

P5

The Newsletter of The Severnside Television Group

March 1995

from the pen of the **CHAIRMAN G8YMM**

CHRISTMAS SOCIAL

It was nice to see so many people attending and supporting the Christmas social. The evening went well with the first prize of the raffle £50 going to Allan G7DRU. Unfortunately for him!! He spent the majority of it in the auction. Well done. Thank you for all your donations and effort.

GB3XG

Last year the committee and members worked very hard to get our 10Ghz repeater project GB3XG on air. The repeater was finally commissioned in December with pictures (P3), being received as far as the Malvern Hills (50 miles due north of Bristol) by Ian G6TVJ. The repeater unfortunately at present is temporarily off air due to site engineering work which is not under our control, so please be patient.

GB3ZZ

GB3ZZ not forgotten, has worked remarkably well throughout the year. Our chief engineer Ian G6TVJ has been busy calibrating and equalising the video, RX, and TX circuits so as to improve its performance.

ACTIVITIES

The group attended three rallies this year Bristol, BATC and Longleat. The rallies provide methods of fund raising and public relation exercises. We also took part in Jamboree On The Air in October and the Summer Fun competition on the Mendips.

MEMBERSHIP AND SALES

Once again your membership is due see enclosed form. The membership barely covers the cost of P5 let alone the operations of the group hence our aerial sales are vitally important. Matthew Bell G0ECM a long standing member has taken over the sales from Shaun G8VPG. See BATC advert or write to me if you require prices and information.

AGM

The AGM is rapidly approaching see nomination form and date. This year several committee members are standing down after serving between 5 and 9 years therefore, we require a Secretary and Treasurer and two other committee members. Of course you may nominate for the other positions on the committee. The purpose of the committee is to serve the group in the best interest. Without a committee the group will not be able to function under the constitution. So lets have some new support. We meet socially approximately 6 times a year on an evening in the week with typical work activities listed above. If you require further information please contact me.

THANK YOU

I would like to thank on behalf of the members Jean G0AWX, Shaun G8VPG, Ken G4BVK and Malcolm G0UMP for your dedicated support to the committee over the years. I would also like to thank the members who have put in many hours of hard work supporting the group's activities and projects.

This issue of "P5" contains the official notice of our AGM. These are seldom the most dynamic of events organised by any organisation, but it is hoped that members will make a special effort to attend and have a say in the future development of the Group.

Subscriptions now due !

This issue also contains your subscription renewal form. Your renewal is due after the AGM and it is very much hoped that you will all continue to support the Group during 1995. The Membership Secretary is still Paul G8YMM. Please send all renewals to him and please make cheques payable to SEVERNSIDE TELEVISION GROUP and not to Paul ! Every year we always seem to get some cheques made out to the Membership Secretary personally.

ANNUAL GENERAL MEETING

NOTICE

Formal notice is hereby given of the Annual General Meeting of the Severnside Television Group. This will take place on Tuesday 11th April 1995 at 7.30 pm, at Elm Park Parish Pavilion, Elm Park, Filton, Bristol.

All members are asked to attend the meeting. Guests and non-members are welcome to attend, but only fully paid up members will be able to participate by speaking or voting.

NOMINATIONS

Nominations are now invited for the following posts ; Chairman, Chief Engineer & Vice Chairman, Honorary Secretary, Honorary Treasurer and up to five committee members. All nominations must be deposited in writing with the Secretary (who is currently S.P.O'Sullivan G8VPG, 15,Witney Close, Saltford, Bristol BS18 3DX) no later than Tuesday 28th March 1995. Nominations must be proposed and seconded by two fully paid up members of the Group, and the nominee who must also be a fully paid up member of the Group, must indicate his agreement to serve in the capacity indicated if elected. You may nominate someone for more than one post, the elections will take place in the order given above and the nominee must accept the first two posts to which he is elected. A member cannot hold more than two posts.

In the event of more than one nomination being received for any Officers post, or more than five nominations being received for committee members posts, a secret ballot will be held at the AGM.

A suitable nomination form is included in this issue of "P5", but the use of this is not obligatory.

Nominations will be sought at the AGM for the non-committee post of Honorary Auditor.

RESOLUTIONS

Members wishing to propose Resolutions at the AGM must submit them in writing to the Secretary no later than Tuesday 28th March 1995. Each resolution must be proposed and seconded by two fully paid up members of the Group, who should be prepared to address the AGM when the resolution is discussed.

Members should note that whilst there will be an opportunity to discuss minor matters under "Any Other Business" at the AGM, constitutional or major matters must be submitted in advance as a formal resolution.

ATV Gossip Phil G1HIA

In September 1994 we received a request from Grant Dixon of the BATC. Could we demo our repeater to a visiting ATV enthusiast from the USA? Ken Wood K6IIS. Having already done the same for Mike Sheffield ZL1ABS from New Zealand, I had the honor to repeat the task for Ken. Paul G8YMM thought that I had more room (how deceiving camera shots are), however, a quick clean-up of the shack, (yes, it was cleared not cleaned!), you should have seen it before my guests arrived, Grant and Ken must have been shocked!!

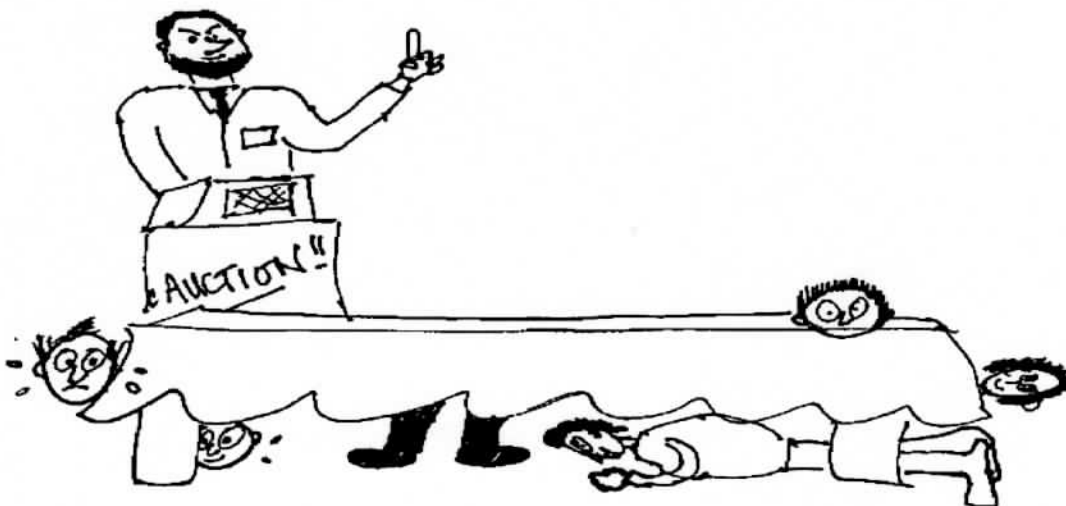
We gave a briefing of GB3ZZ and it's functions and information pages, including weather fax. We then proceeded to work a few stations through GB3ZZ. Then Ken K6IIS produced a video that had been transferred to VHS PAL format. It was played into GB3ZZ's video recorder and showed some great video of the Californian video repeaters along with earthquake damage and space borne ATV, great stuff!! I am glad to see that we are not the only ATVer's to have fun. The "ATV's most wanted" was very funny and cleverly thought out, if you haven't yet seen it, just access GB3ZZ and press *71# as it is still on the VCR.

Our new repeater GB3XG is "on air" with excellent results, but no doubt others will write further on that subject. I must say a very well done to all those involved, especially John G3RFL, Nigel G7JZP and Ivor G1IXF, not forgetting our site sponsor, many thanks.

Our next event was the Christmas Social where we all gathered to speak to each other personally rather than on the air. There must have been 50-60 members, some with wives and families, a lot of food and wine was consumed that night, which was just what Roger, G4ZQF wanted for his annual auction. To see Roger extract money from the members is an art form, the secret is not to blink, squint or to move a muscle whilst the auction is in progress. He still managed to raise £157 in the auction, many thanks to those who donated VCRs, radio spares, whiskey bottles etc. The raffle also raised £40 even after giving away the £50 first prize. So in all, we boosted the club funds by a tidy sum that evening.

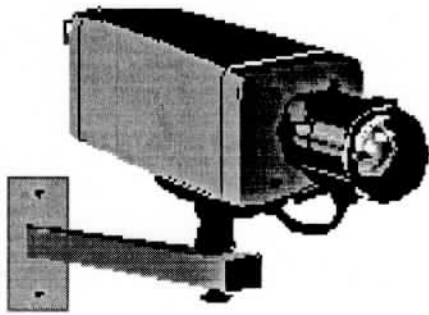
Well, as another year draws to a close, may I take this opportunity to wish everyone a healthy 1995.

73's.. See you on air !



Hiding from the Auctioneer !!

Cameras and lenses for ATV enthusiasts



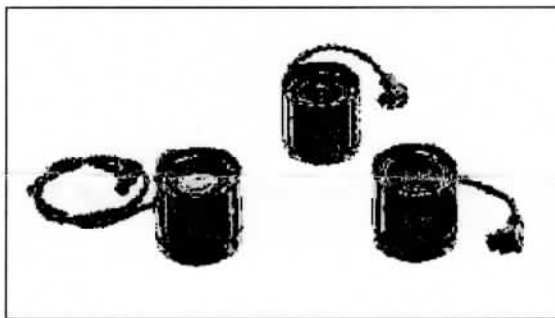
The cameras and lenses available to the amateur TV enthusiast range from the older Vidicon tube cameras to the state of the art colour CCD devices. This article answers some of the common questions that arise when using different types of lenses on popular cameras.

CCD image sensors

The modern cameras are almost always based on the Charge Coupled Device sensor. These image sensors have the advantage of being totally solid state devices. This means that there is very little in the way of setting up to do and even less to go wrong. Sensors come in various sizes and resolutions, naturally they also come in colour or monochrome. The most common sensor size is 0.33", but 0.5" and 0.66" are also popular. When choosing lenses for a camera, it is important to be aware of the image sensor size for the reasons explained later in this article.

Image resolutions

The popular 0.33" colour CCD camera that most ATV enthusiasts use might be 500 horizontal pixels by 582 vertical pixels. The horizontal line resolution is often quoted as around 330 TV lines, this refers to the ability of the device to resolve vertical lines in the scene, not the amount of pixels in one scan line. This is a medium resolution device. A high resolution camera would typically be a 0.5" image sensor with around 450,000 pixels (782H x 582V), or around 460 TV vertical lines. Note that the vertical resolution is never 625 pixels for 625 lines, there would be little point in sensing any image during the frame flyback period.



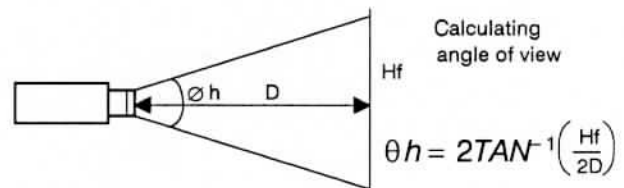
Lenses

Lenses come in many varieties. The main consideration when choosing an appropriate lens for use in the ATV shack, is the focal length. A lens that has a wide angle of view would be quoted as around 3-4mm, this type of lens would be suitable for a general shack view. A lens with a focal length of over 16mm is usually termed "tele-photo". This type of lens would be useful for close up views of items in the shack or exterior views when working as a portable station. You may find that the view as seen by one camera is somewhat different to the view as seen by the same lens on a different camera. This is explained below.

Iris control

All lenses have some sort of iris control, the iris is set to allow just the right amount of light to fall onto the CCD. If this control is manual, the user must reset the setting every time the light level changes. This is very inconvenient, and so it is fortunate that there are three other kinds of iris control. The easiest to use is the Electronic Iris. Sometimes called Shuttering, this system relies on the cameras' ability to alter the shutter speed of the CCD as the light level changes. The user need only preset the manual iris to a mid-range position and let the CCD shutter circuit compensate for the changes in light level. The Auto Iris lens automatically changes the iris setting as it senses the rise in average video level. The camera connection to the lens would be +12v, video to the servo amplifiers and ground. Circuits inside the lens continuously sense the video level and adjusts the iris to keep the light level within acceptable limits. This system has one main disadvantage, the iris will close down when only one small area of the image is very bright. This may protect the CCD from damage, but the information in the rest of the image will be lost. A variant on the Auto Iris is the Direct Drive Iris. This differs only in that the iris servo circuit is inside the camera and not the lens. The camera connector would send a small current through the iris coil inside the lens. Most good cameras have both types of drive. The adjustment for either type of lens is two pre-sets marked Level and ALC. Adjust the Level to pre-set a peak white level measured on a 'scope to 0.7volts. Then adjust the ALC so that there is a just acceptable amount of time lag when the image is changed from a bright to a dark scene.

Field of view



It is possible to predict the field of view if the CCD sensor size is known and the focal length of the lens is known. This formula gives the angle of view from the distance and field size. A 3.6mm lens focussed on a 0.33" CCD would see a vertical angle of 52.8° and a horizontal angle of 67°. If the CCD is 0.5" the vertical angle would be 71.7° and horizontal angle would be 92.6°. This explains why the same lens can "see" different scenes on different cameras.

C and CS mounts

There are two variants of lens mounts in common use. The C mount is a 25mm diameter screw thread ring that connects the lens to camera. The standard C mount is designed to focus the image at 17mm behind the lens mount. The CS mount is almost identical save that the focus is 12mm behind the lens. A C lens can be used on a CS mount camera if a 5mm adaptor ring is fitted between the lens and the camera. If you try to use a CS mount lens on a C mount camera it will be impossible to obtain focus unless a method of adjusting the CCD position is provided. Some cameras have a screw adjustment on the rear or a large rotating locking ring on the front.

Connectors

Auto iris connectors are usually square four pin "QQQ" plugs. Power to the unit is either through a terminal block or an H10 two pin miniature bayonet connector. The video output is almost always a BNC, as is the genlock input.

Genlock

If you feed the genlock input of two cameras with TTL sync derived from one of the cameras, it is possible to mix or switch between the two video images with the minimum of picture break up. Extra camera adjustments are needed if the two pictures are colour to match the subcarrier phases.

A 10GHz Gunn Diode controller.

by Brian Kelly, GW6BWX.

As many people have found out, its very simple to produce a TV picture from a Gunn diode oscillator but very difficult to achieve high quality pictures and sound. This design overcomes many of the problems experienced with simpler circuits yet is still easy to construct and set up. All the components, with exception of the etched PCBs are available from Maplin Electronics. The boards can be home made, the track and component layouts are included in this article.

Changing the voltage across a Gunn diode causes the frequency and amplitude of its oscillations to shift. Since most receivers can effectively ignore amplitude variations at video rate, only the frequency modulation effect will be used. To see how the design was developed we must first analyse the deficiencies and merits of each method of driving Gunn effect devices and then utilise the most suitable method in a way that allows home construction.

The goal is to present the video information, sound subcarrier and adjustable DC supply voltage to the Gunn device simultaneously. This isn't too difficult to achieve if the mixing of these signals can be done very close to the Gunn diode and sufficient video and sound drive can be produced to feed the low impedance at this point. In the real world, the Gunn diode may be located up a mast or high on a wall where accessibility is poor and long cable runs would be needed. Apart from the requirement for separate audio, video and DC feed cables, the load impedance for each is quite different and matching components would be necessary with the inherent losses they would introduce.

Three options are open:

1. to run three cables to a modulator unit co-located with the Gunn oscillator,
2. to mix the signals together at source and feed them to the oscillator via a single cable,
3. to mix audio, video and a tuning signal together, fed them through a single cable and add the DC supply at the oscillator end.

Option 1 is most expensive in terms of cabling, also losses in the impedance matching networks require that considerable signal power is generated. Option 2 is least expensive to implement but the complex and varying impedance of the Gunn diode makes matching to co-ax very difficult. The mismatch would show as video ringing, ghosting and probably missing frequencies due to phase cancellation in the standing waves along the cable. The missing frequencies could well include the sound or colour subcarriers. Option 3 is technically most complicated but requires only one co-ax cable to carry the signals and a separate unshielded cable to carry the DC supply. The third option is the one chosen in this design.

Circuit description:

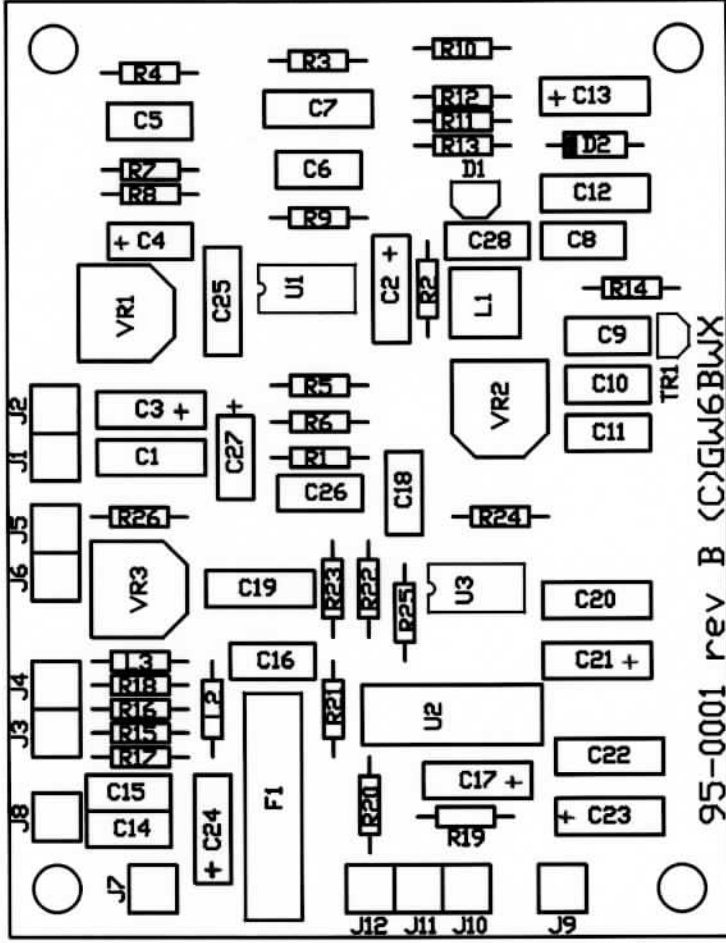
Overall, the design occupies two small PCBs, one mounted at the "shack end" of the cable which deals with the signal processing, the other is located close to the Gunn head and provides the adjustable DC supply. The co-ax cable is driven and loaded with 75 ohm impedances to correctly match the cable and prevent signal distortion, even when long lengths are used. Changing the values of R26 and R101 to 51 ohms will allow 50 ohm impedance co-ax to be used instead but the supply current will be slightly increased. Looking at the main PCB (95-0001) first; the circuitry around U1 is a two stage audio

amplifier giving sufficient gain to allow direct connection to a microphone. It also provides high frequency pre-emphasis necessary to give an overall flat response when received through a satellite receivers de-emphasis circuits. The audio signal is then DC blocked by C6 and fed to a varicap diode which has a steady 4 volt reverse bias to centralise its capacitance swing. As the varicap changes capacitance it frequency modulates the subcarrier oscillator formed from components around TR1. The oscillator and varicap supplies are stabilised by D2 to prevent frequency drift if the power source fluctuates. Video arriving at J3 is fed through a pre-emphasis network and 6MHz trap. The trap slightly upsets the video phase response but with the values suggested its phase shift passes through 0 degrees at almost exactly 4.4 MHz so colour distortion is minimal. If desired the trap can be omitted by not fitting L2 and C16. The video and sound are mixed with the tuning voltage at pin 3 of U3 which is configured with a gain of 2 to offset the halving of the signal in the co-ax feed and load resistors R26 and R101. In order to reduce current flow through the co-ax and hence its load resistor, the tuning is achieved by sitting the combined sound and vision signals on a DC offset of between +1 and -1 volts. If adjusted correctly the offset should be 0v and no load current will flow. To generate the negative voltage a modular DC-DC inverter is used (U2). This gives +12 and -12 volt outputs which track each other fairly closely. By using the +12 output from U2 instead of the main power rail, any variation in supply is balanced and has no effect on tuning voltage. Pin 3 of U3 is a high impedance point and therefore offers little loading to the sound or vision signals and permits isolating resistors R22 and R23 to be used. C17 filters noise from the tuning potentiometer wiring and is returned to the +12 rail so its switch-on charge momentarily raises the Gunn voltage, this has been found necessary on some diodes to "kick start" them into oscillation.

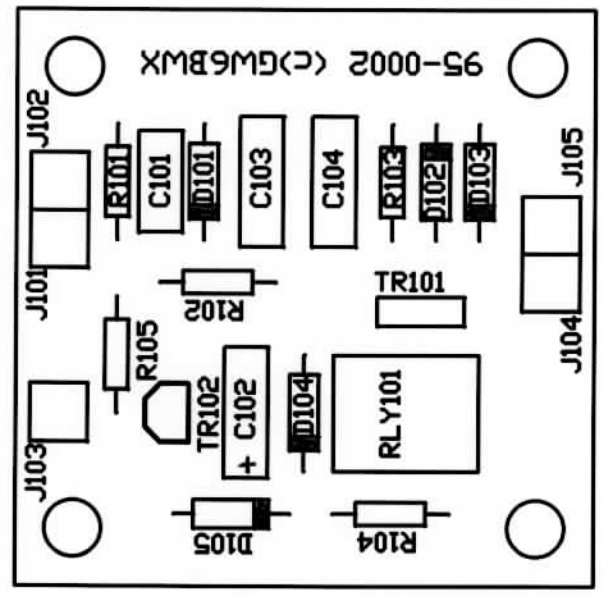
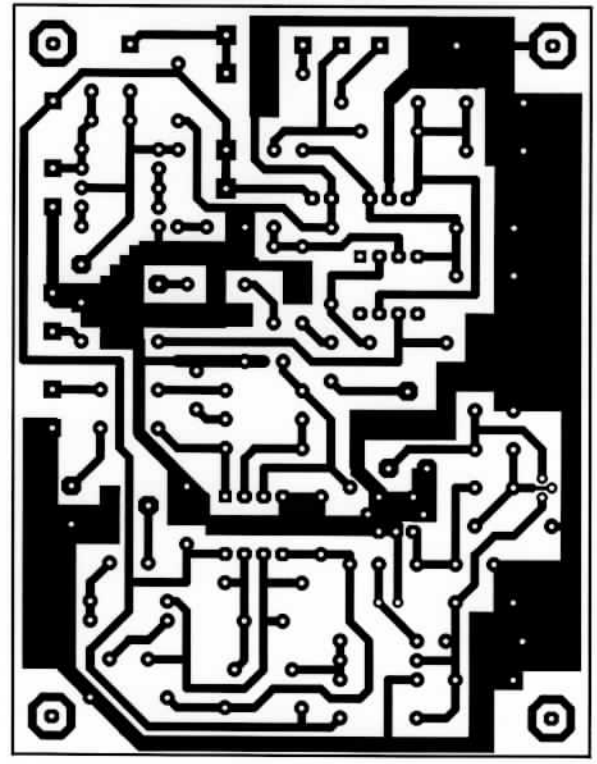
On the second PCB (95-0002), the co-ax cable is matched into load resistor R101. If the tuning is correctly set there will be no DC voltage across this resistor. D101 and R102 lift the signal from the cable so it sits 8.2 volts above its previous level. TR101 is used as a current amplifier to drive the Gunn diode itself. As its emitter voltage will sit about 0.7 volts below that at its base pin, the Gunn should have 7.5 volts across it, nicely central in its operating range. By adjusting the tuning control the voltage across R101 should swing approximately +1 to -1 volts so the Gunn voltage will swing approximately 6.5 to 8.5 volts which are about its safe limits. D102 and D103 prevent the Gunn voltage dropping more than 6.8v below supply or 9.1v above ground should the tuning voltage exceed safe limits. R103 and C104 form a 470 ohm shunt which helps the Gunn diode appear less reactive and reduce its tendency to oscillate in undesirable modes. If the wires to the Gunn module are longer than about 10cm (4") fit them at the diode instead of on the PCB. As a protective measure, relay RLY1 will only close and connect the Gunn voltage if the supply voltage exceeds about 9.5 volts. A voltage low enough to bias the diode below its negative resistance region can cause excessive current to flow.

Assembly:

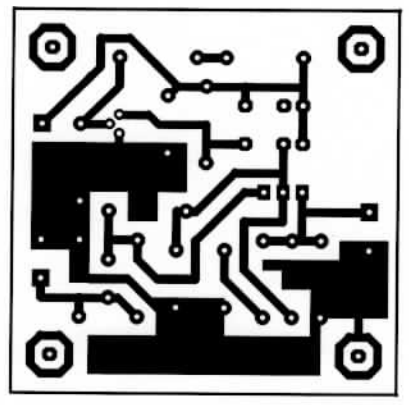
All PCB holes are 0.8mm except the fuse clips which are 1.5mm, TR101 and the L1 can legs which need 1mm holes. All resistors, diodes and fixed inductors are mounted on 0.4" spaced holes, 0.1uF capacitors and electrolytics are on 0.3" spacing and ceramic capacitors are on 0.2" spacing. Preforming the leads before assembly will greatly speed construction. Assembly order isn't critical but I suggest fitting the two fuse clips first as these need their pins folding together on the track side, a job more easily done before fragile components are fitted. Fit U2 and L1 last as these are the tallest parts and are easily damaged during handling. The only awkward soldering is around TR1, be careful not to short its pins together.

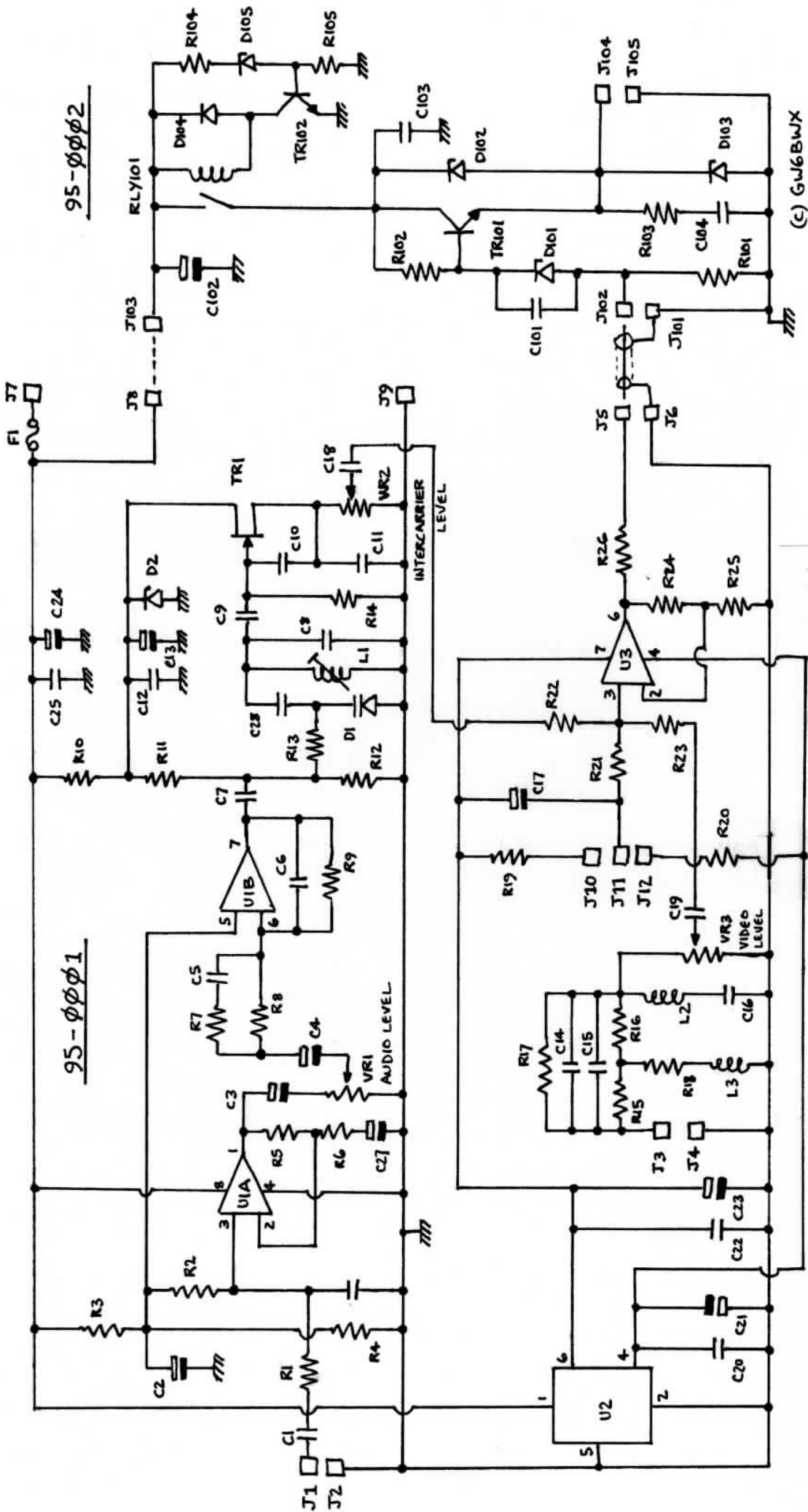


PCB Connections	
J1	Audio input - signal
J2	Audio input - ground
J3	Video input - signal
J4	Video input - ground
J5	Co-ax to 95-0002 - inner
J6	Co-ax to 95-0002 - braid
J7	+12 volts supply input
J8	+12 volts to 95-0002
J9	0 volts supply ground
J10	"HF" end of tuning control potentiometer
J11	wiper of tuning control potentiometer
J12	"LF" end of tuning control potentiometer
J101	Co-ax from 95-0001 - braid (from J6)
J102	Co-ax from 95-0001 - inner (from J5)
J103	+12 volts from 95-0001 (from J8)
J104	"Live" to Gunn diode assembly
J105	Ground to Gunn diode assembly chassis



TRACK LAYOUTS ARE ACTUAL SIZE





10 GHz GUNN DIODE CONTROLLER

Parts List:*(Codes are for Maplin Electronics orders)*

Value	Code	Qty	Ref	
18	M18R	1	R18	
75	M75R	3	R15, R16, R26	(R26 may be M51R, see text)
82	M82R	1	R101	(R101 may be M51R, see text)
300	M300R	1	R17	
390	M390R	1	R10	
470	M470R	1	R103	
560	M560R	1	R104	
1K	M1K	5	R1, R23, R24, R25, R102	
2K2	M2K2	3	R6, R7, R22	
10K	M10K	5	R3, R4, R5, R13, R21	
47K	M47K	1	R2	
56K	M56K	2	R19, R20	
68K	M68K	1	R8	
100K	M100K	3	R11, R12, R105	
330K	M330K	2	R9, R14	
1K	UH00A	3	VR1, VR2, VR3	
22p	WX48C	3	C6, C8, C18	
33p	WX50E	2	C10, C11	
68p	WX54J	1	C16	(if required, see text)
100p	WX56L	1	C28	
680p	WX66W	2	C15, C26	
1n	WX68Y	4	C5, C9, C14, C101	
0.1u	WW41U	9	C1, C7, C12, C19, C20, C22, C25, C103, C104	
2u2	YY32K	2	C4, C27	
10u	YY34M	3	C2, C3, C17	
47u	YY37S	5	C13, C21, C23, C24, C102	
10uH	WH35Q	2	L2, L3	(L2 if required, see text)
15uH	UH86T	1	L1	
6V8	QF49D	1	D102	
8V2	QF51F	2	D2, D101	
9V1	QF52G	2	D103, D105	

1N4148	QL80B	1	D104
MV1208	QY81C	1	D1
BF244	QF16S	1	TR1
BD131	QF03D	1	TR101
BC337	QB68Y	1	TR102
TL072	RA68Y	1	U1
NMA1212S	AH17T	1	U2
EL2020	UR06G	1	U3
RELAY	DC52G	1	RLY1
VEROPIN	FL24B	1	J1 - J12, J101 - J105 (1 x FL24B = 100 pins)

Tuning control either 10 turn or single turn but MUST be 10K value and preferably linear track. This part is not mounted on the PCBs. Use a type that suits your preferred box or enclosure.

Alignment:

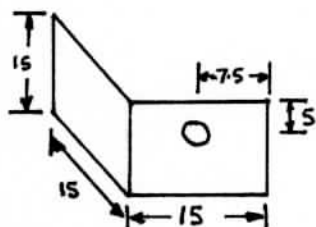
There will be a small amount of interaction between the adjustments, it was felt that the addition of buffer stages would make the design considerably more complicated and expensive while offering little advantage. In particular, the sound frequency (L1) and intercarrier level (VR2) will affect each other, it may be necessary to repeat adjustments two or three times to achieve optimum results. The sound and video levels are set by VR1 and VR3 respectively, they have no interaction and should be set to give best modulation levels.

Initially, the transmitter frequency should be set. As the tuning control will only allow adjustment over about 60MHz (varies widely according to the Gunn module), it should be set to give most shift above and below the desired centre frequency. Connect a voltmeter between J5 and J6 and adjust the tuning control for zero voltage, then adjust the tuning screw on the Gunn module until the frequency is correct. If using the repeater you can adjust the screw until best picture is rebroadcast. The voltage at J5 should swing approximately 1V positive and negative as the tuning control is turned from end to end. the exact voltages are not critical but must not exceed 1.5V.

To adjust the sound subcarrier oscillator, set VR2 to mid position and adjust L1 to achieve most quietening of the background hiss while monitoring on a receiver or the repeater. If a frequency counter is available, disconnect the cable from J5 and attach the counter in its place, set VR3 to minimum and adjust L1 for 6.00MHz. The intercarrier level is a little more difficult to set, the object is to provide sufficient carrier to fully quieten the sound channel but no more. Excessive level will do nothing to improve sound performance but may cause patterning on colours. Find the level that kills receiver noise and set VR2 just beyond that point. Repeat the adjustment of L1 to make sure it hasn't pulled too far off frequency.

Hardware notes:

Both PCBs have one mounting hole attached to ground through a narrow track. This hole can be used to ground the board to a screened box if a suitable conductive pillar and washer are used. If for any reason you do not wish to ground the board this way, simply cut the track with a sharp knife to isolate the mounting. TR101 runs fairly warm without any heatsink. If desired, a small angled aluminium heatsink can be fabricated to the design below. There is space on the PCB to mount it.



HOLE IS 3MM DIAMETER
MOUNT TR101 TO THE HEATSINK BEFORE
SOLDERING IT IN PLACE.

DATES FOR YOUR DIARY

- | | |
|------------------|--|
| • S.T.G (A.G.M) | 11th April 95, 7:30pm, Elm Park Pavilion, Filton, Bristol. |
| • BATC RALLY | 30th April 95, The Sports Connexion, Coventry. |
| • LONGLEAT RALLY | 25th June 95, Longleat Safari park, Warminster. |
| • BRISTOL RALLY | 3rd Sept 95, Temple Meads, Bristol. |

SUBSCRIPTIONS

Members are reminded that all annual subscriptions become due after the AGM. A suitable renewal form is included with this issue of "P5", and all members are asked to renew promptly. The rate will be set by the AGM.

CURRENT COMMITTEE

For your information, the current committee is listed below ;
Chairman, Paul Stevenson G8YMM.
Chief Engineer & Vice Chairman, Ian Bennett G6TVJ..
Honorary Secretary, Shaun O'Sullivan G8VPG.
Honorary Treasurer, Mrs. Jean Fletcher GØAWX.
Committee Members, Ivor Green G1IXF, John Hudson G3RFL, Ken Stevens G4BVK, Brian Kelly GW6BWX & Malcolm Parker GØUMP.
Honorary Auditor, Bryan Collins G4YQR.

SEVERNSIDE TELEVISION GROUP

NOMINATION FORM FOR OFFICERS & COMMITTEE 1995/96.

We wish to nominate (name) (call)

for the post of : Chairman
Chief Engineer & Vice Chairman
Honorary Secretary
Honorary Treasurer
Committee Member. (delete as applicable)

Proposer (signed) (call)

Seconder (signed) (call)

I agree to serve in the capacity indicated if elected,

..... (nominees signature)/..../1995.

This form must be returned to the Secretary no later than 28th March 1995.

Apologies for the omission of this article in the December '94 issue of P5 but it had not arrived by the publication deadline. Here is the full article as received from John.

How to get the best from GB3XG

by John Hudson, G3RFL.

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SEVERNSIDE TELEVISION GROUP MEMBERSHIP APPLICATION AND RENEWAL 1995/96

Membership benefits include:-

- Support and use the GB3ZZ & GB3XG Repeaters.
- Free Quarterly Newsletter "P5"
- Social Evenings
- Rallies and Contests
- Help and Advise

We hope you will continue supporting the group by renewing your membership promptly and encouraging new membership.

APPLICATION FORM	PLEASE TICK
I hereby apply for membership for the year 1995/6 and enclose £6.00	<input type="checkbox"/>
Please renew my membership for the year 1995/6 and enclose £6.00	<input type="checkbox"/>
NAME..... CALLSIGN.....	
ADDRESS..... POSTCODE.....	
TELEPHONE NUMBER..... STD CODE.....	

Please send your application form and cheque for **£6.00** made payable to :-

SEVERNSIDE TELEVISION GROUP

**C/O MR P STEVENSON (G8YMM)
14 CAMELFORD RD
GREENBANK
BRISTOL
BS5 6HW.**

THANK YOU

NOTE :- Members are advised that a computerised data base is used by the group for mailing purposes only. This data is strictly confidential and is bound by the data protection act. If you object to your details being on the data base please notify in writing.