

P5

NEWSLETTER OF THE SEVERNSIDE TELEVISION GROUP

Edited by Shaun O'Sullivan G8VPG

A PATTERN GENERATOR PLUS

by Pat Janes GW1SXU

Maplin Magazine No.37 contains a project described as an "Audio/Video Generator" which some readers might find useful. I have knocked one up and am pleased to say that again Maplin are offering a properly designed device which works without problems.

The board offers (a) a mono pattern generator employing the ZNA 234 and (b) an audio tone in the form of a clean 1 kHz sine wave. There is a standard 1 V peak to peak video output and also a UHF output via an Astec 1286 modulator for use with a TV set. Alternatively, there is provision for the acceptance of external video and audio signals - so the board is quite versatile.

My version was built from the base board (of high quality) and "populated" mainly from stock. A kit is available (at a price) but did not interest me as I had no intention of using the specified case or the pcb mounted rotary switch or blankety-blank pcb mounted push button switches which go with it. I have standardised on an 11" x 11" x 2" box for virtually all my ATV projects. Thus I used ordinary panel mounted rotary and toggle switches for the front controls and BNC's (for video and RF) and 1/4" jacks (for audio) at the rear.

There were no serious problems in construction but the following remarks may be of interest.

- 1) The specified pcb mounted rotary switch is described in the Maplin catalogue as a make before break type. I think that that must be a catalogue error and my front panel switch is a standard break before make.
- 2) R1 on the board is specified as a 10R 1 W wirewound but the Maplin part number given refers to a carbon film item. I used a carbon film.
- 3) The specified pcb push button switches were replaced with standard toggles. S3 can be a simple on/off or a second pole could be used to operate an LED termination indication. S1 and S5 can be single pole, double throws.

The end product offers seven mono video test "patterns" including vertical lines, longitudinal lines, cross-hatch, dots, grey scale, black and white. There are composite video and UHF outputs and there is a facility to use an external video source which can, of course, be mono or colour. Audio-wise, you have a stable 1 kHz tone output which also appears on the RF modulator output. Again, an external sound source can be used as an alternative.

Not an "el cheapo" project but quite a useful box of tricks.

It does indeed sound very handy to have about the shack. I have recently come across a very good kit if all you need is an audio tone generator. JANDEK kits produce a very good little audio signal generator. It produces a good sine wave from the Wien bridge circuit, with a separate "squared off" output to drive a digital frequency meter. 6 over-lapping ranges cover from 40 Hz to 40 kHz, and the output is continuously variable up to about 3 V peak to peak. The output is also stable and remains very constant over the entire frequency range. The kit includes a good quality pcb, all the board mounting components and the principle front panel controls. I think that the kit is excellent value for £9.75 plus £1.00 postage from JANDEK, 6, Fellows Ave., Kingswinford, West Midlands DY6 9ET. Ted G3JMY and myself have both built one up, and are delighted with them. Ed

NEWS ITEMS

* **RECORD TEMPERATURES** : As a write this edition of "P5" in early August, the temperatures are soaring way over 30 deg C. Doubtless by the time you read this, things will have returned to normal, and it will be cold and wet. None the less, spare a thought for our poor repeater, which is standing up to these high temperatures amazingly well. A few weeks back, when I last visited the shack on a pleasantly warm evening, it was 30 deg C in there. Little did I think that we would get 34 deg C outside. I imagine that the shack must have got up to 40 deg C during the last few days, since no one has dared venture up there to check the max/min thermometer.

* **WELCOME BACK** : As those of you who regularly monitor GB3ZZ will know, our software expert has recently returned from his sojourn in the USA. We would like to welcome Brian GW6BW back. He has already been busy with various re-writes of the GB3ZZ software, and Chief Engineer Steve G8KUW has put some new EPROM's in recently. I am afraid that I have lost track of which version is now current, but the computer does seem to be working very well.

* **CONTEST NEWS** : As usual, we entered the BATC Summerfun contest on 9/10th June. Our usual tower was being used by its owners, the Gordano ARG elsewhere on Mendip. We were fortunate to be able to borrow Audrey G4ULH's. This worked very well, after a considerable amount of work in freeing the outrigger legs. Ivor G1IXF and the boys spent several long days and evenings with various tools working on this, until they succumbed to brute force and the warming effect of Ted G3JMY's blow torch.

After all this, the contest should have been easy and infact most things did run smoothly. We did a great deal of work on the Friday evening, which enabled us to have the aerials up and operational by lunchtime on Saturday. Your editor spent much of Saturday afternoon hoping to take advantage of the good location and equipment to work some exotic DX on 2 m SSB. Unfortunately conditions were flat and there was very little about, and I only managed to struggle up to the Midlands and down to the South Coast.

Our barbecue in the evening was dampened by some persistent drizzle, but all those that came enjoyed the burgers, sausages and steaks which were cooked outside, and had the authentic smokey flavour. Conditions through the contest were quite flat, and no spectacular DX was worked. We have claimed 5986 points on 70 cm from 36 contacts, and 2561 points on 23 cm from 26 contacts. The rumour is that after a very good long run at number one, someone has pipped us at the post for first place on 23 cm. Never mind, we will try even harder in September. The dates to remember are 8/9th September. This contest is the International, and is always the most busy, so we will appreciate your points even more than usual.

* **RALLY NEWS** : The Group had a stand at the Longleat Rally, and those on the stand met a great many members and friends. We will also have a stand at the Bristol Rally on 16th September. This is being held at the Brunel Train Shed, Temple Meads Railway Station. Once again, we hope to put on a live display of GB3ZZ, and how much has it developed since we were last there 2 years ago. The full range of Group products and AZTEX equipment will be there for you to examine and buy. Viv, Ivor and Steve represented us at the BATC Rally, and had an enjoyable weekend away. We sold all the aerials which we took, and much interest was shown in the AZTEX items on display. What a pity it is such a long way away from Bristol, and so few of us could travel to see this interesting show.

* **NEW VIDEO IF BOARD** : Many of you will have seen the advertisement on the back cover of the latest CQ-TV featuring the new Camtech Video IF board. The specification and performance promises to be very good, and

1. INTRODUCTION

1.1 INTRODUCTION - This book is intended to introduce the subject of 23 cm Amateur Television (ATV). It is aimed primarily at people who are already licensed Radio Amateurs, but who do not have experience of either ATV operation on other bands, or of microwave operation on the 23 cm band. Thus it will be equally useful to the dedicated HF or 2 m operator who is interested in ATV, or the 70 cm ATVer who is considering a move up to 23 cm.

1.2 STANDARDS - ATV is a fascinating and powerful hobby. It enables you to exchange pictures with other Radio Amateurs, as well as the more usual conversational QSO's. The pictures that are sent on 23 cm are much the same standard as the professional broadcasters use. This means that we have a 625 line fast scan picture. Colour, which is more often used these days than not, is the usual PAL encoded type which a standard UK domestic TV set will decipher. Similarly most Amateurs send a sound channel with the pictures, which in combination with a conventional talkback channel on another band (usually 2 m) enables full duplex operation to take place.

Thus it is possible with a fairly simple complement of equipment, to be described in this book, to run your own ATV station from the spare room of your house. Something over 2000 Radio Amateurs throughout the UK are active in this fascinating hobby, and most large centres of population have a group of ATV enthusiasts.

1.3 THE TALKBACK CHANNEL - One way of finding out about ATV activity in your area is to listen on 144.750 MHz in FM mode. This is the international ATV calling and working frequency, and tends to be used by ATVers for local talkback. Talkback is the term used for the phone channel which ATVers use to communicate whilst pictures are being exchanged. It is used for calling CQ-TV when someone is looking for a QSO, and for exchanging comments when the QSO is in progress. In busy areas or during contests, it might be prudent to vacate the channel once communication has been established with the other station, but at most times the sound of local ATV activity on 144.750 MHz tends to stop other Amateurs using it for non-ATV purposes.

1.4 PICTURE REPORTING SYSTEM - You will often hear ATVers exchanging picture reports and using "P" numbers. These P numbers are a simple system of picture quality reporting, similar to the familiar Readability scale for phone transmissions. The scale runs from 0 to 5, with a P5 being a top quality picture, and a P0 not really being a picture at all. The BATC publishes a reporting chart, which assists newcomers to assign picture reports to signals with some degree of consistency.

1.5 THE BATC - The BATC is the British Amateur Television Club. Founded just after the War, this RSGB affiliated organisation is the main voice for ATVers in the UK. It has just over 2000 members, and publishes an excellent quarterly magazine called "CQ-TV". Packed with informative articles, and designs for home constructed equipment, it is thoroughly recommended to all those interested in ATV. The BATC also publish several books of circuits for ATV projects, supply certain hard to obtain components, organise ATV contests and an annual ATV Convention. Membership of the BATC is really essential for all those with a serious interest in the hobby.

1.6 THE 23 cm BANDPLAN - The 23 cm band extends from 1240 to 1325 MHz, and the terms of the UK Amateur Radio licence (either class A or B, the special TV only licences were abandoned a long time ago) allow ATV operation throughout this band. As for any other band however, an RSGB sponsored bandplan has been drawn up and readers are advised to comply with this. Specific ATV segments are shown from 1241 to 1251.5 MHz and 1270 to 1286 MHz. All modes parts of the band are 1240 to 1241 MHz, 1251.5 to 1260 MHz, 1286 to 1291 MHz, 1291.5 to 1296 MHz and 1298

seems certain to improve upon the various NE564 based boards which most of us seem to use. This being the case, I was very keen to try one. However there is one small problem. The IF input frequency is 40 MHz, and a telephone conversation with Camtech revealed that it cannot be raised to the more commonly used 50 MHz (compatible with W&D 1250DC50 down-converter). It turns out that Camtech are planning an accompanying down-converter themselves in due course.

I did some tests to see if my W&D down-converter would work with a 40 MHz IF. The VCO in the NE564 was reset to 40 MHz from 50 Mhz, and it worked fine apart from one small problem - it ran out of tuning range at the top end of the band, and would not quite tune to the GB3ZZ output channel. The only alternative was to raise the range of the LO in the down-converter by 10-15 MHz. A telephone call to W&D brought some cautionary advice and a complete set of circuit diagrams, layouts and alignment instructions. The advice was to be careful, and do not play with the band pass filter alignment, which needs a sweep generator to set up properly. The adjustment for the LO range was quite easily found, and the frequency monitored at the buffer stage output with a 1.5 GHz frequency counter - this item is essential. It is a very touchy adjustment, but was eventually completed with no detectable deleterious side effects. The down-converter now covers the whole band with either a 40 or 50 MHz IF, and the rather pointless undershoot which the item usually has is eliminated, or rather replaced with some overshoot at the top end.

This work complete, I am now awaiting the new Camtech kit, and will let you know how it works in a future edition of "P5". If anyone needs the information on the W&D down-converter, please contact me. For some strange reason, nobody seemed to get a circuit diagram with the unit at purchase, and service and repair without one is rather difficult.

A GUIDE TO 23 cm TELEVISION

by Shaun O'Sullivan GBVPG

About the time that GB3ZZ was first put on air in 1987, "P5" published a couple of supplements which were intended to give guidance to newcomers to 23 cm ATV. The intention was to review the techniques and equipment needed to participate in 23 cm ATV through the repeater. The text was largely non-technical, the aim being that this would be a practical hands-on guide to the subject.

Ever since, I have been meaning to expand and update this material into a complete guide to 23 cm ATV. Just recently, the text of this project has been completed, in a total of 9 chapters. Starting in this issue of "P5" is a serialisation of all 9 chapters. It has been written with the idea that together with illustrations and diagrams (which for space and printing reasons probably will not appear in "P5") it can eventually be published as a complete booklet. This will be sold by the Group at a modest cost as a fund raising venture. If you extract the relevant pages from "P5", you can build up the entire book over the forthcoming issues.

In this issue, we start with Chapter 1, Introduction and Chapter 2, Aerials. Further chapters include Cable & Connectors, Receivers, Transmitters, Video Sources, ATV Repeaters, a brief review of other aspects of the ATV hobby and a comprehensive Reference Chapter with ideas for further reading and the addresses of equipment suppliers.

to 1325 MHz. Areas to avoid are 1260 to 1270 MHz (Amateur satellite service), 1291 to 1291.5 MHz (Phone repeater inputs) and 1296 to 1298 MHz (the main narrowband modes part of the band). You should also bear in mind the ATV repeater channels discussed in the chapter about repeaters.

1.7 FURTHER READING - The final chapter of this book gives references for further reading, and a complete list of all the suppliers mentioned in the book. This should be adequate to give you a good start in the hobby. The Severnside Television Group have produced a video film, which illustrates some of the many facets of 23 cm ATV. This is available to readers, and full details can be obtained from the group.

2. AERIALS.

2.1 INTRODUCTION - This chapter will examine the essential requirements for an aerial. As with any radio installation, an ATV station will only be as good as the aerial to which it is connected. Hence it is folly to connect a sophisticated array of equipment to a small, poorly located aerial, and expect outstanding results. Conversely, a good aerial system will bring out the best in a simple, low power station.

However, do not think that all this means that you will need a large and unsightly aerial farm in the back garden. Because of the very short wavelength of the signals in which we are interested (roughly about 23 cm) high performance aerials are surprisingly compact.

Before we look at specific examples, lets consider some of the fundamental properties which an aerial for 23 cm ATV must have.

2.2 POLARISATION - The RSGB Microwave Committee have standardised on horizontal polarisation for all beacons and repeaters in the 23 cm band. This is because it is judged to have propagation advantages, and of course our signals need all the help they can get as they pass through the ether. This is opposed to conventional practice on the 2 m and 70 cm band, and has led to some difficulties for repeater operators, as we shall see in a later chapter. Never the less, horizontal polarisation has been the norm for 70 cm ATV, is used by all current UK ATV repeaters, and hence has been adopted as the standard for both simplex and duplex contacts on 23 cm.

2.3 IMPEDANCE - As with most Amateur Radio equipment, the standard characteristic impedance of aerials, cables and equipment seems to be 50 Ohms. Nearly all the 23 cm equipment that I have seen on the market, or designs described in magazines conform to this norm.

2.4 GAIN - Because we want as strong a signal as possible, we are usually looking at fairly high gain aerials for 23 cm. As intimated above, the comparatively short signal wavelength of 23 cm makes it possible to construct compact yet high gain aerials for this band far more easily than for lower frequency bands. However, as gain rises, so the beamwidth of the aerial tends to decrease. This makes the aerial far more directive, and hence it becomes increasingly important that the aerial is accurately pointed in the desired direction. If you only want to work the local repeater, a fixed direction aerial may be adequate, but for most other purposes a means of turning the aerial is needed. This in turn dictates the need for a rotator, although because of the small size of the likely aerials, this need not necessarily mean one of the larger, more expensive types. However, the better rotators tend to have superior control and positioning accuracy, and the high directivity of an aerial will make this a distinct advantage. My advice as far as rotators are concerned is not to skimp too much on it, since a good rotator which is not overloaded will be a long lasting and reliable asset to your station.

2.5 BANDWIDTH - The 23 cm band is very wide, 85 MHz in fact. If you

care to add it all up, there is more spectrum in the 23 cm band than all the other bands below it. Hence we are freed from many of the bandwidth conserving restrictions that are taken as the norm on lower frequency bands, which is just as well, since FM modulated TV is inherently a wide band mode. This is why 23 cm is the lowest frequency band on which FM TV is permitted. This is also why all the ATV repeaters are to be found on this band, since it has sufficient bandwidth for two or more simultaneous FM TV channels.

All of this puts a demanding requirement on aerials, since not only is high gain needed, but wide bandwidth is also desirable. As any aerial designer will tell you, this is a notoriously difficult combination to achieve, since one tends to act against the other. If you want to cover the 69.5 MHz split between the FM repeater input and output channels, the choice is either to use one of the aerials with proven wide bandwidth, or to use two separate aerials. As we shall see, there are some very good aerials on the market which have comparatively narrow bandwidths, thus restricting their use to the 23 cm ATVer. However, even the most narrowband aerial has sufficient bandwidth to accommodate the usual FM TV signal which is about 17 MHz wide.

In conclusion therefore, we are looking for a horizontally polarised beam aerial, with an impedance of 50 Ohms for good matching and low SWR on transmit, good gain and enough bandwidth to cover the majority of the band. Lets now look at some of the aerials which are available to us.

2.6 THE YAGI BEAM - Variations on the Yagi beam are probably the most popular type of high gain aerial on the VHF and UHF bands. Similarly, they have found wide use on the lower microwave bands such as 23 cm. There are a number of commercially available types, as well as various designs published in magazines and books over the years. Probably typical of the commercially available types are the French manufactured Tonnas, which have built up a good reputation on the 2 m and 70 cm bands. Tonna produce two basic beams for 23 cm, one with 23 elements and the other with 55. The 55 element aerial is a magnificent device, but it is centred on 1296 MHz and has a bandwidth of only about 10 MHz, and it is hence not well suited to ATV operation.

The 23 element aerial is available in two versions, one of which is useful to us. This is the 24 cm version which covers 1240 to 1260 MHz. This is thus suitable for the usual repeater input channel of 1249 MHz and the common simplex frequency of 1255 MHz. The gain is 16 dBd (that is gain compared to a half wave dipole. This figure is about 2 dB lower than gain referred to an isotropic radiator, commonly abbreviated to dBi) which is a quite reasonable figure. The aerial is quite compact at only 1.85 m long, and is constructed from good quality materials. The final assembly is left to the purchaser, but this is not a difficult job, even if it is a little fiddly. In tests this aerial has performed well at the frequencies for which it is intended, but be warned, it is not a wide bandwidth device. Above about 1275 MHz, the gain seems to fall off rapidly, and at repeater output frequencies it is of no real use at all. Hence it can only be recommended for the bottom part of the band.

Tonna produce another variant for the 1296 MHz narrow band modes part of the band, but like the 55 element Tonna, this is not of much use for ATVers. Incidentally, the Tonna beams are all fairly conventional with a single folded dipole driven element, and optimised parasitic elements whose length is tapered and spacing varies along the length of the boom.

A much simpler variation on the Yagi theme is the 18 element wideband device marketed by the Bristol based Severnside Television Group. The aerial is sold as a fund raising project by this well known repeater group that run one of the most advanced ATV repeaters in the world, GB3ZZ. The aerial is constructed from similar materials and techniques

to a domestic UHF TV reception aerial. The fairly chunky elements help to promote its wideband characteristics, which enable it to cover the whole band. It is very small at only 900 mm long, and of course it looks very similar to a normal TV aerial, which may help those of you with neighbour/planning problems. The gain is about 10 dBd, which means it is really suited for fairly short, clear signal paths. None the less, with over 300 now sold, it has achieved considerable success in the UK ATV market. The cost of the aerial reflects its simple construction, and it is currently well under half the cost of the 23 element Tonna. In conclusion therefore, it is a simple, inexpensive and unobtrusive aerial which covers the whole band, and will suit those with a clear path to the local repeater or who want to conduct local simplex QSO's.

2.7 THE HELICAL BEAM - Another type of aerial available for 23 cm use is the helical. This comprises a continuous spirally wound element with a backplate reflector. This type of aerial is really suited for satellite use, since it produces circularly polarised signals. The sense of the polarisation - clockwise or anti-clockwise - depends on which way the spiral is wound. When used to receive a plane polarised signal such as our ATV signals, there is an inherent loss of 3 dB. This figure must therefore be deducted from the published gain figures, which for a helical aerial usually refer to circularly polarised signals. However, this loss is not always as bad as it may seem, since it often happens that a signal which starts off as horizontally polarised at the transmitter can become twisted during its signal path. Hence a plane polarised aerial would suffer some loss, but the loss exhibited by the helical would remain constant at 3 dB. A 20 turn helical beam is marketed by Sandpiper Communications, and has a claimed gain of 15 dB. For plane polarised signals, this amounts to 12 dBd, which is not a great deal for an aerial 1.5 m in length. Never the less, the bandwidth of these aerials is wide, and it will cover the whole band with ease. The current cost of the aerial is about the same as the 23 element Tonna.

2.8 CORNER REFLECTORS - The Corner Reflector is a simple form of aerial, which consists of 2 flat plates joined along one edge, and set apart at an angle. Inbetween these is a half wave dipole driven element, the two plates acting as a reflector to focus the incoming signals onto the driven element. Doubtless the gain and directivity of the aerial could be improved by adopting some form of parabolic shaping the reflector. A 23 cm Corner Reflector used to be commercially produced by the well known British aerial manufacturer Jaybeam. Although it was discontinued some years ago, secondhand examples may still be seen from time to time, since it was a ruggedly constructed aerial. The gain claimed was about 13 dBd, and the bandwidth was excellent. However, it was a somewhat heavy and large aerial with a fairly high wind loading, and would take some careful mounting on a mast.

2.7 SPECIAL FORMS OF YAGI - Over the years, many designers have developed special forms of the basic Yagi aerial. One of the apparently more successful such variations is that produced by Mike Walters G3JVL, and is called the Quad Loop. Here, the elements are formed by into a circular shape. To optimise gain, both the diameter and spacing may be tapered. Of particular interest to ATVers is the wideband variation called the Loop Periodic. This features 3 driven elements, combined onto a log periodic type of feed. The constructional details have now been published in the RSGB Microwave Handbook Volume I, but the aerial is available in a fully constructed form from G3JVL, trading as JVL Electronics. Two versions are produced, one with 28 elements and a length of 2 m, and the other with 48 elements and a length of 4 m. The gains are respectively 18 and 22 dBd. The wideband Loop Periodic feed ensures that the aerials cover

the whole band, and the results from both versions are truly impressive. Although various independent testers have not been able to establish any significant and demonstrable advantages of the Quad Loop, they certainly seem to perform exceptionally well on 23 cm ATV duties, and must come with my top recommendation. In certain exposed locations, you may find that the 4 m long boom of the larger version will benefit from some extra bracing. Their fiddly construction reflects in the cost, which for the 28 element version is roughly twice that of the 23 element Tonna. However, I think that this is money wisely spent.

Another variation on the Yagi theme is the slot fed aerial. This comprises two conventional beam aerials mounted one over the other, with a shared driven element known as a skeleton slot feed. Jaybeam produce one of these aerials commercially, with 15 elements in each of the two beams from which it is constructed. The aerial produces a gain of 15 dBd and operates over the range 1280 to 1330 MHz. Hence although it covers the repeater output channels quite effectively, it misses the input channels and simplex frequencies, and is thus of limited use to the ATVer. I seem to remember that a 1250 MHz version was produced some years ago, but was withdrawn as a result of low demand. Like all Jaybeam products, it is solidly constructed and may be expected to give long and reliable service. It is also very compact at only 870 mm in length.

2.10 MISCELLANEOUS - If you are keen to construct your own aerial, there are a number of designs published in the German books "The UHF Compendium". These designs do not seem to have been widely used in the UK. Since we are using the lowest of the microwave bands, you may be wondering whether a parabolic dish aerial could be used. Infact, Sandpiper Communications do produce a 2 m diameter mesh dish with a 23 cm feed. A parabolic dish reflector will work at any frequency, provided that if it is constructed from mesh rather than solid materials, the aperture of the mesh is less than 10% of the desired signal wavelength. The feed of the dish will need to be designed for the frequency in use. However, the gain of a given diameter dish increases with increasing frequency, and vice-versa of course, and it so happens that at 23 cm, the gain which a reasonable size dish will produce can be more easily, cheaply and compactly produced by one or two beam aerials. For example a 2 m dish will only produce about 16 dBd gain, which can easily be produced by a single beam aerial. At higher frequencies, the gain of the parabolic dish becomes unassailable, and it is widely used for frequencies above about 3-4 GHz.

One final tip before we leave aerials, and that is before you erect your chosen device, give it two or three coats of polyurethane varnish. This will help to protect it from corrosion, and hence preserve its performance for a longer period of time.

NEXT SOCIAL EVENING

The next Group Social Evening will take place on Sunday 30th September. As always, the venue will be the GB3ZZ Repeater site, Elm Park Parish Pavillion, Elm Park, Filton, Bristol. All members, their partners and guests are welcome to attend, with "kick-off" at about 7.30 pm. Everyone is asked to bring along some liquid refreshment, and a contribution to the buffet would be most appreciated. GB3ZZ with all its latest enhancements will be on display. See you there ?.

SEVERNSIDE TELEVISION GROUP

24 cm FM TV TRANSMITTER

Our state of the art 24 cm FM TV Transmitter gives a solid 2.5 W output on two switchable channels - 1249 and 1255 MHz are standard, but others are available to order. The ready assembled unit has both line and mic level audio inputs for inter-carrier sound, and front panel audio and video gain controls. The RF circuitry is state of the art, featuring surface mount components, superb stability, SP5060 pll chip and the SC1043 pa module. See the review in CQ-TV 150. The price is £220.00 plus £5.00 postage.

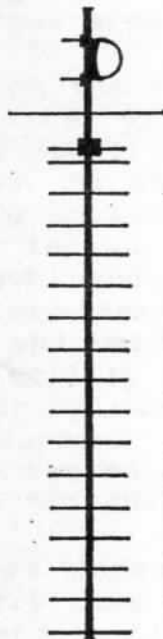
COMPLIMENTARY 20 W PA

A 20 W pa using the high power SC1040 pa module is now available to go with the 24 cm Transmitter. The cost is £150.00 plus £5.00 postage.

23/24 cm PRE-AMPLIFIER

Our 23/24 cm GaAsFET pre-amplifier really is the hottest design around, and yet it is still very stable. See the review in CQ-TV 150. The typical gain is 17 dB with a noise figure of only 1 dB. The gain across the 23/24 cm band is flat, but there is 8 dB of rejection at 700 MHz, thus helping to reduce broadcast TV breakthrough. All this is achieved by the ATF 10135 GaAsFET in a state of the art circuit using surface mount components and careful screening between input and output. The pre-amp is fully boxed and assembled (but not weatherproof) and does not contain RF change-over circuitry. The price is £52.00 plus £1.50 postage.

Cheques payable to AZTEX ELECTRONICS. Send to Ken Stevens G4BVK, Aztex Electronics, 20, Coberley, Footshill Rd., Hanham, Bristol BS15 2ES. Tel. 0272 677 005 after 7 pm or weekends. Please send an SAE for full details on any of our products. Delivery 28 days.



As over 250 users from all over the UK will know, the STG 18 element wideband yagi is the affordable aerial for 23/24 cm ATV. Don't forget that your aerial must cover all the band for repeater working. Just look at some of its star features ;

- * Frequency coverage 1240 to 1325 MHz.
- * Gain 10 dB across the band.
- * SWR about 1.5 across the band.
- * Length only 900 mm, weight only 300 g.
- * Supplied with clamp for masts up to 55 mm in diameter. End mounting design as shown.
- * Neat and unobtrusive, it looks just like a domestic UHF TV aerial, but is smaller.
- * Best of all, the price is still only £14.00 plus £2.50 postage (UK only, please write for export air freight rates).

→ **NEW PRODUCT** : Precision made 3 pole inter-digital filters for 1245 to 1320 MHz. Less than 1 dB insertion loss. To order, state centre frequency and either BNC or N sockets. Price £50.00 plus £2.50 postage.

Cheques payable to SEVERNSIDE TELEVISION GROUP. Send to STG, 15, Witney Close, Saltford, Bristol BS18 3DX. Tel. 0225 873 098 after 7 pm and weekends only. Allow 28 days delivery.

Jean Fletcher
(0272) 643277

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To: Mr. S. O'Sullivan,
Organiser of Longleat Rally,
15, Witney Close,
Saltford,
Bristol. BS18 3DX.

29.6.90

Dear Shaun,

On behalf of the Severnside TV Group may I thank you for the use of the table for our Group at the recent Longleat Rally. We do appreciate this facility very much and it enables us to advertise our interest to other radio amateurs which might otherwise hardly know of our growing field in amateur TV.

We had many enquiries from folks some distance away and also were able to take subscriptions from five new members.

The position of the table was ideal, being so close to the movement of people in and around the Bring and Buy section. This year we did not need the open section of the tent that was so appreciated in the extremely hot weather of last year, but never the less greatly appreciated for the viewing of our videos.

A letter has been sent to the Secretary RSGB (Bristol) by the Chairman thanking him for the facility so I was delegated to offer the members thanks to you for all the hard work you have undertaken to make Longleat Rally such a tremendous success, may next year continue the theme of the "Best in the Country" Rally.

Warm wishes of all Severnside TV Group members to you.

Yours sincerely, *Jean*

Jean Fletcher GOAWX.