknowledgment to John Hartley, Electronics Times.



B.A.T.C. INCOME AND EXPENDITURE ACCOUNTS FOR 1980-1981

EXPENDITURE

	<u>1980</u>	<u>1981</u>
CQ-TV printing	1274.51	1810.16
postage	500.35	730.82
Gen. post & expenses	1029.65	1166.25
R.S.G.B. aff. fee	6.00	7.50
Committee expenses	152.38	58.12
Exhibition expenses	59.36	170.66
Depreciation	81.00	1046.70
	<u>£3103.25</u>	<u>£4990.21</u>
Surplus	322.31	3194.58
	<u>£3425.56</u>	<u>£8184.79</u>

INCOME

	<u>1980</u>	<u>1981</u>
Enrolment fees	79.00	198.50
Subscriptions	1995.84	3714.42
Post & donations	80.87	99.38
Advertising	72.00	103.50
Exhibition rents	-	18.00
Interest	368.51	402.86
Miscelaenous	37.70	23.74
Members services	159.13	1576.71
Publications	632.51	2047.68
	<u>£3425.56</u>	<u>£8184.79</u>

BALANCE SHEET AS AT 31st DECEMBER

LIABILITIES

	<u>1980</u>	<u>1981</u>
Accum fund	4714.39	5036.70
Add surplus	322.31	3194.58
Balance	<u>£5036.70</u>	<u>£8231.28</u>

CURRENT LIABILITIES

Creditors	55.00	197.19
Subs in advance	1583.12	2003.03
	<u>£6674.82</u>	<u>£10431.50</u>

ASSETS

	<u>1980</u>	<u>1981</u>
Stocks	893.59	1520.18
Publications	53.82	86.33
Debtors	36.00	-
Office machine	-	1046.70
Less depreciation	-	1046.70
Investment	4158.66	7061.52
Cash	1532.75	1763.47
	<u>£6674.82</u>	<u>£10431.50</u>

A.W Rix, G3RYF. Hon. Treasurer.

Accounts audited and in my opinion give a true and fair view in accordance with the vouchers and explanations.

R.Broadbent, G3AAJ

CONTEST NEWS

by Graham Shirville, G3VZV

As will no doubt be reported elsewhere in this magazine, activity on 70cm continues to increase by the month.

In view of this interest and activity we have arranged for another cumulative contest to take place in May and June (rules below) when the "summer weather" will hopefully induce some participants to operate under portable conditions.

Also shown below are the full European results of last years International contest where for the first time there are British stations in the "top ten" and also for last years Autumn Cumulative Contest where activity was quite well spread across the country but which was won by the B.T. Group operating high up a building in Essex!

Most contestants appeared to like the change to five operating periods and virtually all managed to get on for the one evening when conditions were above average.

Finally, a date for your contest diary:-

1982 INTERNATIONAL TV CONTEST-11/12 SEPTEMBER 1982

Full rules will appear in the next issue.

AUTUMN 1981 BATC CUMULATIVE CONTEST RESULTS

POSITION	CALLSIGN	POINTS	QRA	BEST DX	POWER
1	G4BPO	6988	AM77J	G8DIR - 280k	150
2	G6AIW/P	6086	ZK09F	G8VBC - 223k	10
3	G8VBC	5540	ZM13E	G6AIW/P-223k	40
4	G8MNY	4846	ZL60E	G8VBC - 185k	150
5	G8EGG	3731	ZL77H	G8VBC - 192k	90
6	G8RZO	3618	AL45F	G4CRJ - 180k	150
7	G4CRJ	3452	ZL38B	G8GHH - 124k	150
8	G8DIR	2805	YM27J	G4BPO - 280k	150
9	G3UMF	2722	ZL15F	G8MJD/A-228k	10
10	G3ZWM	2497	ZL80H	G8ASI - 72k	20
11	G8GHH	2167	AL57B	G6AIW/P-131k	100
12	G4IMO	1394	AL34B	G6AIW/P-111k	100
13	G4AGE	982	ZN64A	G8EOP - 48k	3
14	G4FKI	961	AL31A	G8ZWM - 54k	6
15	G8VTN	806	YM28C	G8VBC - 64k	100
16	G8GLQ	443	YL48H	G8MNY - 184k	100
17	G8MMF	433	ZL50E	G8RZO - 62k	100
18	GW4NGV/A	N/A	NO QRA's	RECORDED!	

B.A.T.C. SUMMER CUMULATIVE 1982

DATES: 8, 16, 24th May and 1, 9th June.
TIMES: 19.00 - 22.00gmt each day, (ie 8pm - 11pm bst).
SCORING: Logs must be entered per band operated - a maximum of three sessions will count for points - if you operate more please enclose details for checking purposes.

- A) Two-way QSO on 70cm: 2 points per km.
- B) Two-way QSO on 23cm: 8 points per km.
- C) Two-way QSO on 3cm: 16 points per km.

Milti-operator stations may only use one callsign - only one location may be used during the contest. Crossband QSO's must be entered in the log for the transmit band. One way contacts may be made with "receive only" stations for half points.

EXCHANGES: The following data is to be exchanged:

- 1) Code-group, which consists of four digits, individually chosen by each entrant ie. 1865 or 9732. All four numbers must not run consecutively. The code group must be exchanged in video only.

A different code group should be used for each session.

- 2) Call, QTH locator, report, serial number starting at 001 on each session, this data to be exchanged via video or phone.

Should one of the stations fail in receiving the picture of the other, the scores of both stations should be halved.

144.75 and 144.17MHz are well-known ATV calling channels, please QSY from these frequencies as soon as a QSO is established.

CONTACTS: The same station may only be contacted once per band on each night.

LOGS: Logs must include postal address, locator and station details (including code groups used in each session) and should be mailed not later than 30th June 1982 to:-

Graham Shirville, G3VZV
18 Church end,
Milton Bryan,
Milton Keynes,
Buckinghamshire
MK17 9HR

GOOD LUCK.

INTERNATIONAL AMATEUR TELEVISION CONTEST 1981

CONTEST RESULTS.

POSN	CALL	POINTS	QSO's	POSN	CALL	POINTS	QSO's
1	F3YX	14816	61	51	DK2RH	1390	11
2	F8MM	8307	39	52	G8GHH	1372	12
3	F6BEZ	7754	36	53	F3LP/P	1266	9
4	F1ACA	7584	22	54	DL4FAE	1232	10
5	ON5ID	5980	40	55	DKØMM	1218	10
6	F1AGO	5404	19	56	ON1ADK	1193	18
7	G8GCP/P	4820	32	57	G4AKG	1160	20
8	F1EJK/P	4680	17	58	F5XC/P	1137	20
9	ON1JE	4404	33	59	ON1RG	1107	14
10	G8MNY/P	4262	33	60	DKØPX	1100	13
11	G4ARD/P	4248	40	61	G4HMG	1058	17
12	F6BGR/P	4105	14	62	F1AJD/P	1012	6
13	DFØBUS	3925	40	63	F1FRG	988	16
14	F1BSS/P	3795	19	64	ON7LT	978	13
15	F1ETG	3706	29	65	ON5VG	969	11
16	G8DTQ	3679	41	66	G3YVI	968	15
17	PAØERW	3416	28	67	DG5EAH	954	12
18	ON4JS	3150	27	68	PE1BFD	944	15
19	DB9KH	3086	29	69	F6FZO	938	24
20	ON6AR	3085	34	70	F6BQP	930	11
21	PE1CSI/A	2942	30	71	G8CQE	900	16
22	G8ZWM/P	2930	33	72	G8VBS/P	863	9
23	G8GLQ/P	2837	17	73	DL9EH	856	17
24	F1BJB	2789	13	74	PAØAWI	849	13
25	PA2AAD/A	2788	29	75	DF5JJ	846	12
26	G8VBC	2784	28	76	DK6EU	826	15
27	ON4ABC	2726	27	77	G8HBR/P	787	13
28	F1NC	2695	21	78	DØØFK	758	9
29	DK2DB	2688	24	79	G8GKQ	715	14
30	PAØSON	2617	28	80	ON1ANK	701	15
31	F1EFV	2438	9	81	PE1BZL	689	15
32	ON6PM	2373	22	82	G3UMF	681	8
33	DHØIAR	2348	22	83	F1FVX	590	18
33	DL1LS	2348	22	84	G8CJS/P	589	4
35	G4AGE/P	2266	33	85	ON5NK	588	10
36	F6GKQ	2257	20	86	F6FGE	573	11
37	ON5VW	2215	24	87	F1EHB/P	548	4
38	G3YQC	2149	22	88	G4IZT	525	5
39	G8EGG	2063	18	89	PE1AME	520	12
40	F1KEY	2000	7	90	DJ8NC	473	5
41	ON1WW	1976	22	91	PAØGBE	466	11
42	G4CRJ	1797	27	92	DL5NQ	424	10
43	DB9XQ	1779	22	93	PAØBOJ	418	10
44	ON7FI	1658	19	94	PE1APH	394	8
45	PAØBHW/DC	1645	16	95	DC7ZI/P	390	13
46	G8MLA/P	1631	11	96	PAØJTA	386	12
47	F6FGV/P	1515	7	97	DG1GC	384	11
48	G4DYP	1508	14	98	DB9IQ	379	8
49	DJ4LB/A	1460	10	99	PE1DTS	375	10
50	GW8GIZ/P	1439	9	100	DB5NF	351	9

MEMBERS SERVICES

Items are available to club members only.

CHEQUES should be made payable to "THE BATC" and should be drawn on English banks only.

ORDERS please to:- Mr.P.Delaney. 6 East View Close, Wargrave, BERKS, RG10 8BJ
England. Tel: 073-522-3121

QTY	TV CAMERA TUBES AND SCAN-COILS	EACH	P&P	GOODS TOTAL
.....	E.E.V. Leddicon	£82:00	nil	.....
.....	1/2" E.M.I. 9777 Ebitron	£30:00	nil	.....
.....	2/3" E.M.I. 9831 Vidicon - amateur grade	£15:50	nil	.....
.....	1" E.M.I. 9677 Vidicon - amateur grade	£15:50	nil	.....
.....	1" E.M.I. 9728 Vidicon - amateur grade	£15:50	nil	.....
.....	1" E.M.I. 9706 Vidicon - amateur grade (5"type)	£15:50	nil	.....
.....	4½" E.M.I. 9565 Image Orthicon	£10.per2	collect	.....
.....	1" Vidicon scan-coils (low Z focus coil)	£6:00	£1:20	.....
.....	1" Vidicon scan-coils (high Z focus coil)	£6:00	£1:20	.....
.....	2/3" Vidicon scan-coils	£6:00	0:80	.....
.....	Vidicon bases (1" or 2/3" delete which not reqd)	0:32	0:16	.....
.....	TV camera lens mounts, 'C' type	£1:00	0:24	.....
<u>STATIONERY AND ACCESSORIES</u>				
.....	B.A.T.C. test card (latest) - with instructions	0:50	0:24	.....
.....	B.A.T.C. reporting chart (illustrated)	0:12	0:20	.....
.....	B.A.T.C. lapel badge - diamond - button hole	0:40	0:16	.....
.....	B.A.T.C. lapel badge - round - pin fastening	0:40	0:16	.....
.....	B.A.T.C. headed notepaper/envelopes (50 each)	£1:75	£1:20	.....
.....	B.A.T.C. key fob	0:50	0:16	.....
.....	B.A.T.C. equipment stickers, 1" round	0:15	0:16	.....
.....	B.A.T.C. windscreen stickers, 2½" round	0:10	0:16	.....
.....	B.A.T.C. club tie printed with latest badge, dark blue	£1:80	0:30	.....

TOTAL this page £ :

QTY	PRINTED CIRCUIT BOARDS	EACH	P&P	GOODS TOTAL
	<u>'Amateur Television Handbook'</u>			
.....	Wide-band 70cm tuner	£3:00	0:30	.....
.....	Amateur television receiver	£1:50	0:30	.....
.....	Electronic character generator	£3:00	0:30	.....
.....	Character generator memory	£3:00	0:30	.....
.....	Colour test-card (set of three double sided)	£15:00	0:60	.....
.....	Horizontal aperture corrector	£3:00	0:30	.....
.....	Video switching unit	£3:00	0:30	.....
.....	P.A.L. colour coder	£3:00	0:30	.....
.....	'Project 100' sync. pulse generator	£3:00	0:30	.....
.....	5 MHz SPG crystal	£2:75	0:25	.....
.....	4 fsc colour crystal	£2:75	0:25	.....
	<u>COMPONENTS</u>			
.....	TBP28L22 PROM, pre-programmed for colour test-card circle. (eqt. 74S471)	£10:00	0:25	.....
.....	TMS4036 memory IC for char. gen. memory board	£5:00	0:25	.....
.....	4.433618MHz PAL colour sub-carrier crystal*	0:40	nil	.....
.....	Colour TV delay line*	0:60	nil	.....
	*surplus - untested			

total this page £ :

total from page 1 £ :

postage £ :

TOTAL ENCLOSED £ :

It is cheaper to send several small items in one package. Please try to estimate the correct amount of postage. All enquiries requiring a reply should enclose an SAE or IRC.

Overseas members should ask for a quotation of postage costs before ordering large items. Thanks to all those who estimate on the high side and donate any balance to club funds.

name	call
address	
	post code

receipt	goods sent	(office use only)
---------	------------	-------------------

PUBLICATIONS

- separate forms before mailing -

QTY		EACH	P&P	GOODS TOTAL
.....	AMATEUR TELEVISION HANDBOOK. B.A.T.C. by J.L.Wood. G3YQC and T.Brown. G8CJS	£1:50	0:40	.....
.....	SLOW-SCAN TELEVISION. B.A.T.C. by B.J.Arnold. G3RHI (second edition)	0:35	0:16	.....
.....	CQ-TV BACK ISSUES. The following issues are still available although stocks of some are low.(circle) 68,77,82,87,88,89,90,91,92..... 93,94,95,96,97,99,100,101,102,103,105,106,107, 108,109,111,113,114, 116..... *please estimate appropriate postage	0:25 0:50	* *	..... .....
.....	RE-PRINTS. Photocopies of any article from past issues of CQ-TV are available. Payment (if ordered seperately) in UK postage stamps please	0:20 per sheet	0:16	.....
.....	INDEX. All main articles in past issues of CQ-TV and both handbooks. Including page-count.	£1:00	nil	.....
		sub total	£ :	
		postage	£ :	
		TOTAL ENCLOSED	£ :	

Publications are available to club members.

ORDERS please to:- BATC publications, 14 Lilac Avenue, Leicester LE5 1FN.

AUSTRALIA

Would Australian members please note that the 'Amateur Television Handbook' is available directly from the Wireless Institute of Australia at PO box 150, Toorak, Victoria 3142.

name	call
address	
	post code

CQ-TV AWARD

This award is available to both transmitting and receiving amateurs and SWLs in any part of the world whether or not they are members of the BATC.

The award is for contacts made using fast-scan high definition television systems only.

TRANSMITTING AWARD.

For pictures transmitted which have been successfully identified by another station claim 2 points per kilometer; if the contact becomes a successful two-way exchange of pictures then 10 bonus points may be claimed by each station regardless of distance.

Careful logging of transmissions is essential.

RECEIVING AWARD.

For any picture positively identified claim two points per kilometer.

POINTS.

Points are claimed as above; however if the contact is on 24cm or above, the points should be doubled.

The award is divided into five grades: for the bronze - 1,000 points, for the silver - 5,000 points, for the gold - 10,000 points and for the diamond - 100,000 points.

CONTACTS.

A station may be worked once only per day for the purpose of this award. It is quite possible for the award to be gained by working the same station many times, but the aim is to promote activity of any sort. Points may only be claimed for contacts made from the first of November 1977.

THE AWARD.

Upon qualification for the bronze award a certificate will be issued together with the bronze seal; the certificate may be up-graded later with silver and gold seals. The diamond award is in the form of a specially made trophy. (If you make that many points you have earned it!).

APPLICATIONS.

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

Applications should be made to the award manager; John L. Wood. G3YQC.
47 Crick Road, Hillmorton, Rugby, CV21 4DU.

1981 International results, continued.....

POSN	CALL	POINTS	QSO's
101	PA3BPG	340	12
102	DB3UK	338	6
103	DL3ZAU/P	324	3
104	DB8SB	318	3
105	DG6NL	308	12
106	PA2WDO	240	7
107	HB9CIZ	238	3
108	DF3EI	220	6
108	F1BCW	220	5
110	DF6YW	219	5
111	DC6CF	206	7
112	DJ4NG	178	4
113	PA3BPH	177	9
114	PA3ATP	163	5
115	DF2SS	115	2
116	DK4MM/A	112	3
117	PE1GWR	110	7
118	DG8EP	100	6
119	F1XI	76	2
119	F20H	76	2
121	PA3AOG	48	2
122	G4UR	12	1
123	G8JLE	1.5	1

70cm SECTION B (receive only)

1	DB8JJ	1543	29
2	NL5184	1500	28
3	FE11036	1198	10
4	DH2KAN	966	10
5	ON1KVJ	846	19
6	NL4775	743	14
7	DK5FA/P	695	13
8	PD0GJW	641	14
9	K Liebermann	502	12
10	ONL4867	479	13
11	PD0KJJ	449	15
12	DF7VH	386	15
13	PA7211/NL7795	342	15
14	ON1AH	300	9
15	ON4WJ/A	285	8
16	ON5AZ	277	9
17	DJ1YS	268	12
18	BRS46324/A	257	7
19	F6FZU	195	9
20	PA3249	192	10
21	NL6357	95	5
22	PE1HDE	90	6
23	PE1GOO	34	5
24	DD4LK	15	2

23cm SECTION A

POSN	CALL	POINTS	QSO's
1	DJ4LB/A	6016	10
2	DL4FAE	3144	8
3	F3YX	2696	
4	F8MM	2564	
5	DF0BUS	2404	11
6	F1ETG	2332	
7	F6BEZ	1644	
8	PA2AAD/A	1264	3
9	F6FGE	1236	
10	F1BJB	1052	
11	DL3CZ	756	4
12	F6BQP	652	4
13	DC6CF	528	5
14	G4ARD/P	399	2
15	DB9IQ	152	1
16	DF3EI	56	1

23cm SECTION B (receive only)

1	K Liebermann	564	7
2	F1NC	556	5
3	DK6EU	380	2

BATIC AT THE VHF CONVENTION

Saturday the 20th March saw this years annual VHF Convention, held this time at Sandown Park racecourse.

There was a lot more space this year which enabled people to get round and see everything.

The BATIC stand was manned as usual by Mike Crampton, G8DLX who was ably assisted by Peter Delaney. Fifteen new members were enrolled indicating the continued high interest in amateur television.

Trade stands selling TV gear included Wood & Douglas, Microwave Modules Ltd, and Sirkit Projects who are connected with the Home Counties TV group.

24cm TELEVISION CONVERTER

by Graham Shirville, G3VZV

The NSF version of the popular ELC1043 type of domestic television tuner has been successfully modified to work on 24cm. The resulting down-converter has its IF output at around channel 36 (600MHz) and although several converters have so far been modified, the design could, no doubt, be 'played' with to optimise its performance.

A study of the various Figs gives most of the details. Basically the oscillator compartment is left untouched. The RF circuits have all their components removed and a new piece of good quality copper clad or teflon PC board is cut to fit on top of the existing board (component side). A BNC socket (square flange, 4-hole fixing) is mounted in the original aerial input position and preferably soldered into place. A further coax socket for the IF output is mounted as shown in Fig.3. The circuit of Fig.2, comprising an RF amplifier and mixer is then wired into the new compartment using the "DYP" method of cutting small pads and tuned lines from pieces of copper laminate board and gluing them onto the new PC board in the required positions. A feedthrough insulator as shown in Fig.3 is used to carry the local oscillator signal to the new mixer. The signal is extracted by a piece of insulated wire from the insulator, passing across the printed oscillator coil and soldered at its remote end to the screen as shown in Fig.3.

The NSF tuner is available, surplus, at £4 each, including postage from: Graham Shirville, G3VZV. 18 Church End, Milton Bryan, Milton Keynes, Bucks MK17 9HR. All proceeds will go towards the GB3TV television repeater project.

With acknowledgment to G4CPE for the original idea.

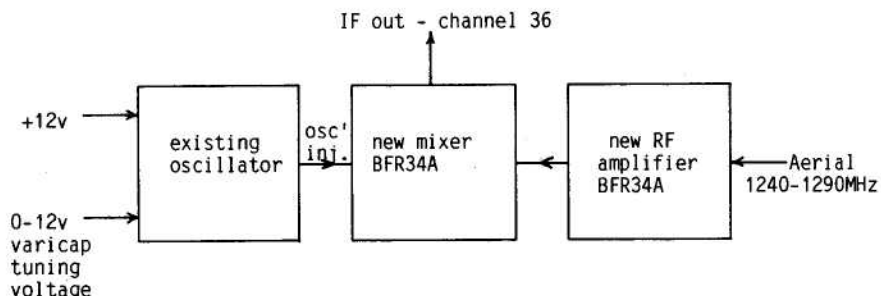
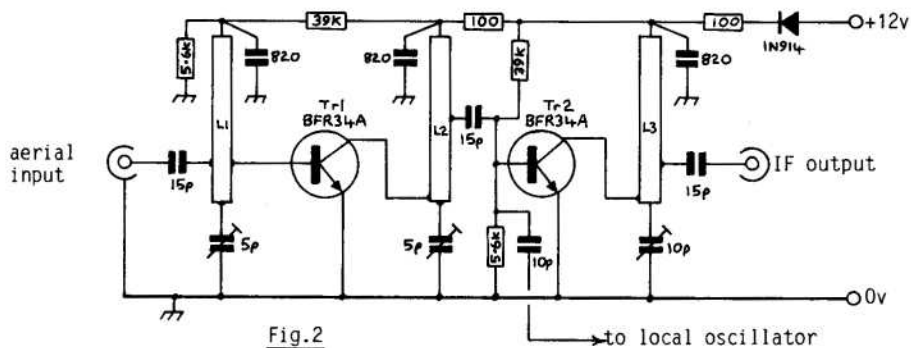


Fig.1.

BLOCK DIAGRAM OF MODIFIED VARICAP TUNER UNIT.



L1, L2 - 15mm x 3.5mm cut from PC board material

L3 - 17mm x 3.5mm cut from PC board material

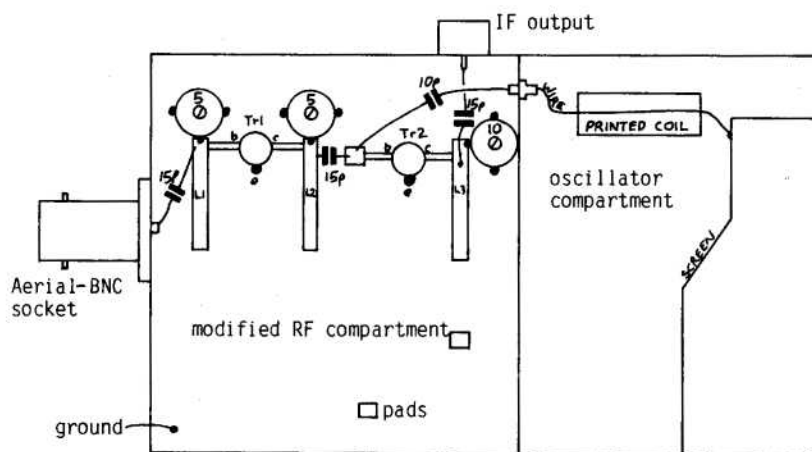


Fig.3.

LAYOUT OF MAIN PARTS FOR MODIFIED TUNER.

With the ever increasing use of the domestic television set to display TV games, computer data and the like, the problem of converting the video to an RF signal within the domestic UHF spectrum becomes more common. A suitable RF modulator is shown here in data sheet form which should meet this requirement.

UM1231

UHF MODULATOR

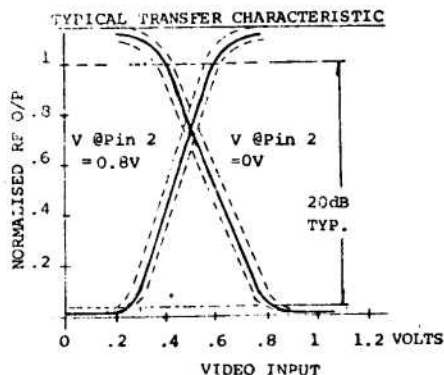
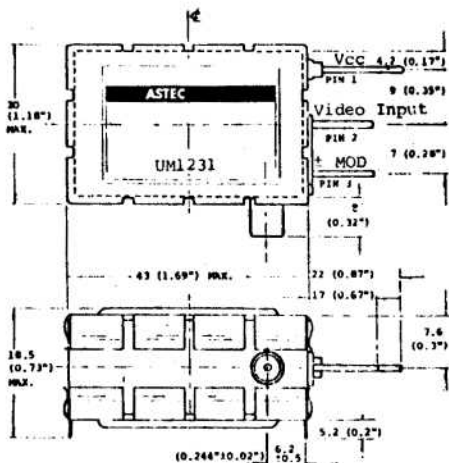


FEATURES:

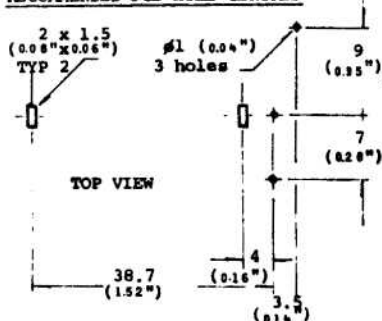
- LOW RADIATION AND HARMONICS
- SWITCHABLE POSITIVE AND NEGATIVE MODULATION CHARACTERISTICS
- PRETUNED VISION CARRIER E36
- SUPPLY VOLTAGE RANGE 4.5 - 6.5V
- LOW CURRENT DRAIN (TYP. 3mA)
- 75Ω OUTPUT FROM A STD PHONO SOCKET
- COMPACT RUGGED DESIGN FOR PCB INSERTION

THE UM1231 IS A HIGH PERFORMANCE MODULATOR FEATURING LOW RADIATION AND HARMONIC FIGURES IN LINE WITH THE NEW EUROPEAN SPECIFICATIONS.

THE UM1231 IS PRIMARILY INTENDED FOR USE IN COLOUR TV GAMES. THE UM1231 FEATURES A MODULATION CHARACTERISTIC WHICH IS SWITCHABLE FROM POSITIVE TO NEGATIVE, THIS FEATURE IS IMPORTANT IN EEC COUNTRIES WHERE BOTH STANDARDS EXIST AND ALSO MEANS THAT THE ONE MODULATOR CAN BE USED FOR POSITIVE AND NEGATIVE SYNC IC'S, THUS REDUCING INVENTORY. THE UM1231 HAS NEGLIGIBLE SPURIOUS FM WHICH MAKES IT IDEAL FOR SECAM APPLICATIONS.



RECOMMENDED PCB HOLE CENTRES



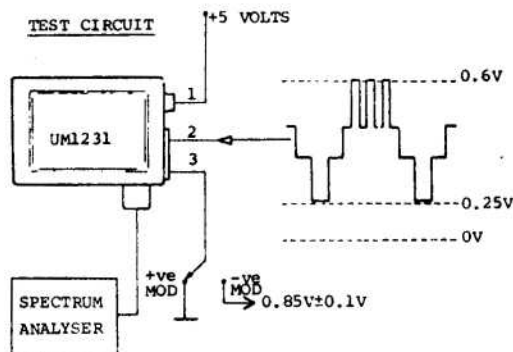
Note: ALL DIMENSIONS ARE IN MM. (INCHES ARE IN BRACKETS)

UM1231 CHARACTERISTICS

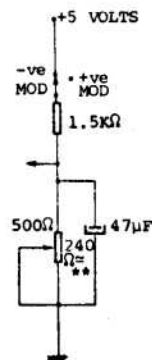
VCC = 5.0V \pm 0.2V

TA = 25°C

SYMBOL	DESCRIPTION	TYP.	UNIT
FC (E36)	VISION CARRIER CH E36	591.25	MHZ \pm 5MHZ
ICC	SUPPLY CURRENT	3.5	MA
VO (HI)	RF OUTPUT, VMOD = 0.60V	1.5	MV \pm 4DB
VO (LO)	RF OUTPUT, VMOD = 0.25V	-20	DB -6 +2
BW	3DB BANDWIDTH	8	MHZ (6DB, BW 16MHZ)
VO (SP)	SPURIOUS OUTPUT	<-30	DB WRT VO (HI)
FM (SP)	SPURIOUS FM OF CARRIER	5	KHZ
MOD +	POSITIVE MOD CHARACTERISTIC	0 @ PIN 2	VOLTS
MOD -	NEGATIVE MOD CHARACTERISTIC	0.85 @ PIN 2	VOLTS \pm 0.1 VOLTS
VOSC MIN	OSCILLATOR STOP VOLTAGE	3.5	VOLTS
VIDEO ZIN	MODULATOR INPUT IMPEDANCE	1.5K	OHMS @ VO (HI)
ZO	RF OUTPUT IMPEDANCE	75	OHMS
VSWR	VOLTAGE STANDING WAVE RATIO	<2.0	



MODULATION BIAS CIRCUIT



* For optimum negative modulation the bias at Pin 3 is adjusted to point between 0.75 and 0.95 Volts.

** For low cost applications the trimpot can be replaced by a fixed resistor.

Note if only positive modulation is required Ground Pin 3.

ASTEC INTERNATIONAL LTD.

1260MHz FOR SIMPLEX TV

DIGITISING VIDEO part 1

by C.Grant Dixon, G8CGK

Digitisation is the order of the day - we have digital watches, multimeters, radio receivers etc. and digital video and audio are occupying the minds of engineers all over the world. The engineers who operate our broadcasting systems have standardised on a system which allocates 8 bits to each picture element thus giving up to 256 levels of grey. Experiments with SSTV have shown that quite presentable pictures may be obtained with only 16 levels of grey and this would simplify matters for the amateur constructor both from the point of view of circuitry and of frequencies involved. It is therefore suggested that 16 levels be adopted as an amateur standard at least for SSTV if not for FSTV also, the views of other members would be appreciated on this subject.

There are three possible methods of digitising an analogue signal:-

- 1) by using level comparators such as the 711
- 2) by using a clock oscillator and a counter, resetting the counter after each sample has been taken.
- 3) by using a clock oscillator and an up-down counter, where the counter is made to track the analogue signal.

The first method has been used in SSTV fast-scan to slow-scan converters and the basic circuit is shown in Fig.1. Essentially the incoming signal is presented to a series of comparators whose other inputs are supplied with a voltage from a potential divider network. The outputs of the comparators are then encoded to give a grey code signal as this is less likely to give trouble with "glitches" on the power lines, (in the grey code only one bit can change state at any one time as the amplitude is increasing or decreasing). Variations on this circuitry include the use of a single comparator for E - the 710; replacement of the 7420 and 7400 by diode gates as shown in Fig.2; slightly simpler feeds for the divider chain - see Fig.3; and a simpler feed from the camera Fig.4. Other designs have made the divider chain terminate at earth and arranged for the video signal to be controllable both in amplitude and DC level so that it can match the sampling levels.

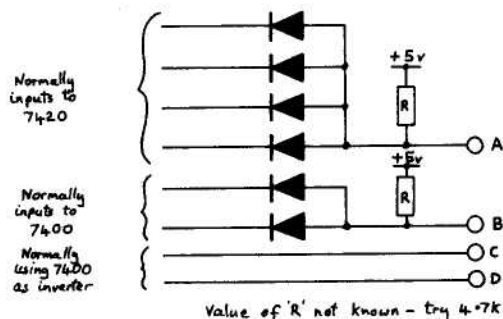
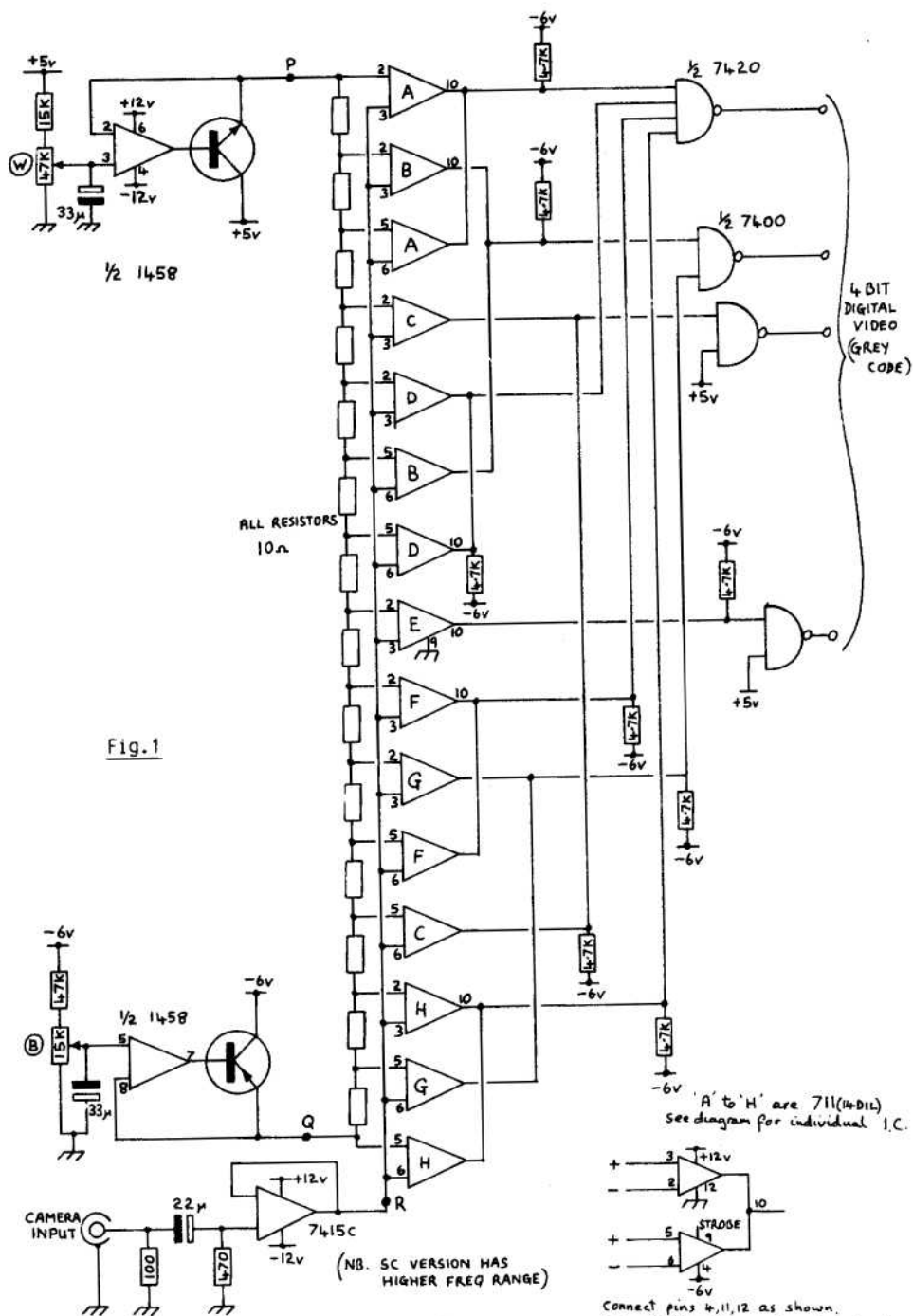


Fig.2



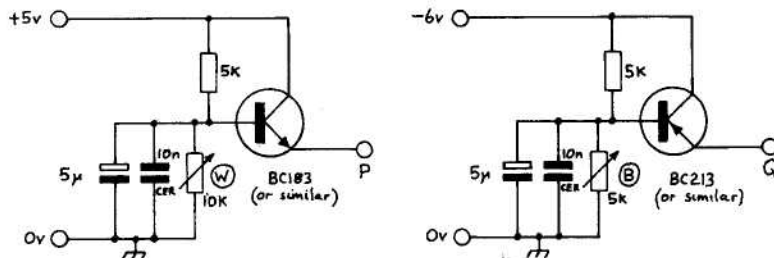


Fig.3

In operation the potentiometers labelled W and B are used to set-up the white and black levels between which the picture part of the video waveform will sit. Wrong setting of the white control will result in either 'white clipping' (loss of detail in the highlights of the picture) or in a failure to reach the white level of the system; similarly in the opposite direction for the black control. The best check is to use the circuit which I gave in CQ-TV 95 (p16) and which is reproduced in Fig.5 minus the op-amp output stage, as most oscilloscopes seem able to cope with the signals via their internal amplifiers. This circuit gives a visual display of the top level (white), bottom level (black) and the video waveform when the timebase is set to run at, say, 33.5Hz and locked to the AC supply.

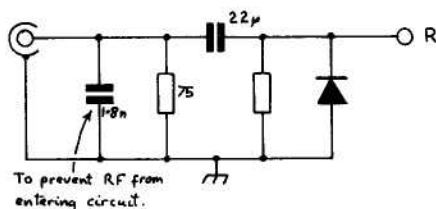


Fig.4

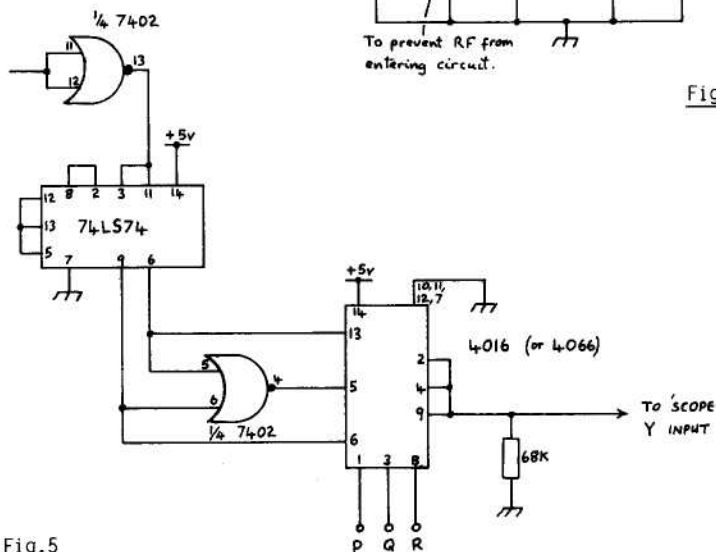


Fig.5

The second method of digitising involves us in some rather high frequencies when it is applied to fast-scan TV but can be quite useful for digitising an analogue SSTV signal. Basically, a clock oscillator is running and feeding a counter whose outputs are connected to a D/A converter; the analogue signal so generated is compared with the original video signal and when they are equal the clock is stopped, the counter outputs are latched into a memory and the counter is reset to zero....the clock is then started and the whole operation starts over again. With a fast-scan signal the duration of a single line is 52uS when the line sync pulse has been discounted; if we say that we would like 100 picture elements in a line then all the above operation must take place in 0.52uS. Now if we are converting FSTV to SSTV, the SSTV picture has a 1:1 aspect ratio and consists of 128 (or 120) lines; taking this into account we need to sample about 42uS of the line for our SSTV line and in that period we need 128 samples. Thus each sample period is 328nS - now, if we allow 100nS for latching and re-setting, this means we must count up to 16 in 228nS, hence a clock frequency of 70MHz and the need to use high speed 74S series TTL logic. This is the sort of argument that has led to the use of the simpler method of Fig.1.

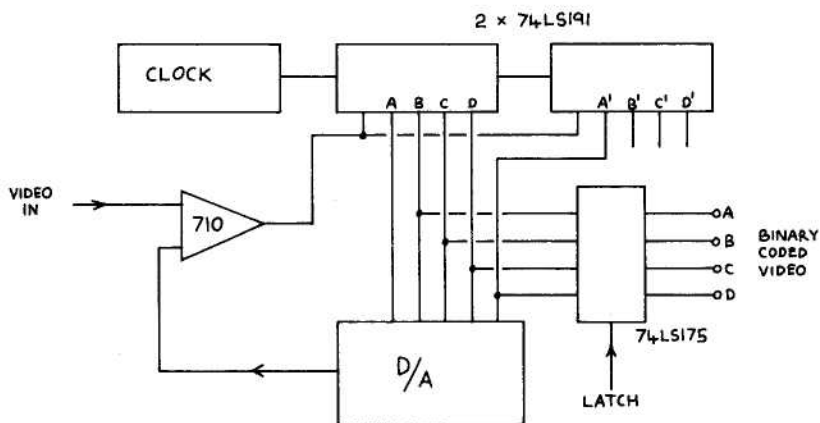
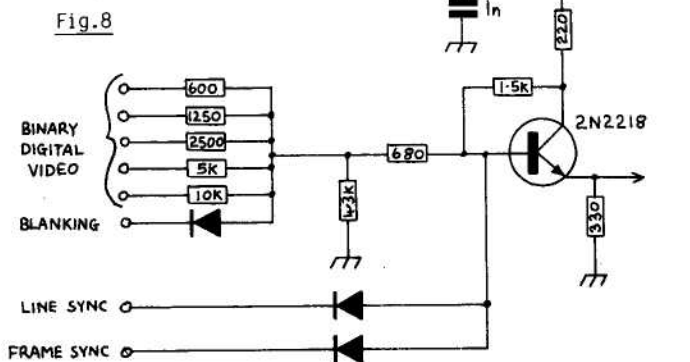
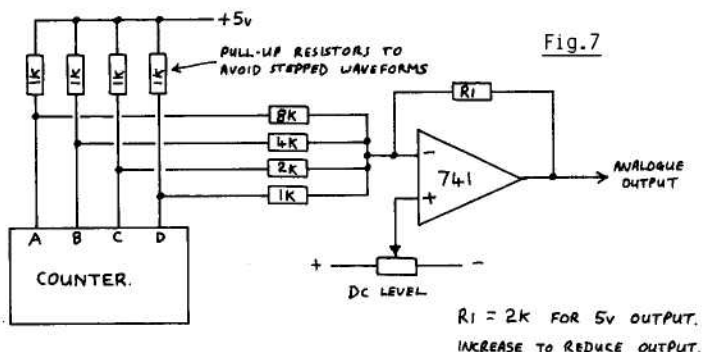


Fig.6

In the third method - Fig.6 - we have a clock oscillator driving a counter which is never reset. If the D/A signal exceeds the video signal then the counter is switched to count down; as soon as it is lower than the video it is switched to count up, hence the output of the counter oscillates above and below the figure necessary to give the correct value for the video waveform. This oscillation is not a problem as we can organise the clock frequency so that the counter counts up to 32 for peak white and then we just ignore the least significant bit of the counter. Ignoring the settling time while the counter reaches the video level, we now have only to count up to 2 in our 328nS sampling time which represents a clock frequency of about 6MHz - well within the counters capability. A higher clock frequency will not alter the counter outputs BCD for a given video level, the output A will oscillate more rapidly above and below this level. The outputs of the counter may be latched by an SSTV slow clock of about 2.1KHz (128 bits in 60mS).

I must now confess that this is only 'on paper' but is an idea which should work satisfactorily as it is well within the limits of the various ICs; I should be glad to hear from anyone who tries it out.

The circuit in Fig.6 requires a D/A converter and any system using digital techniques must use a D/A converter as most of our perception is analogue in character. One type of D/A converter uses accurate resistors having values in the ratio R:2R:4R:8R etc. - this is shown in Fig.7 where the counter output is used to give an SSTV signal. If a high speed /41SC were used it would be equally useful for fast-scan output; however, another circuit using a transistor works very well - see Fig.8, in this case the output would drive a 75 Ohm cable and inputs have been provided for sync and blanking signals, also the video is 5 bit as in the original circuit some processing had been done.



The second type of D/A converter uses a ladder network and this is the type I use on the PCBs for the 5FP7 monitor where the SSTV is decoded digitally. Fig.9 shows the relevant part of the circuit, note the use of pull-up resistors to eliminate the stepped waveform sometimes present at counter outputs. This is for a 6 bit video, if you require a 5 or 4 bit converter then it is a simple matter to omit the appropriate number of 'rungs' of the ladder. The output of this circuit is at a fairly high impedance and it would be wise to follow it with an op-amp stage connected as a voltage follower.

Part two, which will appear in the next issue of CQ-TV, will deal with some circuits which are peculiar to SSTV where the received signal is frequency modulated and the conversion is from frequency to digital - also one or two other titbits.

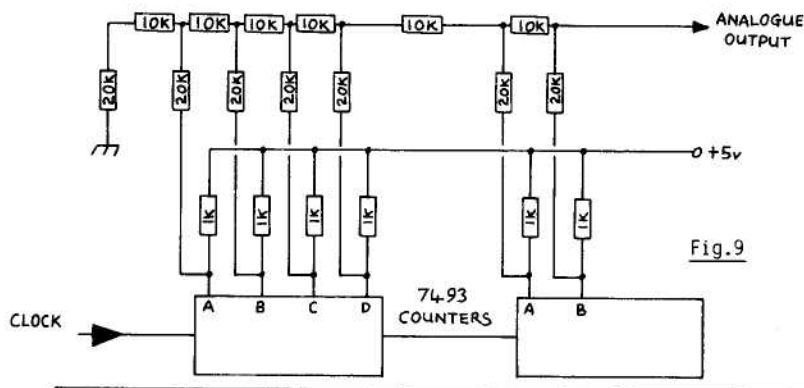


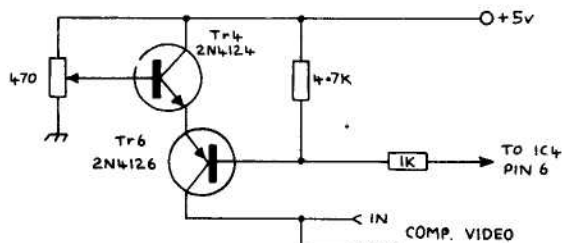
Fig.9

HANDBOOK NOTES

In CQ-TV 116 some suggestions were given to correct a tendency for the electronic character generator to produce badly formed or streaky characters. A letter from Mr. Bruce Balla, VE2QO gives an alternative circuit for dealing with this problem:

".... If the input to Tr5 is the problem, eliminate Tr5 and its associated components. I modified my unit and used pin 6 output of IC4 to drive Tr6 (see Fig.1) with no difficulties arising. As seen in the sketch, transistors Tr4 and Tr6 were changed because these were readily available. The resistor values were changed also due to the different transistor characteristics.

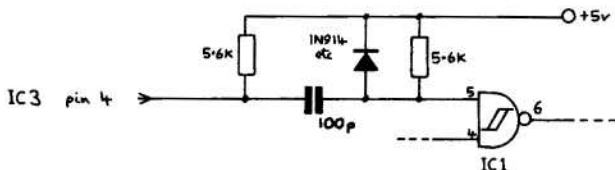
For greater vertical shift range control for North American television standards the 2.2uF capacitor was changed to 4.7uF.



ELECTRONIC TEST CARD.

John Sager, G80NH has found a jitter problem on his test card and suggests the following modification to correct this:

".....The published circuit requires a modification to avoid a jitter problem on the multiburst signal. The multiburst counter IC19 requires a clock pulse to be applied during the reset pulse. The following circuit will do this:

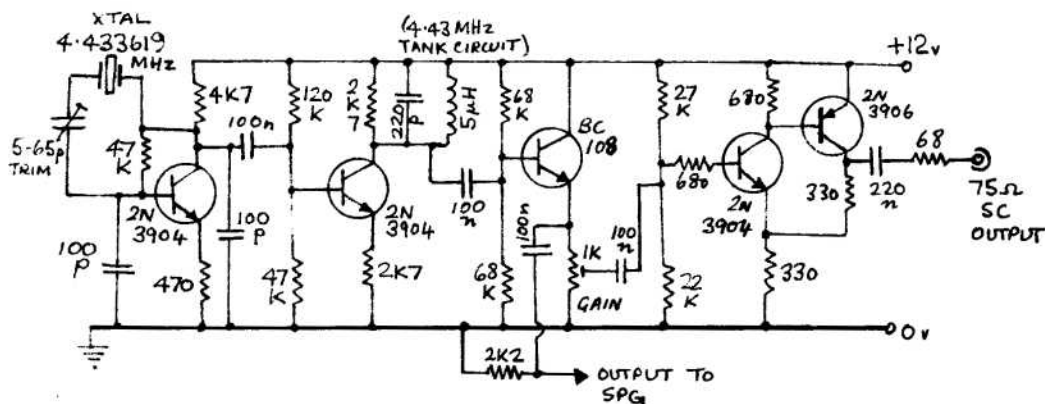


Break the track between pins 4 and 5 on IC1 (board 1) and wire in the components as shown. This generates a pulse on the 40MHz clock line shortly after the beginning of the line sync pulse to reset IC19. In principle it should be possible to use a 74S161 or 93S16 for IC19 in the original circuit but I could not get it to load correctly, possibly due to a noise immunity problem.

The jitter problem is caused because the 74S163 in the original circuit is never reset and the counter is left with one of three consecutive counts from the previous line which vary randomly due to the operation of the phase-lock circuit for the 40MHz oscillator. Thus the multiburst can start 25ns early or late and because it happens rather randomly it is visible as jitter on the screen!"

APERTURE CORRECTOR. The cable loop delay line should be 15yards not feet.

Fig.2 Shows a new circuit diagram for a PAL colour subcarrier oscillator since the one published has certain limitations. The circuit uses standard receiver crystals. The temperature control circuit in the handbook may be used as is.



AUTO CHARACTER LOADING

by Trevor Brown, GBCJS.

This circuit is designed for use with the character generator memory board described in the current "Amateur Television Handbook", and is intended to provide an easier method of loading characters into the memory.

The complete circuit is shown in Fig.1.

Decade switches are fairly easy to obtain and are reasonably priced. Each switch has ten positions numbered 0 - 9. Positions 8 and 9 are not used in this design. Each number corresponds to a row of characters - see Fig.2. To load any character into memory, first select its row number on the decade switch then, upon releasing the write inhibit switch the characters in that row will appear in turn on the screen at the location selected by the cursor. When the correct letter appears simply press the load button, the character will appear and the cursor will move to the next location.

When installing the circuit it is necessary to reduce the six 100k pull-up resistors on the data bus to 15k.

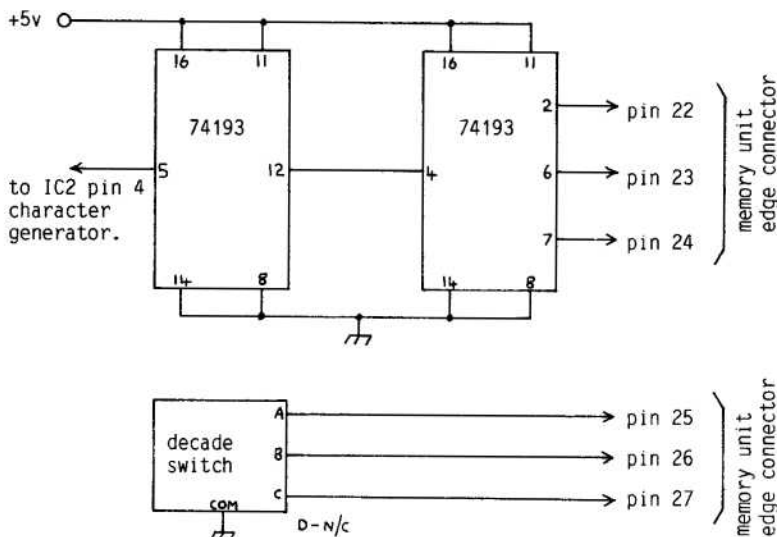


Fig.1

AUTO CHARACTER LOADING CIRCUIT.

DECADE SWITCH									
0									
1									
2									
3									
4									
5									
6									
7									

Fig.2. SWITCH NUMBERS/CHARACTER ROWS

The home of F3YX
30km South West of Paris.

CALLSIGN GENERATOR

by John L wood G3YQC

Having built the electronic colour test card from the "Amateur Television Handbook" it seemed that to complete the picture it would be nice to include in it the station callsign. The obvious place to insert this would be into either the top or bottom rectangle within the main circle. Doing so would mean that all the original patterns would remain intact. The only drawback was that the callsign would perhaps be a little small and thus be hard to read by stations receiving a weak picture, however I felt that this was not sufficient justification for blocking out one of the test patterns in order that the call letters could be made larger. The callsign in this design is inlayed into the lower black rectangle.

A standard 7 x 5 matrix character was decided upon. Although this style is a little 'boxy', since the callsign is relatively small on the screen the actual display is perfectly legible. Also the memory chips for this format are easy to obtain and use.

TTL signals from
test card board 1.

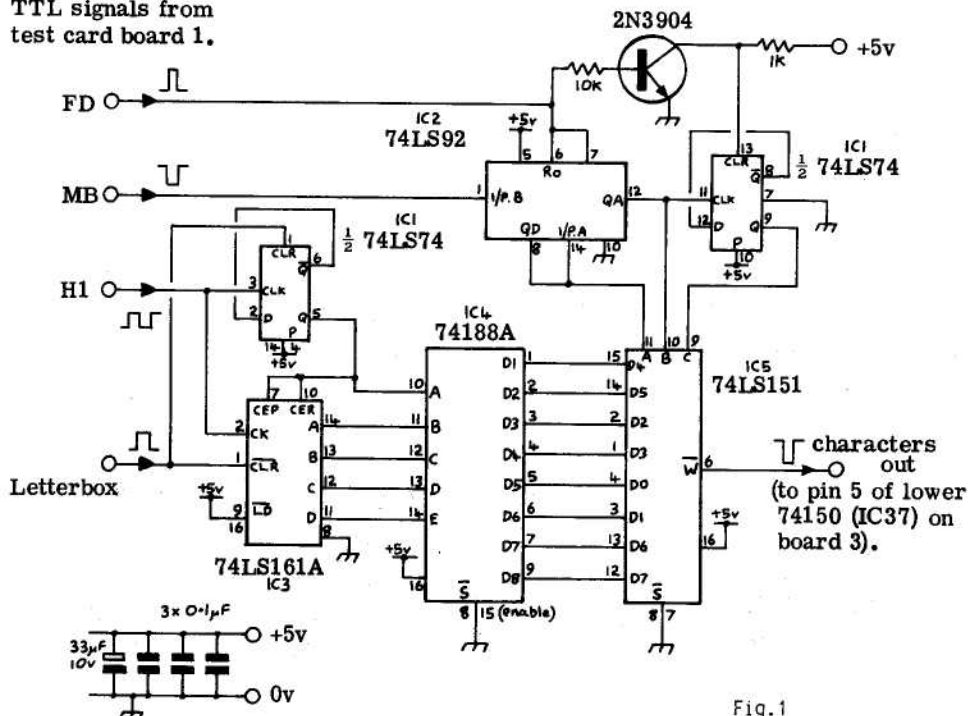


Fig.1

CALLSIGN GENERATOR FOR TEST CARD.

The memory IC chosen is the popular Programmable Read Only Memory (PROM) 74188A or 74S288. This device in its' natural state has all outputs low at all locations. To programme in a message a coding chart such as that shown in Fig.2 should be drawn up. This will give the exact address codes to be programmed into the PROM.

- Set 'prog' switch to 'idle', set address switches to logic '0', ensure all output pins are open circuited, insert the IC and apply +12v. Set-up the required address using the switches.
- To programme an output high, connect that output to the battery supply (-0,7v) and
- switch to 'prog' for about one second and then back to 'idle', (ensure that this switch is a 'break before make' type - most are).
- Repeat b and c for each output to be programmed high at this location, and repeat a,b and c for each location requiring programming.

All outputs not programmed will remain low and may be programmed high at a later date if required.

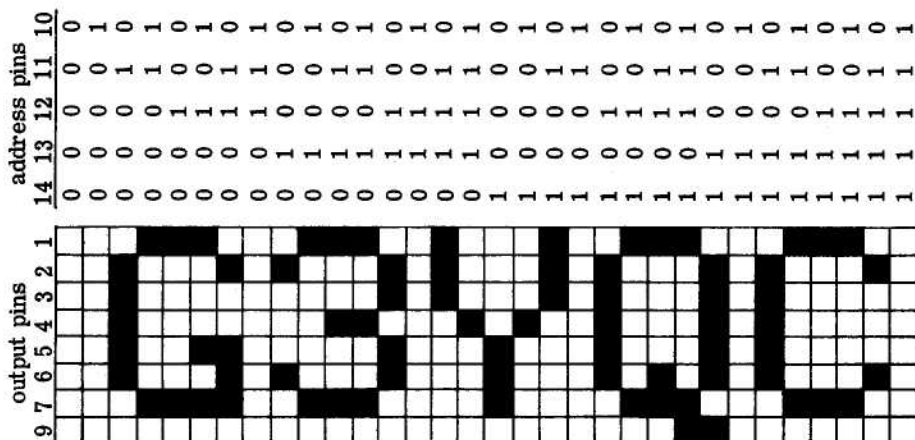


Fig.2

Stations with long callsigns (GM,GW etc) may find it difficult to fit their call within the programming map whilst still retaining a pleasing visual display. Unfortunately there is no easy answer to this problem using the existing circuit but the circuit should be able to be modified to accept other memory ICs to enable the longer callsigns to be used.

An alternative callsign generator circuit, devised by G8ABD and using only three ICs, is shown in Fig.4. This design does the same job as Fig.1 but does necessitate "getting in" to various points on the printed boards to obtain the required signals.

My thanks to Richard Russell, G4BAU and to Brian Wade, G8ABD for their help with this project.

REFERENCE.

"The G8PLX MK2 rtty video display unit" by J.P. Martinez, G3PLX.
From "Radio Communication" magazine, April 1977.

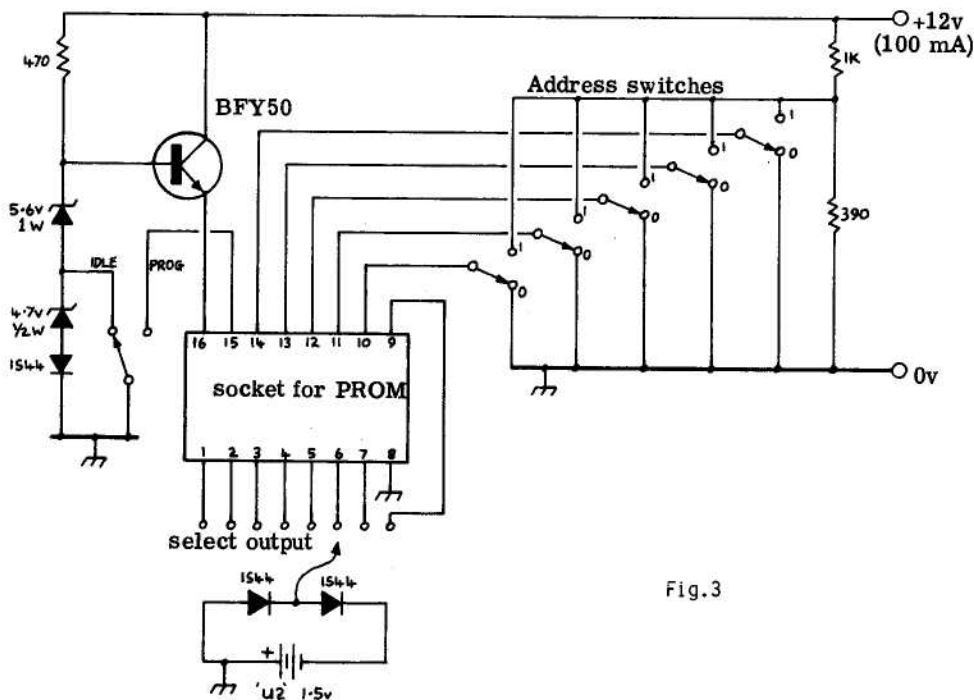


Fig.3

SN74188 PROM PROGRAMMER

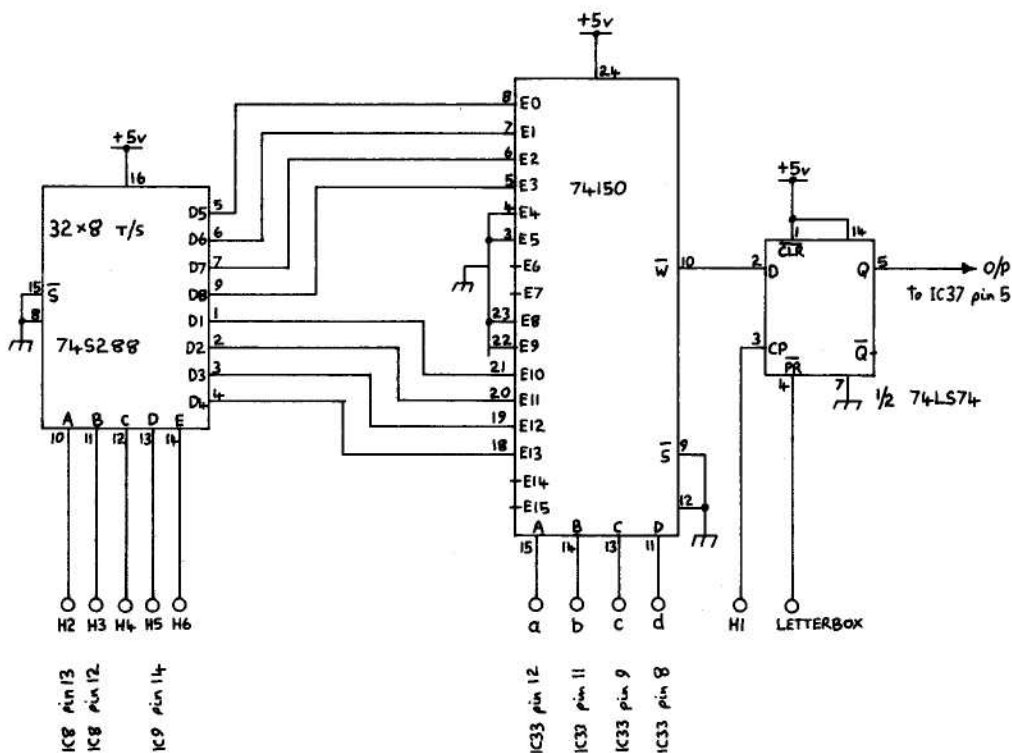


Fig.4

G8ABD CALLSIGN GENERATOR FOR TEST CARD.

The shack at F3YX

FM ON A TV SET

This design by Peter Johnson, G8EIM was published in CQ-TV 103 and 104. Owing to the large number of members who have joined the club since these magazines were issued, the circuits are re-drawn and presented here.

Fig.1 shows the basic FM demodulator which uses a TAA661 IC. De-emphasis is not used although an output is available at pin 1 which avoids the e/f output on pin 14. L1 and L2 are stagger tuned - L1, LF of the IF centre frequency and L2, HF of the IF centre frequency. L3 and 4 are tuned to reject any remaining 35MHz IF signal.

Figs 2 and 3 give a choice of IF inputs. In the case of Fig.3 it will probably be necessary to provide some IF amplification between the tuner and demodulator. Composite video output may be obtained by inserting the single transistor emitter follower (Fig.4) at point 'C'. REMEMBER a TV receiver chassis is often LIVE. Take care!

L1,2,3,4,5 14turns 28swg on 5mm former, with core.

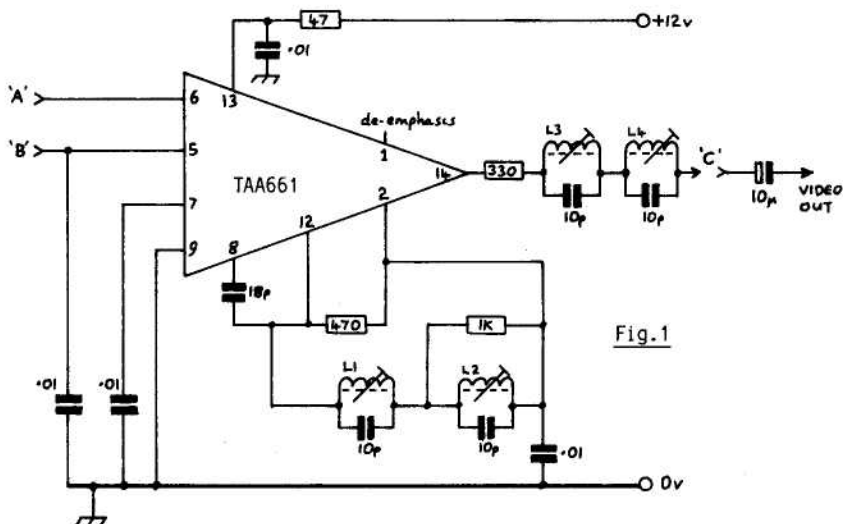


Fig.1

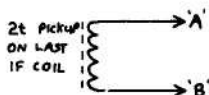


Fig.2

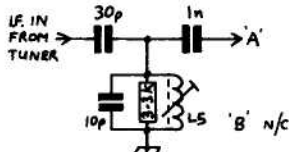


Fig.3

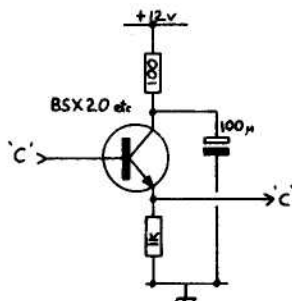
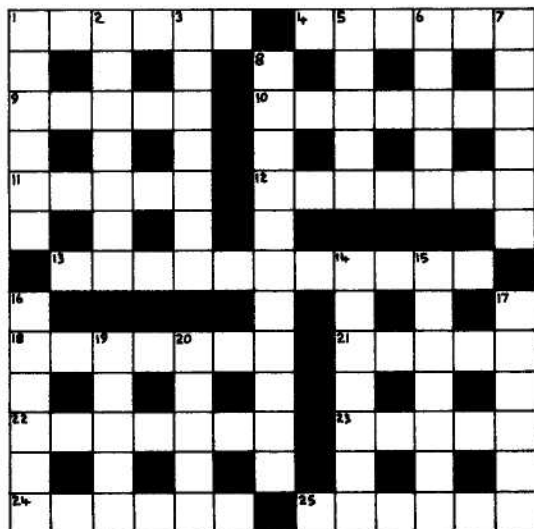


Fig.4

TV FM DEMODULATOR FOR USE IN DOMESTIC TV's

CROSSWORD

Compiled by R. Timms, G8VBC



ACROSS

1. 1043 should tell you what these are. (6)
4. Working on wheels? (6)
9. Fed from source. (5)
10. Imagine if you will some video (7)
11. Tend with radio initially-to study. (5)
12. Get on the.....and.....your wrath! (3-4)
13. +100dB. (3-4-4)
18. 'I hear you' by telephone, but by vision? (1-3-3)
21. Many of the circuits in CQ-TV are this. (5)
22. I havn't got a component for my radio, what! none left over? (2-5)
23. Lift up, sari about the orient! (5)
24. Lack of discipline. (6)
25. Old men and trees. (6)

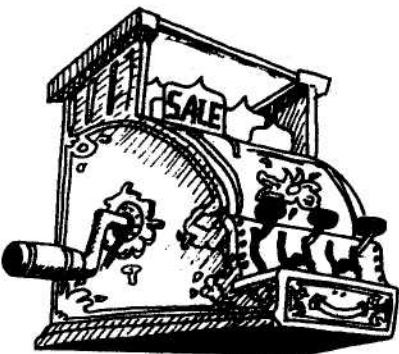
Solution in next issue.

DOWN

1. Three up? (6)
2. What else has a transistor not got that a valve has besides a cathode and heaters? (2-5)
3. He may be 2KHz up or 3KHz down but this will tune him on the nose.
5. Award in the sky. (5) (3-4)
6. All active amateurs' equipment is this. (2-3)
7. Rallies, exhibitions? (6)
8. What you could do if you are not heard very well, it may help. (5-6)
14. An army leader-but not special (7)
15. A bill, are you able to shout about it? (7)
16. Message about nails with a note.
17. Hand operated grippers. (6)
19. GB3ER is here. (5)
20. Stay around the orient for a raising agent. (5)

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MODIFYING THE THORN TX-9 COLOUR
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—for sale—

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FOUR INPUT keying unit. Allows captions to be inlayed or a second picture to be overlayed according to a pattern scanned by a third camera. Designed to work with monochrome, but should work in colour. Built by seller.
Full circuits for both above units supplied, buyer collects.
John Goode. 58 Linden Crescent, St. Albans, Herts. Tel: 0727-63170 (home), or Radlett 5880 (work).

Pye Mk V camera complete with P.U., C.C.U. plus 4½" I.O. tube and interconnecting cables. £60.00

PYE Mk V camera head with some electronics - offers.

Various I.O. fixed lenses - offers.

E.M.I. 205 colour camera, P.U., C.C.U. channel amplifier with tubes and manual, minus interconnecting cables and viewfinder drive panel - offers.

PYE Mk VII all solid-state camera, complete channel with 4½" I.O. tube. £80.00

PYE 625 valve SPG - offers.

PYE 2780 and 2788 14" monitors - offers. (5 off)

Pye 2369 P.U. - offers.

PYE 2369 P.U. - offers.

PYE Mk III C.C.As with w.f.m - offers. (2 off)

PYE 17" triple standard monitor - offers.

CINTEL triple standard 21" monitor - offers.

With a few exceptions, most of the above equipment is in working condition. Circuits are available for most of the gear. Sold as seen, buyer collects.

A.R. Watson. "Somerby View", Bigby, Barnetby, South Humberside. Tel: Searby 347 (evenings or Brigg 52850 (daytime)).

B.A.T.C. Equipment for disposal: Prowest 19" B/W monitors type pm19/1a - £4.00
REDIFUSION 24" B/W domestic type monitors with sound, nice - £3.00

The above have been donated to the BATC and the price reflects the cost of collection and disposal. All the profits will go into club funds. The equipment is of ex-broadcast origin and is quite nice but is offered "as seen".
Brian Summers, G8GQS. Tel: Gainsborough 3940.

SPARES FOR THORN 2000 RECEIVER - is anyone interested?

Video, IF, frame/sound boards, tuner - £4. each plus postage. Many other parts, e.g. LOPTs, power transistors. Peter Major, Tel: Winchester (0962) 4851.

BROADCAST standard video and pulse distribution amplifiers, 19" rack mounting, all solid - state, one each EMI and Melford D/A, one Shintron USA 4v pulse D/A for sale at a fraction of their original prices: £25 + VAT + carriage.
SHIBDEN professional colour effects generator, six inputs, quite sophisticated, £100.
MARCONI 8 - way video switch, £20.
SONY service manuals - several still available (see advert in CQ-TV 117).
MONOSCOPE tubes still required for my collection, buy or exchange.
Andy Emmerson, GBPTH, 4 Mount Pleasant, Blean Common, CANTERBURY, Kent, CT2 9EU
or Tel: 0227 77 471

TELEVISION TRANSMITTERS FOR 70cm - choose between Fortop (ready built) or PC Electronics (uncased modules). Ignore all others! Send large SAE for details and other useful info to your Southern agent.
Andy Emmerson, GBPTH, 4 Mount Pleasant, Blean Common, CANTERBURY, Kent. CT2 9EU
Tel: 0227 77 471

SSTV THE EASY WAY! Robot PC boards, genuine Robot manufacture, £72.50p (no VAT) including technical information and p & p. Also sets of memories (16 x 4030/4060) ex-equipment but guaranteed, £23. per set including sockets.
Peter Burnett, G4BLI, 7 Rydings Avenue, Brighouse, West Yorkshire, HD6 2AJ
Tel: 0484 710474.

SONY CV2100ACE 1/2" VTR, excellent condition, complete with service manual and 7 tapes, £100 plus carr.
YAESU FRG7700 memory unit, unused £55 plus £1.90p post.
Trevor Lumb, 14 Linton Gardens, Bury St. Edmunds, Suffolk. Tel: 0284 4318.

PYE U50A 70cm 4CX250B amplifier, £55 (buyer collects). MICROWAVE MODULES MMC435/600 ATV converter, £20. MICROWAVE MODULES MMA144V 2m pre-amp. £23.
MICROWAVE MODULES MMC 1296/28 converter, £23 (with 1268MHz L.O. output).
DC0DA 23cm 3-stage pre-amp, £10. MICROWAVE MODULES MMS384 384MHz source, £19.
D.Robinson, 19 Bostock Road, Ipswich, Suffolk IP2 8LP.

GBGQS SALES LIST.

PYE studio camera, 7" viewfinder, PSU control panel, camera cable, as new, 4 lens turret, vidicon, circuits, £50.
PYE industrial vidicon camera (valved) good clean condition, circuits, £25.
Vintern camera wedge plate, .50p
EMI camera, ex-BBC, viewfinder, PSU,CCU,Control panel, 4 lens turret, circuits, needs some work doing on it but could be made very nice, £75.
EMI camera as above but no control panel, model 203 late s/no. £60.
EMI vidicon camera, viewfinder, 4 lens turret, PSU,CCU. No tube, no cable, a bit rough but ideal basis for rebuild, collect only, £10.
SPARES for broadcast TV cameras and modules etc. Phone for details.
SCAN COILS, 1" vidicon, new, modern manufacture, surplus, post paid, £3.99.
SET OF THREE matched Plumbicon yokes, 1 1/2", Philips/Mullard, £30.

STUDIO EQUIPMENT

MARCONI SPG. Solid state, BTG MK4 style, L drive, M blanking and sync, xtal or mains lock, £15.
MARCONI pulse and bar generator, solid state, rack mount, £20.
BBC staircase generator, GE4 525, as new, circuits, £8.
BBC sawtooth generator, GE4 532, as new, circuits, £5.
TALKBACK unit with mic amps, LS amps, relay logic control, line transformers, vol. controls etc. Rack mount, £8.
VIDEO DA by ABC TV, 4 channel 5 outputs each, solid state, 3 1/2" rack mount, BNC in/out connectors, nice, working, £15.
PULSE DA by EMI, 6 units in 19" frame, 5 outputs each, solid, £18.

G8GQS continued.....

PLUGE (?) generator, Thorn, rack mount, working, circuits, £15.
AUG. pulse and bar gen + crosshatch + staircase + burst + VITS. Insert makes and inserts one test line into video signal. Electrocraft, £40.
MIXER, Marconi, solid state, 8 channel, cuts and fades, circuits, colour OK, control panel missing! All electronics in 3 units, panel has passive components only, switches etc. Feasible to build hence only £45.

MONITORS

5" BBC monitor, fits BBC type frame, working order, circuits, solid state, mains or 12 volt, £40.
Philips 14" monitor, solid state, very high quality, needs new EHT doubler, circuits, clean and smart, £25.
AS ABOVE but not so nice, £15
PYE 8½" monitor, Type 2823, working order with handbook, very nice clean condition, valved, £35.
AW17-20 CRT. 6" diag, white phosphor, ideal viewfinder, £5.
2BP1 CRT. 2" scope tube new and boxed, £4.
VALVES, ECC88, 6CH6, EB91, plenty prof. TV types, phone.

LENSES AND OPTICS

SET OF 4 lenses for image orthicon cameras, (TV88 mount) £60.
C MOUNT lens for .66" vidicon, 16mm focal length, as new, £8.50.
SERVO ZOOM 10:1, fits IO camera, ie:- EMI 203 etc. With PSU and controls, made by Evershed power optics, tested, £55.
LIGHT SEPERATION BOX, L in R,G,B and L out, dicroic mirrors, £25.

V.T.R.

PHILIPS VTR model LDL1002, ½" reel to reel, monochrome, in nice teak and perspex case with 3 reels of tape, in good working order, history unknown, heads OK, circuit and data, video in/out @ 75 Ohms, £80.
SOUND FADERS, rotary BBC type, 600 Ohms, old but good, £1.

RADIO GEAR

PYE 2m Pocketphone with leather case, fitted S20, S21 and R3, whip, helical, spare battery, circuit, slight squelch fault, £85.
MBM88 70cm aerial with length of coax, made by J-Beam, £22.
WANTED - IVC VTR, 700 or 800 series, cash waiting, also Claud Lyons automatic voltage regulator type TS3-S448.
ALL THE ABOVE equipment is offered as seen unless stated otherwise.
Brian Summers, G8GQS, 4a Knaith Hill, Knaith, Gainsborough, Lincs. Tel: 0427-3940.

PHILIPS N1500 VCR, working order, heads OK, immaculate appearance, with one tape, £90 ono. E.Trundle. Tel: (Hastings) 0424 434874.

MARCONI MkVI B/W broadcast camera complete with Plumbicon tube, shot box, Evershed 10:1 zoom, C.C.U V.F. £100.
VISION switcher PCBs, ex-broadcast mixer, 9½" x 7½" with socket, 40 video cross points, 20 video inputs, 2 independent outputs, ideal basis for mixer £12.
PLUMBICON and Leddicon camera tubes, almost perfect, low hours. £12. Y,R,G or B available.
TOYO VHF/UHF VSWR Watt meter, model T435, 5W to 120W, 'N' connectors, £25.
SOTA 70cm linear amplifier, 2C39 output, 6" x 10" x 11", used for /T, 40W O/P £100.
Would part exchange any item for 11GHz head end/converter hardware for broadcast satellite reception. G13MBB 20 Towerview Crescent, Bangor, Co.Down. BT19 2BA, Northern Ireland. Tel (0247) 61946.

PROJECT 100 S.P.G. PRINTED CIRCUIT BOARD - NEW ZEALAND.

Due to an error a New Zealand member has been sent a spare P100 SPG board which he does not require. Since it is too expensive to return would anyone closer like to buy the board. If so please contact Mr. M.C Dyer, PO box 33-215, Takapuna, Auckland 9, New Zealand

FOR SALE, due to failing eyesight:- TV camera for fast or slow scan, model CTC 4000 by Ikegami, with spare vidicon, in working order with circuit diagram. £50.00

FAST-TO-SLOW scan converter by DL2RZ, made in Germany with circuit diagram. In working order. £70.00

SLOW-SCAN MONITOR, Boards made in USA by W6MXV, with spare tube, 5FP7 (new), in working order, diagram as in Slow Scan TV handbook. Price £60.00

SLOW-SCAN keyboard based on G8HBR logic boards with computer keyboard.

Format: 8 characters per line, 4 lines per frame (page) 8 pages in 2 memory chips. In working order, with data. Price £50.00.

SSB HF bands transceiver, Trio TR520 with 18AVT trap vertical. Good working order. Offers. Postage at cost. See for further information. P.Kaminski. 5 Tytler St., Forres, Morayshire, IV36 0EL. Tel: 0309 72019 (evenings).

PETO-SCOTT ET 2770 1" VTR - offers.

Geoff Bayley, Tel: 061 624 4594.

LOTS OF TV and monitor bits and pieces including tubes, LOPTs etc. Mono monitors etc. sell or swap.

G.R.Brookes, 136 Middleton Hall Road, Birmingham 30. Tel: 021 458 5882.

PLUMBICON TUBES. The BATC has obtained a very limited supply of used, ex-broadcast. Plumbicon tubes. There are several "L" tubes several "G" tubes plus odments, also what appear to be an R-G-B set. All tubes are 30mm dia. These are offered to members only at £10 each. Please phone first for stock position and to arrange shipping. Peter Delaney, Tel: 073 - 522 - 3121.

FERGUSON 3V17 colour camera, PSU, with leads. 4:1 zoom lens, motorised iris, colour temperature control, as new, £250. (no offers).

A. Parnell G8SUY, 19 Honeyball Walk, Teynham, Sittingbourne, Kent. Tel: 0795 522488

—wanted—

MONO CAMERA wanted, Philips V100 or similar.

Geoff Bayley. Tel: 061 624 4594.

HEAD ASSEMBLY, part No. Y-27112-02-2 for Sony CV2100 ACE VTR. Also wanted information on Hitachi colour tube assy, type 510 NDB22TC01.

V.McDonald, 147a Roseville Road, Hayes, Middlesex UB3 4RA.

SONY service manual for SL-8000UB PAL VCR, to purchase or borrow for copying. Ian Douglas, GMAFGS. 4 Dampark, Dunlop, KA3 4BZ. Tel: 05604 483.

C.R.T. suitable for FSS (colour, so 5FP7 won't do!), also PM tubes for R,G and B anything useful considered.

G.R brookes. 136 Middleton Hall Road, Birmingham 30, Tel: 021 458 5882.

SWAP, two new Eimac 4CX250B's for ATV equipment. WHY?

Steve, Tel: 025 671 3281 (Odiham).

TIFAX XM11 teletext decoder card. Wanted the following spare: IC3 type X905Z, Barrie Procter, GBAWN. 28 Holme Grove, Burley in Wharfedale, Ilkley, West Yorks. LS29 7QB. Tel: 0943 463347. (office hours).

Early CQ-TV magazines and newsletters wanted by the Editor for private collection and for research into the history of amateur television. All magazines before CQ-TV64 required. Also anything else of interest for the above project. Your price paid, all expenses refunded.
John L. Wood. G3YQC. 47 Crick Road, Hillmorton, Rugby, Warks CV21 4DU, Tel: (0788) 846220.

INFORMATION REQUIRED on the whereabouts of a Philips or Peto Scott 1" reel to reel video recorder which might be used to transfer two important 1" video tapes to VHS format. "Have funds will pay".
John Lawrence, GW3JGA, 40 Aberconway Road, Prestatyn, Clwyd, Tel: 07456 3255.

MONOSCOPE TUBES still required for my collection, buy or exchange,
Andy Emmerson, G8PTH, 4 Mount Pleasant, Blean Common, Canterbury, Kent. CT2 9EU, Tel: 0227 77 471.

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