CQ-TV 196

Contents

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Chairman's Column

For some time now I have been continuing the work of Roger Jones, by writing the bimonthly ATV column in Radcom. I have been using it as a platform to interest others in ATV, and have covered a lot of the ATV repeaters and some of the more unusual aspects of ATV.

In the September issue I mentioned the use of ATV in model planes and helicopters. These are not something I have ever built or used, I hasten to add, but for those of you who remember the days when we held our annual conventions at Crick Post House, we had a keen member who used to bring along his model helicopter and demonstrate ATV pictures live from the model on 24cms. These bird's-eye views of our rally proved a very popular attraction. Since those days a commercial company, HoverCam, use this technology for commercial film shoots (see their credits on www.hovercam.com). It would seem that the only debate I have managed to stimulate is one on rules and regulations, and in particular paragraph 2 (14) in the Amateur licence, which states - ""The Licensee shall not establish or use the Station in any aircraft or other airborne vehicle". I suppose it all hinges on the definitions of 'aircraft' and 'airborne vehicle'.

The part that worries me the most is that we are turning into a nation of bureaucrats. We ought to be discussing the engineering aspects, and leaving this side of things to lesser mortals. Amateurs may be bound by the limits of their licence, but licence free equipment is now available, and is in the hands of Joe Public where different rules apply. Minority groups, like amateurs, are subjected to crazy levels of bureaucracy, but when technology advances and deregulation takes place, Joe Public expects to operate without this bureaucracy, especially with QRP stuff. Imagine having to keep a log for mobile phone or RF doorbell usage!

Moving on to more interesting and innovating topics. We now have an in-band 24cms ATV repeater, GB3VW. Bill, G3RMX, switched on this East Yorkshire repeater on Wednesday 29th August. Our contest organiser Richard, G7MFO, reports P4.5 picures 22 km away on a handheld dipole. GB3VW is located at South Cave, near Hull (IO93RS), and has an input frequency of 2330MHz and an output on 2345Mhz. Any reports to Richard@g7mfo.karoo.co.uk

The BATC forum is now up and running on the website; if you would like to moderate a topic, there are still some vacancies. I seem to have got off lightly with club matters, as this topic is not the most popular.

Ian Pawson is now investigating putting together a BATC video CD. The success of his Acrobat format CDs for back issues is legendary and many other magazines have joined the bandwagon with his idea. To this end, Ian needs any moving pictures you may have of interesting ATV activities. We also need to think about a format, which could be anything from MPEG1 through to mini DV. We have discussed the merits of these formats in the past, but a new site www.helpdvd.com was pointed out to me last week and is a source of very useful information. If you are thinking about buying a DVD, it lists all the current models and lets you in on what will play which format.

The white ATV book "An Introduction to Amateur Television" moved into the history books, with the sale of the last paper copy last month (unless we find another box). Thanks to technology you can still have a copy of this book on CD. I shall put my paper copy on the archive shelf with my other books, which go back to the original collectors handbook in a yellow cover. That had many useful and informative articles, such as how to generate a black cross on a white background. I think my age is showing, probably because I spent part of last month working in Kuwait City on 25-year-old VT machines. Remember technology that does not have a micro-processor or software, VT machines that do not produce pictures in shuttle and use 2inch tapes that give you back ache to lift? "It's Television, Jim, but not as we know it".

Trevor Brown, BATC Chairman
email: Chairman@batc.org.uk

More pictures from IBC. See the article below.

IBC2001 HIGHLIGHTS

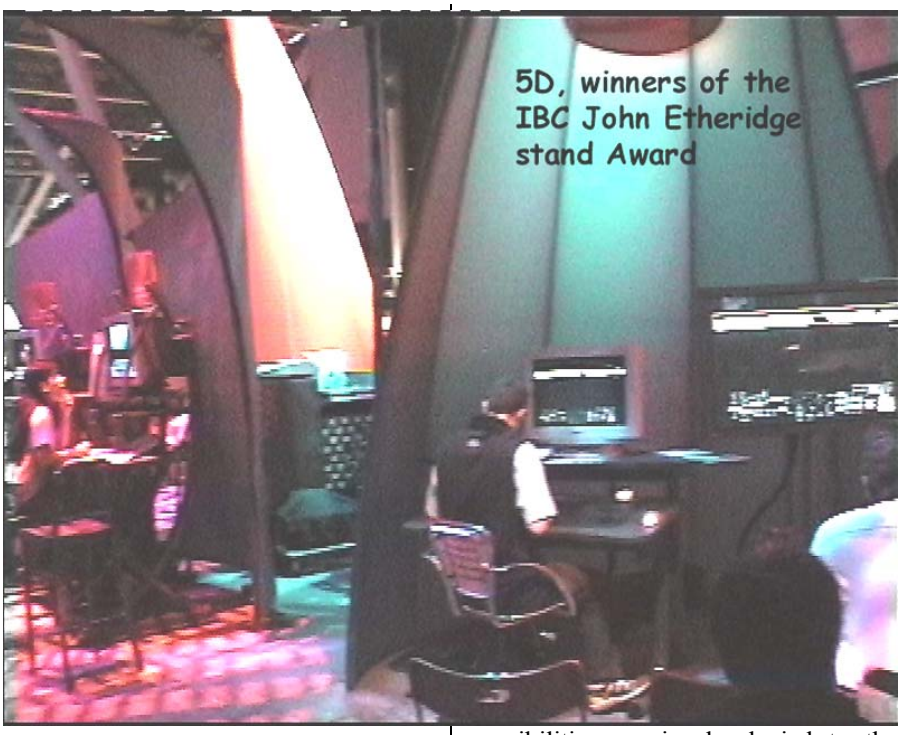
By Mike Cox, el presidente

The build up for IBC2001 was going well when disaster struck the USA. Apart from the personal horror felt by most people, some US exhibitors never made it to the show, and the Conference schedule had to be hastily re-arranged as speakers were unable to travel, or their companies would not let them travel by air. One intrepid Canadian speaker e-mailed his Powerpoint presentation, and gave his lecture in audio only. This worked well.

Exhibition

In the light of the events in the USA, the Exhibition opening time was delayed by three minutes to allow the Europe wide silence to be observed at noon.

The exhibition this year was larger than ever by the addition of an extra Pavilion (Hall 12) built as a temporary structure over one of the RAI underground car parks, and offering 6000 m2 of extra stand space. You may recall that it was originally intended to go over the harbour (CQ-TV193). Sony built their stand in this hall and it weighed 100 tons. Concern was expressed over the floor loading and hence "Acrow" props were fitted in both levels of the car park to provide adequate support.



Topics

Burning issues in the exhibition and at the Conference have included interactive television (iTV), media asset management, metadata, PVRs, digital cinema and digital radio.

High Definition has featured on the Sony, Panasonic, Ikegami and Optex stands, and is becoming a recognised way of shooting material for the cinema. This is likely to grow as Panasonic has introduced a variable frame rate HD camcorder, thus giving possibilities previously denied to the videographer.

The CRT as a display tool on stands is rapidly disappearing, with even the smallest shell stand boasting a 42in plasma display, or if he can scrounge it, a 50" model. Everyone and his dog has LCD displays of all sizes from 4in to 18in.

Delphi International is a company that has worked closely with BBC Research Department in designing better driving circuits for plasma and LCD displays.

Their results are very impressive, but not yet cheap.

One display featured on the EBU Village was a retro 42in DLP display, with a depth that "er indoors" would tolerate in the living room, being about half that of my 32" Panasonic CRT. The quality of the display was stunning, and will knock the socks off the sort of retro display garbage made by Sony and Toshiba and sold in Dixons and Currys. This is expected on the market within the next 6 months.

Also on the EBU display were some interesting small DVB-T tuner units that would turn a laptop into a digital TV. They also had a version with a SCART output, to connect to an analogue TV. This may hold the clue to

converting all the millions of analogue second receivers and VTRs to digital terrestrial reception and allows the politicians to flog off the old analogue spectrum to the highest bidder, if there are any left!

The common practice of storing video material on computer and server hard drives has meant that manufacturers are not showing VTRs in the way they did years ago.

Content is a buzzword that has been around for a while, and many stands are offering their content management ideas, which in many cases is an enormous server. Other stands offer us their thoughts on streaming media, but the lack of affordable broadband access in the UK and some European countries restricts the take up. BT has a lot to answer for in this respect.

Metadata is a term that has come up fairly recently, and is "data about data", which is a complicated way of saying that it is the "label" on a piece of video or audio material. It is embedded in the digital bit stream, and includes full descriptive information about the "content".

It makes media asset management much simpler.

It is also linked to copyright as one means of "watermarking" the content, so that the owners of the "intellectual property" may claim their reward, or tell who is ripping them off. A major issue is to agree a format for such metadata so that it can be universally read and used. The notebook I use to log all my DV tapes and their contents is my form of metadata.

Roderick Snell receiving the IBC John Tucker Award for 2001 from the man himself

Roderick Snell flying HoverflyII

The traditional Sunday night IBC Party went ahead as usual

There is great interest in interactive television (iTV), and a one-day conference session attracted 300 or so attendees. However it was reported back that most of these were interested in the money to be made rather than the technology. The IBC programme festival (Le Nombre D'Or) included a category for interactive programmes for the first time and attracted a large numbers of entries. Quiz and game shows form the bulk of these. The technical issue is the return channel.

Sky and ITV Digital rely on the telephone line that they force you to connect to your STB, but there are a

number of proposals for low power RF return channels, even for satellite reception.

One of the interesting stands for members is the Optex stand. They are a rental/sales company for a variety of video and cine products, but they make a feature of small cameras, mostly Toshiba, such as those used in racing cars, cricket stumps etc. One camera of their own make they showed was about 30mm square, with a protruding antenna for its built-in 1.39GHz transmitter. Range was quoted as about 100m.

Other Aspects

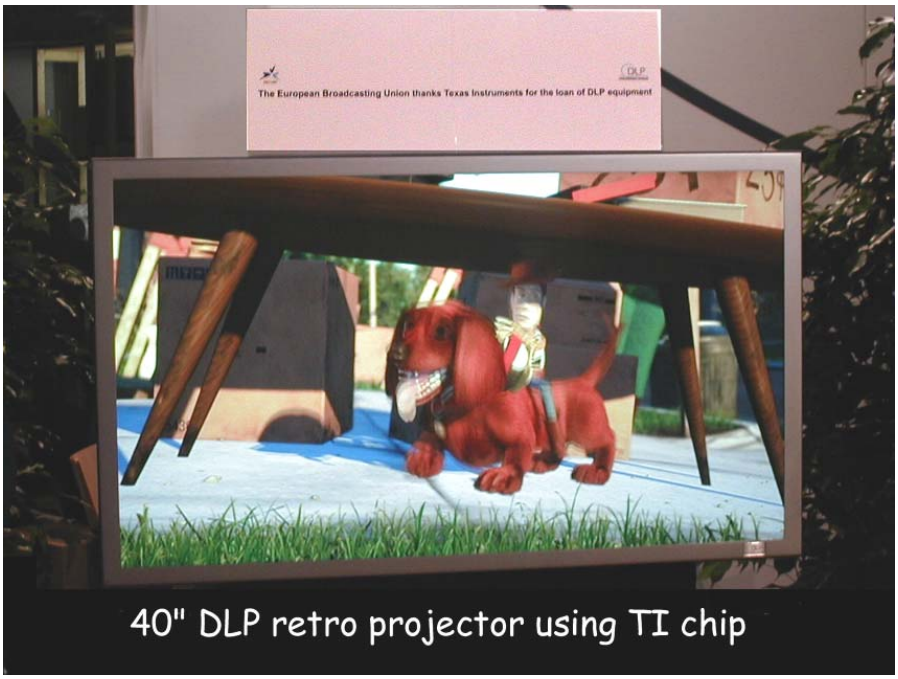
The numbers attending IBC2001 were lower than expected, largely due to the aftermath of September 11th, but exhibitors were generally happy with the number and quality of visitors to their stands.

The social scene was naturally subdued by events, but the IBC Party and Spectacular went ahead on the Sunday evening, with the lead act managing to arrive from Las Vegas on Saturday after a 25 hour flight, and starting rehearsing an hour after landing.

The IBC Spectacular is also the Awards Presentation, hosted this year by Philippa Forrester (Tomorrow's World). The IBC John Tucker Award for a lifetime of achievement went to Roderick Snell, one of the founders of Snell and Wilcox. The John Etheridge Stand Awards went to 5D, and to Pebble Beach, both new UK companies.

The IBC Info/Message Service was installed as usual (see CQ-TV 191/193), and worked non-stop for 6 days.

Despite all the problems, it was a successful IBC. We now look forward to IBC2002, despite rumours, in Amsterdam again.



40" DLP retro projector using TI chip


part of OB exhibits,
HALL 12 in background


IBC President John Wilson (rt)
welcomes Keynote Speaker
Mike McEwen to the podium

A portable ATV station

Notes by G3KKD

The illustrations show the one man portable 23cm ATV station assembled by Sid Robinson G6FKS, and demonstrated at the BATC Bletchley Park Rally 2001.

The idea is to unload from a car and carry it to a suitable vantage point from where to motivate repeaters etc.

The aerial has a gain of 14dBd and is to a design by G8GML. The transmitter is as published by G3KKD. Both are in CQ-TV 182. The TX drives a "brick" amplifier as in the ATV Compendium, to give 1.5W output. The TX and the aerial c/o relay are mounted on the back of the aerial.

The RX uses a preamp as in CQ-TV 169 and a tuner from Mainline Electronics. It is built into an LCD monitor of the type fitted into aircraft seats.

Pictures are provided by a standard video camera, which can also play tapes to air.

Power, 12V at 1.1A on RX and 2.3A on TX, comes from an 18Ah motorcycle battery.

The project started as an exercise in surface mount construction using all recycled components.

Surplus LNB's at 10GHz

By Brian V Davies GW4KAZ

With the change from analogue to digital taking place in satellite broadcasting, the old analogue systems are being removed, with the equipment now becoming surplus.

A number of LNB's have been given to me for experimentation; these include the good old blue cap Marconi LNB and many others.

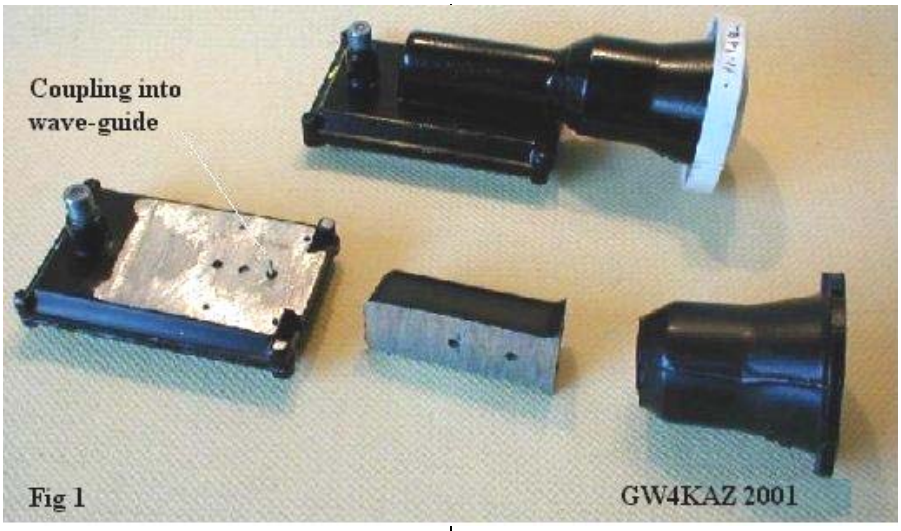
Before starting work on any LNB, it is worth noting that internally they are static sensitive, therefore suitable precautions have to be taken!

The blue cap LNB I have converted into 10GHz transmitters with great success. I found information in past issues of CQ-TV and various web sites, in particular PA3GCO's site at www.qsl.net/pa3gco.

The challenge then was to convert an LNB to receive on 10GHz, to work with a domestic satellite TV receiver. LNB's in the main have either 10GHz or 9.750GHz local oscillators.

For the LNB to work on 10GHz receive, the local oscillator would preferably be working at 9GHz.

The method I used to covert the local oscillator to 9GHz was to glue two dielectric resonator 'pucks' together, using clear nail varnish, clamping the two together and leaving for about 24 hrs to dry. The combined drowas then ground down, until the oscillator was at 9GHz. This was a slow process initially, but as experience was gained, it became easier. ***The ceramic dust could be toxic, do not breath it when abrading***.



It was more of a mechanical problem than electronic, so a micrometer was used to measure the width of the combined dielectric resonators, as I ground them down.

I have converted various types of LNB's to 9GHz, but mainly the Cambridge Juno type, with great success.

Following on from this, I had a requirement to use this LNB with a feed horn and WG16.

After careful study of the Cambridge type LNB, a plan was worked out to achieve this transition, with references taken from the R.S.G.B Microwave Handbook, volume 3, page 18.12.

This involved the use of a hacksaw, and a lot of elbow grease!

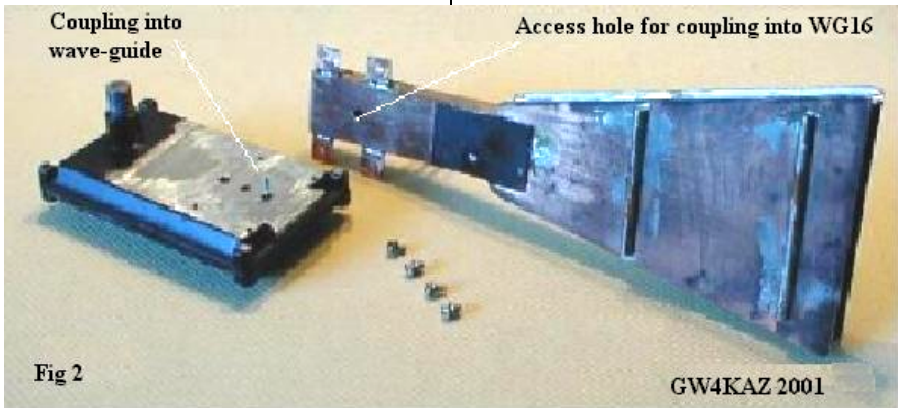
Fig 1 shows the original Cambridge LNB, also the LNB with the circular feed-horn removed.

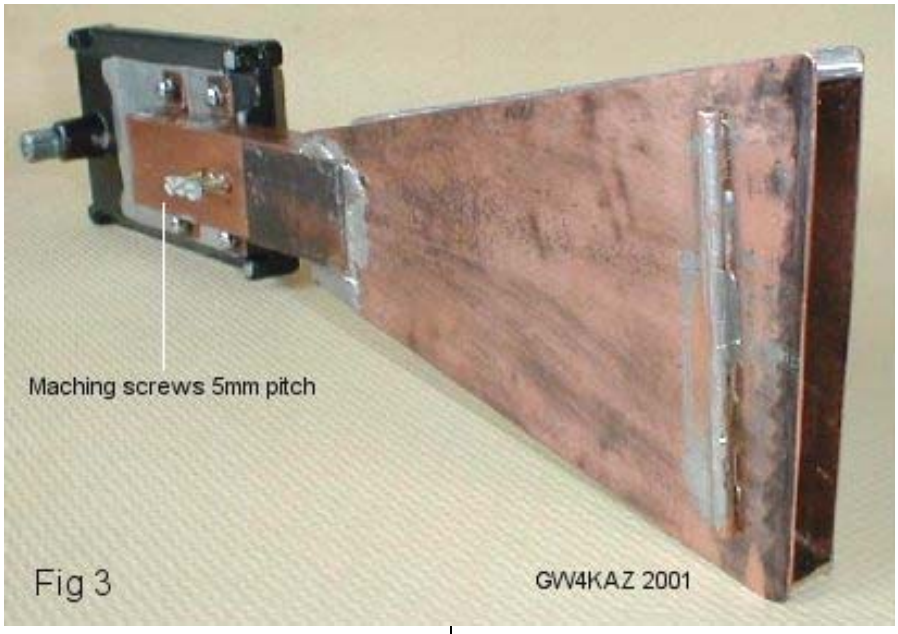
Before starting to cut away at the LNB, there is one important job to be done, which is to remove the pcb from the LNB housing. It is a simple job - access to the pcb is by removing the lid and internal screening of the LNB. All that keeps the pcb in place now is the connection to the "F" connector; unsolder this connection, and with care the pcb together with the rf coupling into the wave-guide can be removed, and safely stored.

With the pcb removed, cutting the surplus parts off the LNB casing can start, removing the parts as in Fig 1. One important feature here is the cut with the face of the LNB; this needs to be as level as possible with the rest of the casing. This is because the WG16 needs to have a good level fit with the casing.

Having completed this modification to the LNB casing, I needed to build up the WG16 as per the reference above. I used the dimension of 23.1mm for the coupling into the WG16 from the blanked off end of the wave-guide. The WG16 was drilled at this location ready to take the coupling from the pcb into the wave-guide, with sufficient clearance.

Holes are already drilled in the LNB casing where the couplings protrude into the original circular wave-guide. Note that there are two couplings; this is because the original system needed horizontal and vertical polarization. In my case I only needed one, the active





coupling with 12v on the LNB was in my case the coupling nearest the edge of the LNB.

I also fitted matching screws in the WG16 as per Fig 18.21 on page 18.13 of the Microwave Handbook, the pitch for the 6BA screws is 5mm, these were drilled and tapped into the WG16.

I soldered 4 lugs onto my piece of WG16; the length of WG16 can be any length required - I kept mine short to suit my purpose.

Match the hole in the WG16 with that in the LNB casing, and mark the location of the lugs onto the LNB casing. Drill and tap these as required to enable the WG16 to fit tightly to the casing.

Now the transition metal work is complete, care is taken with the length of thread of the screws attaching the WG16 to the casing - if they protrude into the inner side of the casing, they will damage the pcb when it is refitted into the case.

As mentioned previously, only one coupling is required into the WG16. There are two attached to the pcb, so removal of the appropriate coupling is required, together with adjustment in the length of the remaining coupling. As in the reference above, the coupling length into the WG16 should be 6mm. It is therefore a good idea to unsolder both couplings and file down one to the appropriate size, taking into account the thickness of the LNB casing and WG16 wall thickness, which the coupling has to pass through, the appropriate coupling can now be re-soldered to the pcb.

A flange could be fitted onto the WG16 for future use, if required.

The transition is now complete, with the pcb re-installed into the casing with lid and screening. Fig 2

I needed to fit an antenna onto the WG16. The requirement was a very broad beam-width; again I turned to the Microwave Handbook. Page 18.83 gave me the answer. A sectoral horn should give 180 degrees beam width - just what the doctor ordered.

Again some planning took place, and I decided to use CAD software to design the shapes of each side of the horn, printing these out, then sticking the cut out paper template onto copper sheet. This gave me an accurate cutting guide.

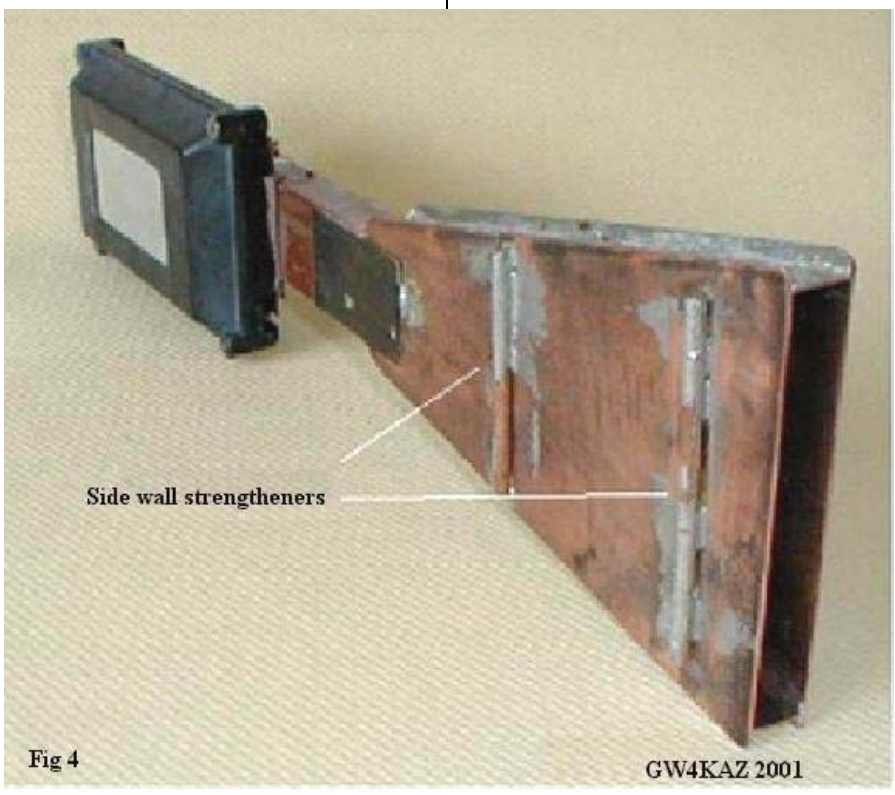
The copper sheet was cut carefully and the pieces soldered together to construct the horn. I did not have any flanges, so decided to solder the appropriate face of the horn to the WG16 directly, making sure all the soldering joints had a minimum amount of solder on the inside faces of the joints. I understand that solder absorbs microwave radiation well, which reduces the efficiency of the system.

The finished unit is shown in Fig 3 and 4, and it works well, except it did not give me the 180 degrees beam width, but 150 degrees at the -3dB points.

I hope that this article helps others to look at 10GHz projects for experimentation.

My thanks go to Max MW1KDP for the donation of LNB's, which allowed me to experiment at 10GHz.

Contact me at www.garth1.co.uk or e-mail gw4kaz@garth1.co.uk



Contest news

By Richard Parkes G7MFO

I would first like to apologise for the late arrival of the Summer Fun contest results, I had hoped to get them out before the International but was delayed with GB3VW.

I was surprised to receive three portable contest station results for the Summer Fun. Dave G8GKQ went portable for the first time in fifteen years with his son Oliver age six and totally enjoyed the experience again except when he shorted out his 70cm TX, which only gave 100mW after that. Dave managed to work G8GTZ/P over a path of 82Km, with only 50mW into a 60cm dish, this gave him second place.

Giles G1MFG went portable in his mobile home and managed to work ten stations over the weekend, using his own modules followed with amplifiers on 23 and 13cm. He also managed to dig out a microwave module for 70cm; I wonder how many of use still use these?

Above -G7JTT-P John Portable

Left - G8GKQ- Dave Portable

John G7JTT single-handed managed to set up on four bands from his 4x4 portable station and was rewarded with first place again

It was nice to receive a check log from Bill PA3FDK. Remember even if you only work one station please send in your results. In total from the log sheets received about twenty stations were on the air over the weekend, which was double the Spring Vision Contest!

Don't forget to keep looking at the BATC 'contest' web page for the latest new and on the new forum 'chat' page. I hope to set up an Email list of amateurs who are going to be on the air for the contests next year.

Richard Parkes G7MFO 7 MAIN STREET, PRESTON, HULL. HU12 8UB. ENGLAND. Tel: - 01482 898559
E-mail: - contest@batc.org.uk

Summer Fun 2001 Results

Place	Callsign	Locator	QSO 70cm	Score 70cm	QSO 23cm	Score 23cm	QSO 13cm	Score 13cm	QSO 3cm	Score 3cm	Total Score
1	G7JTT/P	IO91JA	3	192	10	1160	3	810	1	410	2572
2	G8GKQ/P	IO91TP	1	40					1	820	860
3	G1MFG/P	IO90LU	2	108	6	660	2	245			768
4	G8CKN	IO91LD			4	456					456

Contest Calendar

Winter Cumulative 2002

Tuesday Jan 1st, Wednesday Jan 9th, Thursday Jan 17th, Friday Jan 25th

1900 GMT to 2359 GMT each session. Fast Scan TV all Bands

Three best logs out of four to be entered.

UK ATV Repeater List

Using the contest software I have produced a worksheet with all the UK ATV repeaters and proposed ATV Repeaters. The 'UK ATV Repeater list' can be found on the BATC web site through the 'UK Repeaters' link. The worksheet automatically works out the bearings and distance from the inputted locator to all the repeaters on the list. All the information was obtained from the RMC web site and past copies of CQ-TV. The list has been produced overleaf; Please get in touch with me if you can fill out any of the blank cells or if any of the information is incorrect.

E-mail: -
richard@g7mfo.karoo.co.uk

UK ATV Repeater List September 2001

	Callsign	Locator	NGR	Aerial AGL	Mast ASL	Freq I/P	Freq O/P	Site	Town	County	Keeper	Name	Surname	Aerial	Info
1	GB3AD	IO91VW	TL251255		122	1249	1316	Meredith Road	Stevenage	Hertfordshire	G0OVO	A.D	Wiltshire	Alford Slot	
2	GB3AT	IO91HB	SU451293		143	1249	1316	Sarum Farm	Winchester	Hampshire	G6HNJ	Ian	Bennett	Stacked Arrays	
3	GB3BG	IO82WN	SO923942		227	10.425G	10.240G	Beacon Lane	Sedgeley	W.Midlands	G6WJJ	A.J	Kendal	20 Slot Colinear	
4	GB3DH	IO92SX	SX375421		0	1249	1316	Drum Hill Little Eaton	Derby	Derbyshire	G8DKV	M.C	Coldicott	8 Over 8	
5	GB3DJ	IO82SQ	SJ703106		166	10.425G	10.065G	St Georges	Telford	Shropshire	G8VZT	D.B	Hall	Slotted WG	
6	GB3EN	IO91XP	TQ328968		30	1249	1310	Civic Center, Silver st	Enfield	Middlesex	G4DVG	John	Douglas	Bowtie	
7	GB3EY	IO93WT	TA256388	29	16	1248	1308	Aldrough	Hull	E. Yorkshire	G8EQZ	Clive	Reynolds	Alford Slot	
8	GB3GV	IO92IQ	SK479103		184	1249	1316		Markfield	Leicestershire	G8OBP	Dave			
9	GB3GW	IO72VW	SH513402			1280	1310	Braich Y Saint	Criccieth	Caernarfon Wales	GW4KAZ	B.V	Davies	Alford Slot	
10	GB3HV	IO91OO	SU850919		152	1248	1308		High Wycombe	Buckinghamshire	G8LES	Mike	Sanders		
11	GB3KT	JO01JJ	TQ969725		4	1249	1310	Minster In Sheppey	East Kent	Isle of Shwppey	G8SUY	Andy	Parnell	Alford Slot	
12	GB3LO	JO02VL	TM550937		0	1249	1316		Lowestoft	Norfolk	G4TAD	M.R	Wooltorton		
13	GB3MV	IO92NF	SP756609		52	1249	1316	The Mounts	Northampton	Northamptonshire	G1IRG	S.J	Manning	Alford Slot	
14	GB3NV	IO93IA	SK503459			1249	1316	Watnall	Nottingham	Nottinghamshire	G6SKO	Dave		Alford Slot	
15	GB3PT	IO90JO	SZ539792			1255	1282	Stenbury Down	Wroxhall	Isle of Wight	G8CKN	R.G	Powers	Phassed Plate A	RMC
16	GB3PV	JO02AF	TL397593	30	62	1249.65	1318.5	Madingley	Cambridge	Cambridgeshire	G4NBS	A.J	Collett	Alford Slot	
17	GB3RT	IO92FH	SP335671		113	1249	1316	Ashton Court	Leamington Spa	Warwickshire	G1GPE	D	Murray	Alford Slot	
18	GB3RV	IO90WT	TQ328051	25	135	10.425G	10.24G	Brighton Gen Hospital	Brighton	E.Sussex	G8KOE	Martin	Newell	Horn	
19	GB3TB	IO80FL	SX913680			1249	1316	Burton	Torquay	Devon	G0EKH	K.J	Harper	Dipoles	
20	GB3TG	IO91PX	SP907305		161	10.425G	10.24G	Great Brickhill	Milton Keynes	Buckinghamshire	G3LMX	T.W	Mitchell	Slotted WG	
21	GB3TM	IO73UJ	SH471906		130	1249	1316	NEBO	Amlwch	Gwynedd	GW8PBX	D.E	Jones		
22	GB3TN	JO02KS	TF946251	22	78	1249	1316		Fakenham	Norfolk	G4WVU	Withheld			
23	GB3TV	IO91RU	TL004183	15	222	1249	1318.5		Dunstable	Bedfordshire	G4ENB	Clive	Asquith	Alford Slots	
24	GB3TX	IO74CR	IJ387928			1249	1316	Cairn Road	Carrickfergus	Co.Antrim Ireland	GI6IXD	Alan	Stewart	Alford Slot	RMC
25	GB3UD	IO83VC	SJ858575		242	1249	1318.5		Stoke On Trent	Staffordshire	G0KBI	W.T	Burndred		
26	GB3UT	IO81UJ	ST797664		184	1276.5	1311.5		Bath	Avon	G0LIB	R.B	Weston	AM-TV	
27	GB3VL	IO93RF	SK978718		8	1248	1310	Lincoln Cathedral	Lincoln	Linconshire	G7AVU	Bob	Fisk	Alford Slot	
28	GB3VR	IO90WT	TQ328051	25	135	1249	1316	Brighton Gen Hospital	Brighton	East Sussex	G8KOE	Martin	Newell	Yagi, W-E 25ele	
29	GB3VV	IO90WT	TQ328051			2335	2435	Brighton Gen.Hospital	Brighton	East Sussex	G8KOE	Martin	Newell	Yagi	
30	GB3VW	IO93RS	SE954325	22	152	2330	2435	South Cave Weedley	Hull	E.Yorkshire	G7MFO	Richard	Parkes	Alford Slot	
31	GB3VX	JO00CT	TQ577018		105	1249	1310	Butts Brow	East Bourne	East Sussex	G1IFV	N.J.J	Ginger	Alford Slot	
32	GB3WV	IO70XN	SX578742			1249	1316	North Hessarytor	Dartmoor	Devon	G4ALY	R	Bird	3xTrough Reflec	
33	GB3XG	IO81QJ	ST551668		198	10.315G	10.065G	Dundry Hill	Bristol	Avon	G6TVJ	Ian	Bennett	Slotted WG	
34	GB3XT	IO92EU	SK241269		52	10.340G	10.065G	Rolleston On Dove	Burton On Trent	Staffordshire	G8OZP	Bob	Platts	Slotted WG	
35	GB3XV	JO00CT	TQ577018			10.425G	10.065G	Butts Brow	East Bourne	East Sussex	G0TJH	Withheld		20dB Horn	
36	GB3XY	IO93RS	SE954325	25	152	10.315G	10.065G	South Cave Weedley	Hull	E.Yorkshire	G3RMX	Bill	Hall	Slotted Array	
37	GB3YT	IO93BS	SE091307	360		1249	1316	Mickle Moss Farm	Queensbury	W.Yorkshire	G3TQA	Allan	Robinson	Alford Slot	
38	GB3YX	IO93BS	SE091307			10.425G	10.240G	Mickle Moss Farm	Queensbury	W.Yorkshire	G3TQA	Allan	Robinson	Slotted WG	RMC
39	GB3ZZ	IO81RM	ST624804		52	1249	1316		Bristol	Avon	G6TVJ	Ian	Bennett		

TV On The Air

By Graham Hankins G8EMX.

A couple of 'firsts' for Amateur Television on the 1.3GHz (24cm) and 2.3GHz (13cm) bands.

Brian Davies GW4KAZ, who is chairman of The Arfon Repeater Group, reports: "Following the commissioning of 1.3GHz ATV Repeater GB3TM by the Arfon Repeater Group (Wales) some seven years ago, interest in A.T.V in the coverage area of GB3TM has greatly increased, which is very encouraging for the hobby in the North Wales area. Derek GW0BCR, one of the GB3TM users has, for some time, been experimenting with video links on the Internet. Derek thought that a natural progression for experimentation would be to link the video and audio from the Internet, through his station onto GB3TM.

In April, Derek approached the Arfon Repeater Group, presented his proposal, which the group and David GW8PBX, GB3TM's repeater keeper and committee member, fully supported. The result of this was a proposal to the Repeater Management Committee of the RSGB, with an application for a Notice of Variation completed in April 2001.

We are pleased to announce that on Saturday 7th July 2001 Derek GW0BCR received the Notice of Variation to his licence, as GB3TM-1. This is believed to be the first NOV to be issued for a combined video and audio gateway for a repeater in the UK".

Brian continues: "Experimentation will now continue with the linking of GB3TM through Derek's gateway GB3TM-1. Initially, Derek will be in full control of the gateway and will be responsible for the video and audio transmissions from his station. This is, in essence, similar to the usual video source generated by his station, but switched to an Internet gateway rather than from the local camera at his station. Users of GB3TM will then be able to have a QSO with stations on the Internet, thereby expanding the possibilities to worldwide contacts in video and audio".

Derek has proposed a working window of between 17.00 and 18.00 local time, each day, for the gateway operation, with a further period, maybe once a month, on GB3TM's activity night on Tuesday each week, so that he can learn and carry out further experimentation with the system. Derek is using Iphone software, and will be on the Ham Radio and RptrLink, chat rooms, using the call sign GB3TM-1. If you have video and audio access to the above, then a contact through GB3TM on the Isle of Anglesey in North Wales is a possibility.

The pioneering spirit of Amateur Radio lives on with the clearance of 2.3GHz ATV repeater GB3VW near Hull, which came on-air in early August. Input is on 2.330GHz and output 2.435GHz. Keeper is Richard Parkes G7MFO. Another new repeater is at the application stage. GB3YX will be on the 10GHz (3cm) band and co-sited with 24cm ATV repeater GB3YT near Bradford, West Yorkshire. 'YX will have its input on 10.425GHz and output at 10.24GHz.

The Foot and Mouth Crisis has curtailed the Severnside Television Group's usual ATV activities. The Group was unable to install its mobile contest station on the regular farm on the Mendips, and cannot access its 10GHz repeater GB3XG due to F/M restrictions at its site.

Meanwhile, the STG's plans for a significant renewal and re-vamp of 24cm repeater GB3ZZ are continuing apace. Digital sound and vision recording onto hard disc (replacing the old vcr), new logic, and new circuits to drastically reduce power consumption are just some of the planned upgrades.

The Leicester Repeater Group was preparing for the Leicester Show at the time of writing this. LRG are very much dependent on volunteer helpers for this Show, because income based on their assistance substantially helps to maintain the LRG's FIVE repeaters – one of which is of course ATV repeater GB3GV.

You are correct, dear reader. There was no 'TVOA' in the last edition of CQ-TV. I had received no reports! So TVOA will appear whenever there is something of substance to include.

The antennas of the Torbay ATV repeater. GB3TW

Modifications to the G1MFG.com receivers and transmitters Part 2 - transmitter pre-emphasis

By Giles Read (G1MFG) and Roy Powers (G8CKN)

Introduction

The first part of this article described the de-emphasis circuit for G1MFG.com receivers. Early feedback from this suggests that the modification is being widely implemented. Hopefully as many people will also take up this pre-emphasis circuit as possible, so that we can all see each other in colour properly!

The pre-emphasis circuit described in this article is equally suitable for 23cm or 13cm transmitters, and fitting is identical.

Please note that there was an error in Part 1 of this article. Under the heading Installation, step 4 should have read "change R6 to 75 ohms..." instead of R7. Sincere apologies if this has caused you any problems.

Existing transmitter circuitry

The original G1MFG transmitter provides a very simple path between the video input socket and the transmitter module - a 470 ohm variable resistor and a 470u capacitor. This is not particularly satisfactory because it (a) does not include pre-emphasis and (b) does not present anything remotely resembling a 75 ohm load to the video source. The latter issue can cause some really weird fault conditions, with some video sources (ranging from cheap cameras to more expensive things like VGA-to-video scan converters) simply refusing to output signals! The pre-emphasis circuit presented here requires a reasonably accurate 75 ohm source impedance to operate correctly.

Circuit description

As can be seen from the circuit diagram, the circuit has a lot in common with the standard pre-emphasis circuit. C1 and C2 (both 3n3) in series equal 1650pf: if you happen to have a 1650pf capacitor in your junk box then feel free to use it.

The extra components, L1, C3, R5 and R6, provide the following functions:

·**L1** - provides LF boost. The optimum component to use here would have a DC resistance of 270 ohms but this has proved impossible to source. Instead, we use a choke with 360 ohms resistance that is readily available from Farnell (part no 518-300). Please use only this component when constructing the circuit: other values of DC resistance will compromise the response.

·**C3 & R5** - provide a simple HF roll-off (~6dB/octave) outside the required video pass band.

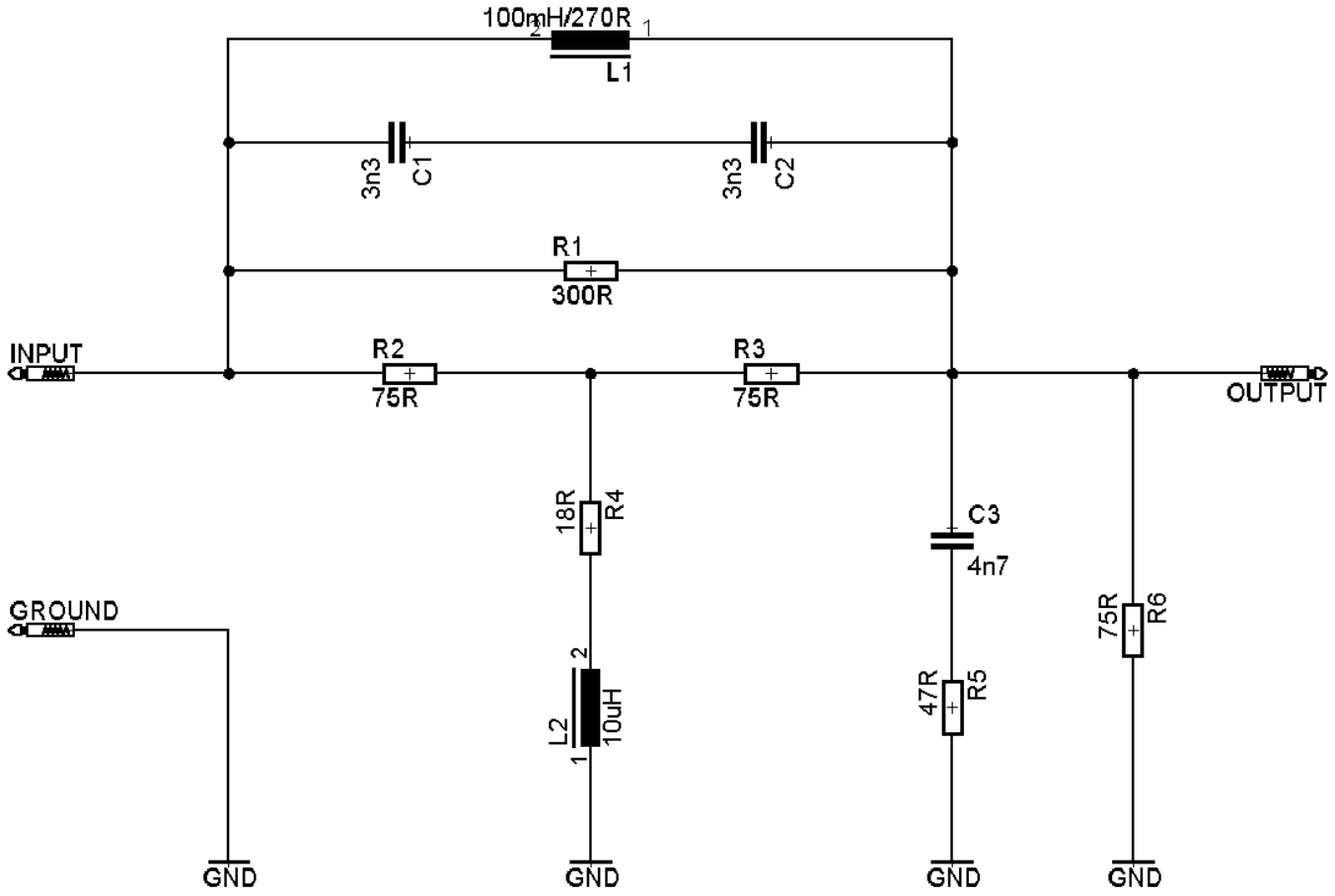


Figure 1. The pre-amp circuit diagram

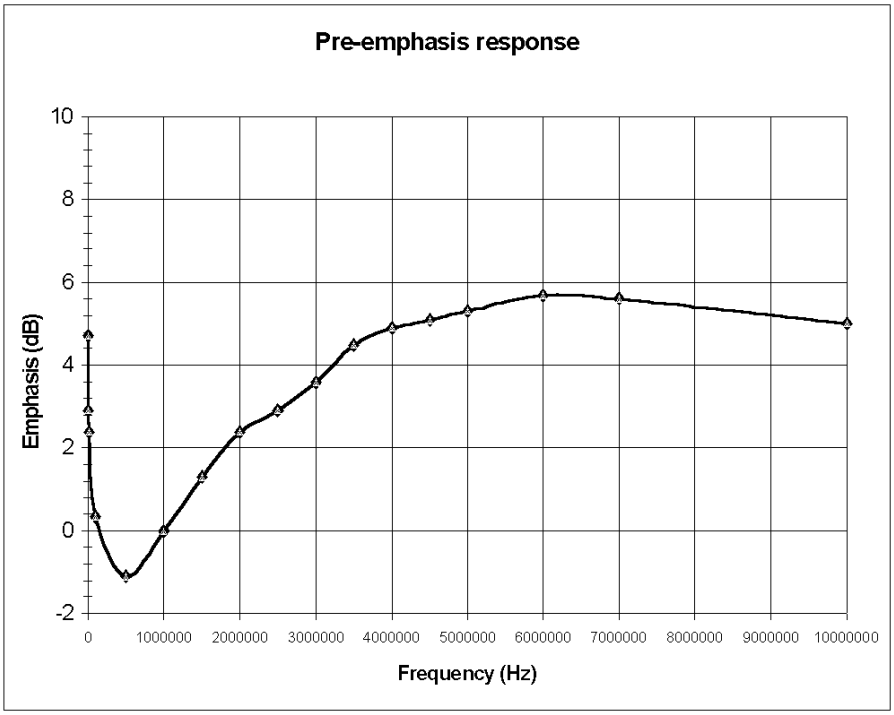


Figure 2.

R6 - provides a proper 75 ohm match to the output of the filter. The input impedance of the transmitter module is in the order of 1k, so does not give any significant loading.

Frequency response curves

The overall frequency response of the pre-emphasis filter is shown in the following plot. See Figure 2 above.

The high frequency end of the plot follows the CCIR curve fairly closely from 1MHz upwards, but includes a significant amount of LF boost. This can more easily be seen in the following plot, which expands the range 10Hz-100kHz: the gentle HF rolloff after 6MHz is provided by C3 and R5. See Figure 3

This shows the effect of L1. If the LF boost is not required then L1 can be omitted.

Construction

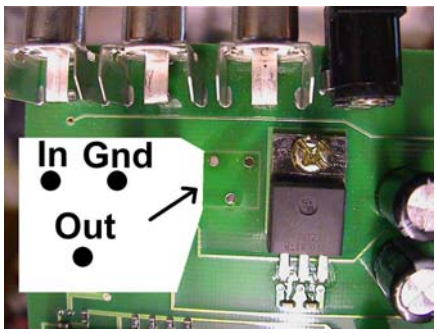
Construction of the circuit is not critical, and it can be accomplished on Veroboard or other convenient method. A suitable PCB (with constructional information) is available for download at www.G1MFG.com/PCB/ (at the time of writing the PCB design was not finalised).

Installation

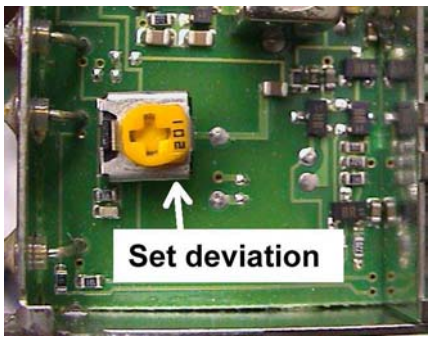
Installing the pre-emphasis circuit is quite easy.

1 Remove the existing deviation control (preset resistor) from the transmitter PCB.

2 Connect the new circuit in place of the preset, according to the following picture. The connection marked In goes to the input of the pre-emphasis circuit.



3 Transmit deviation can now be set using the preset pot within the transmitter module.



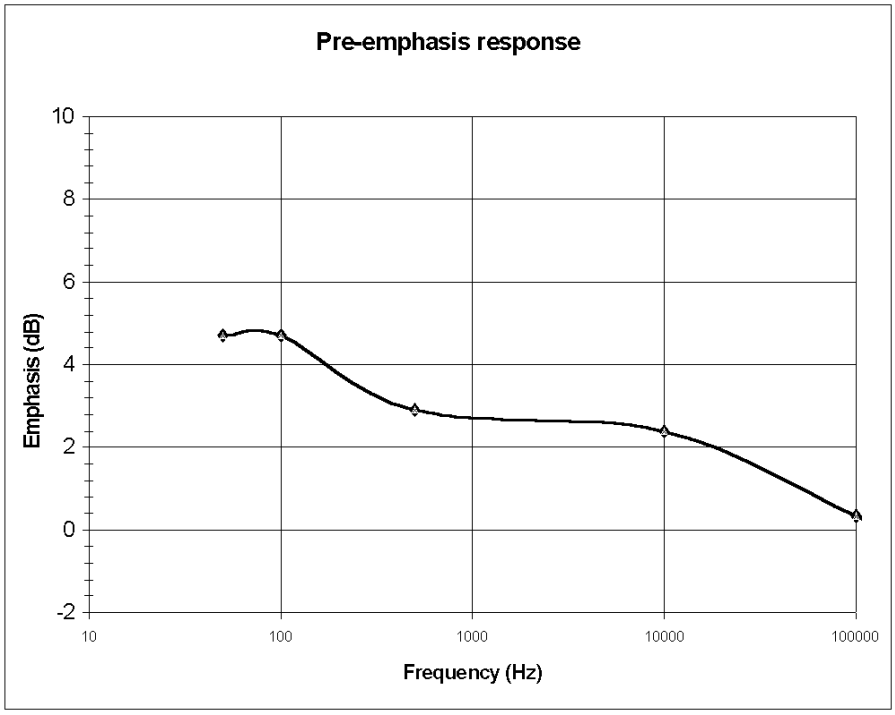


Figure 3

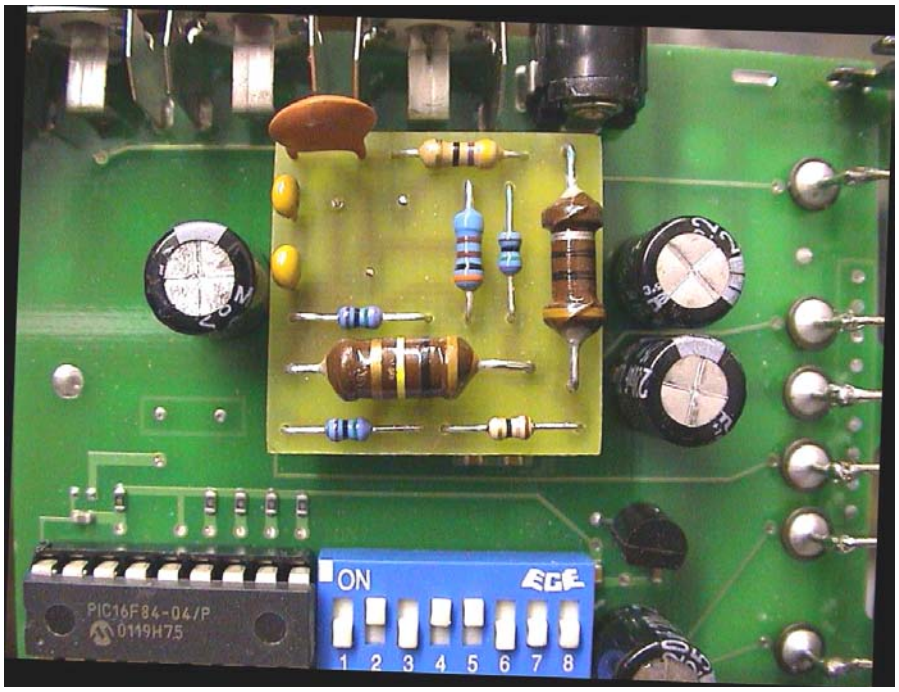


Figure 4. The prototype PCB

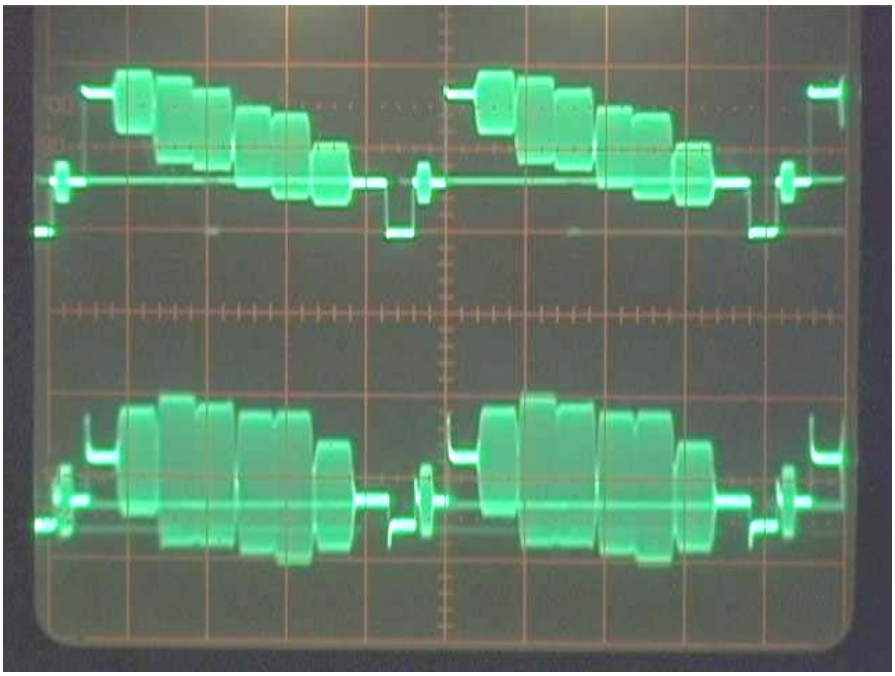


Figure 5

Prototype PCB

This is how the first prototype looks. Production PCBs will be 'flipped' with the components facing the main PCB - this makes it much easier when soldering the board into position.

Note the size of the two inductors. L1 (100mH) is horizontal in the picture. As already noted we strongly suggest that you use the recommended Farnell component.

Performance

The following oscillogram dramatically shows the effect of the pre-emphasis circuit. The top trace is the input waveform, colour bars. The lower trace shows how the colour burst has been dramatically increased in amplitude, as has the colour information present in the bars. Also note how the sync pulses have gained 'spikes' as a result of the HF boost. See Figure 5 below

Conclusion

This two-part article has described pre-emphasis and de-emphasis circuits for the G1MFG.com 23cm and 13cm transmitters and receivers. We are still working on the LF tilt problem on the 23cm receivers, but early indications are that changing the added-on 100n capacitor (beside the two inductors) to 22n provides a cure. We'll keep you posted.

An electronic version of this, and previous issues, can be found on the CQ-TV web site at: -

www.cq-tv.com

Circuit Notebook 75

By John Lawrence GW3JGA

RF Bandpass Filters for 1.3 GHz.

An ATV repeater has the input (receive) frequency and the output (transmit) frequency separated by about 5%, for example: -

Channel	Input	Output	Separation
RT1	21249 MHz	1316 MHz	67 MHz
RT1	31248 MHz	1308 MHz	60 MHz
And in the special case of GB3GW, about 2.5%			
GB3GW	1280 MHz	1310 MHz	30 MHz

It is essential that the receiver performance is not affected by the adjacent transmitted output signal. Some isolation between the received and transmitted signals can be achieved by the choice and relative positioning of the receive and transmit aerials.

At the home QTH separate aerials may be positioned, for example, at opposite ends of the house to provide sufficient isolation to allow the reception of one frequency whilst transmitting on another. At a repeater site the aerials may not be so well separated.

So, to achieve sufficient isolation, such that the transmitter has no noticeable effect on the received signal, it is usually necessary to fit a bandpass filter at the receiver input. The filter should have minimum through attenuation with a reasonably flat response over the operating frequency range with good attenuation at either side of the passband.

In addition, it may be necessary to fit a bandpass filter at the output of the transmitter, to reduce any spurious emissions and generally clean up the signal. Also, where the transmit and receive frequencies are very closely spaced, as in GB3GW, then a 'notch' filter may also be required at the receiver input to further improve the isolation.

There have been a number of suitable filter designs published, [References1 to 4] all of which are interdigital types with quarter-wave tuning elements and require careful machining and construction. The electrical (RF) performance is very dependent on the precision and quality of the workmanship and, to some extent, on the materials used. The receive filter used at my local repeater GB3TM (RT1-2) is based on the design described in [1] and was professionally manufactured in brass.

At GB3GW (which has the transmit and receive frequencies closely spaced) bandpass filters are fitted to both the receiver and the transmitter. Each filter consists of a three-section half-wave transmission line arrangement, designed and built by GW4KAZ. The basic construction is described in [5] and shown diagrammatically in Fig. 1. Other circuit arrangements are described in [6&7].

Filter tuned to 1249 MHz	
Through loss	1.6dB
Passband ripple	0.5 dB
Bandwidth at -3 dB	16 MHz
Bandwidth at -20 dB	32 MHz
Attenuation at 1316 MHz	59 dB

I had the opportunity to test one of these filters on a (borrowed) Tektronix spectrum analyser with tracking generator, shown in Fig. 2. The results are given below`.

Filter tuned to 1316 MHz	
Through loss	1.6 dB
Passband ripple	0.5dB
Bandwidth at -3 dB	16.4 MHz
Bandwidth at -20 dB	31.4 MHz
Attenuation at 1249 MHz	59 dB

In practice, to achieve an attenuation of greater than about 60 dB, care must be taken with the positioning of cables, the proper fitting of connectors and the avoidance of earth loops.

Further details of GW4KAZ's filter are available from the web site http://www.garth1.co.uk

Frequency Measurement at 10GHz for 3cms ATV

A popular method of measuring transmitter frequency at 10 GHz is by using an LNB, which has been modified as a down converter for 3cms ATV, by having the local oscillator set to 9 GHz [8] and by feeding the output into a 1.5 GHz (or higher) frequency counter. An input signal of 10.3 GHz would be displayed as 1.3 GHz on the frequency counter (10.3 GHz - 9 GHz =

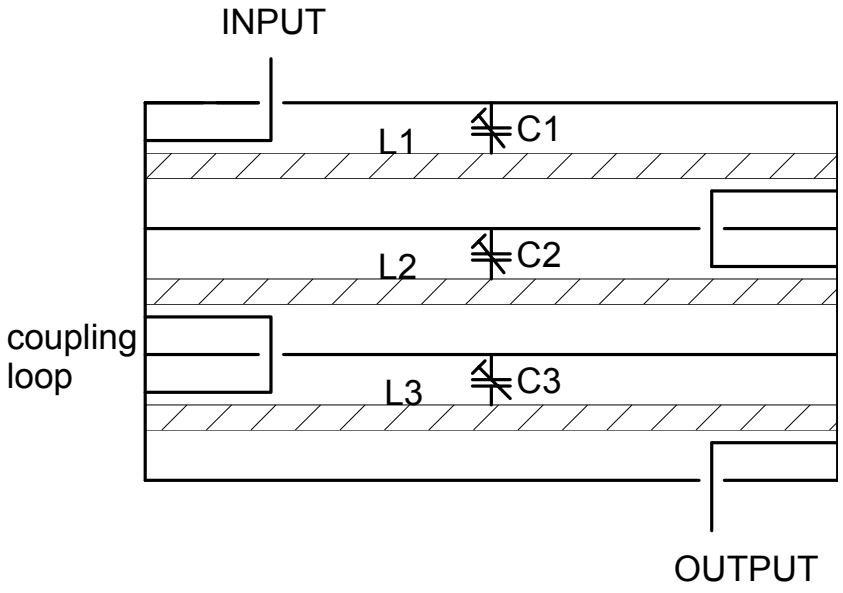


Fig.1. Three section half-wave transmission line filter

1.3 GHz). One advantage of using an LNB in this way is its excellent sensitivity; it will detect and display low milliwatt signals from several feet away - there is no need for close coupling. However, the LNB local oscillator may have a frequency tolerance of up to +/- 0.5 MHz, representing an error of +/- 0.005%. This is perfectly acceptable for ATV purposes and the arrangement provides a simple and convenient way of making comparative measurements at this frequency.

The LNB is powered through its 'F' connector, so +12 to +15 V DC must be fed into the LNB output coax cable whilst the RF output signal is fed to the frequency counter. A suitable circuit is shown in Fig. 3. The supply voltage that is fed through L1 is blocked off from the counter by the coupling capacitor C1. The purpose of L2 is to prevent the DC voltage being fed into the counter in the event of C1 failing. Both L1 & L2 are not critical and can be made by winding about 7 turns of 24 s.w.g. (0.56mm dia.) enamelled copper wire, using a 3mm drill as a former. The circuit is built in a small die-cast box and the general arrangement is shown in Fig .4.

The frequency counter that I use is a Watson FC-130 (from Waters & Stanton Ltd.). A useful feature of the FC-130 is the signal strength indicator, which is part of the LCD display. It enables comparative gain and signal level measurements to be made with relative ease.

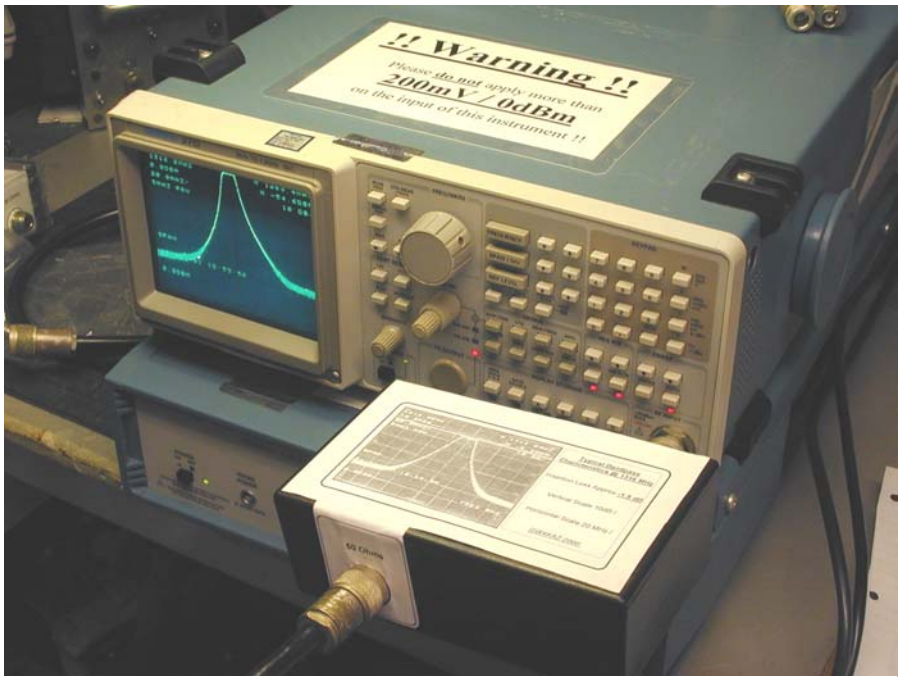


Figure 2 - 1.3 GHz Filter Measurement

References

[1] Five-section filter for the 23cm bandK. Weiner DJ9HO The UHF Compendium (Parts 1&2) Page 174

[2] Interdigital bandpass filter for 1.3GHzC. W. Suckling G3WDG RSGB Microwave Handbook, Vol. 3. Page 14.30

[3] Two filters & a diplexer for 23cmsIan Waters G3KKD CQ-TV 187 (Aug. 1999) Page 36-39

[4] Interdigital filter 1296 design tutorialARRL, UHF / Microwave Experimenters Manual, Page 6.38-42

[5] 24cms filter experiment Brian V. Davies GW4KAZ CQ-TV 190 (May 2000) Page 41-43

[6] Half -wave transmission line filterDon Hilliard, W0PW for 902 MHzARRL UHF / Microwave Projects Manual, Page 6-3

[7] High-Q filtersG. R. Jessop, G6JP RSGB VHF / UHF Manual, 4th Ed'n Page 7.7 Fig. 18b

[8] 3cms LNBsBob Platts G8OZP, Kits & Bits CQ-TV 195, Page 3.

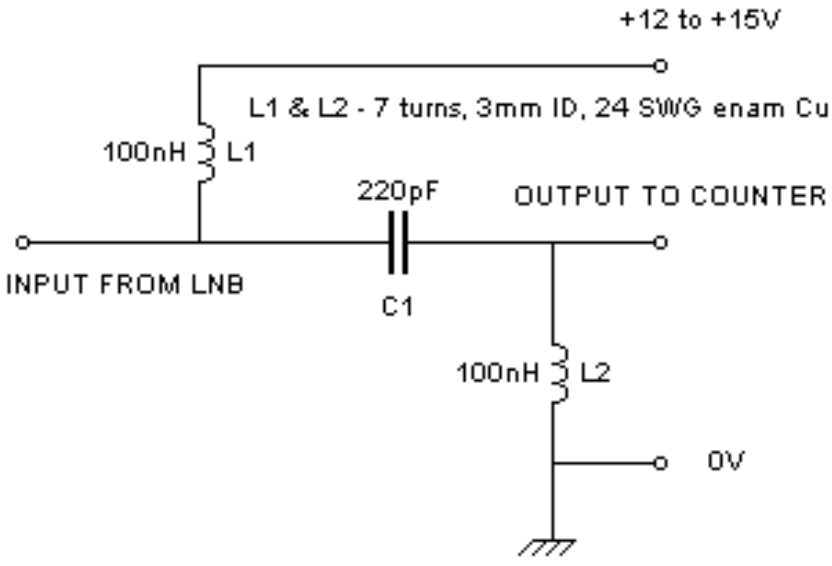


Fig. 3. LNB Supply and Frequency Counter connection

Figure 4 – 10GHz frequency measurement

Malcolm Sparrow ….died 14th Sept 2001

A note from Grant Dixon

I first got to know Malcolm Sparrow when he turned up at my house wanting to see the closed circuit television system which I had built; I think that this was sometime in the late 1950s. This started a lifelong friendship as we had a common interest in amateur television, electronics and, later, computers.

I was the first Chairman of BATC from 1952 to 1962 and when I retired the post was filled by John Ware. In August 1970 Malcolm was recorded in CQ-TV as the club treasurer, and he was Chairman of the BATC from 1971 to 1974 where his business skills were a great asset to the club. He was followed in the position of Chairman by Don Reid.

Malcolm was always interested in other people and willing to help them in various ways. He held the radioamateur call-sign G3KQJ (which he referred to as "King, Queen, Jack") and as he was also a keen member of the local Rotary Club he combined his two interests and organised meetings of Rotarian radioamateurs. In addition to this he had an interest in speedboats; he was at one time treasurer of the West Midlands Amateur Computing Club; and he founded a small company called QM70 which made units for amateur radio and television.

I shall remember Malcolm as a person who was always complaining, good humouredly, that he never had time to do anything for himself as he was always doing things for other people. I, myself, was one of the "other people", and I, along with many others, will miss Malcolm's cheerful and friendly assistance. Our sympathy goes out to his widow Jill.

V.S.W.R. METER

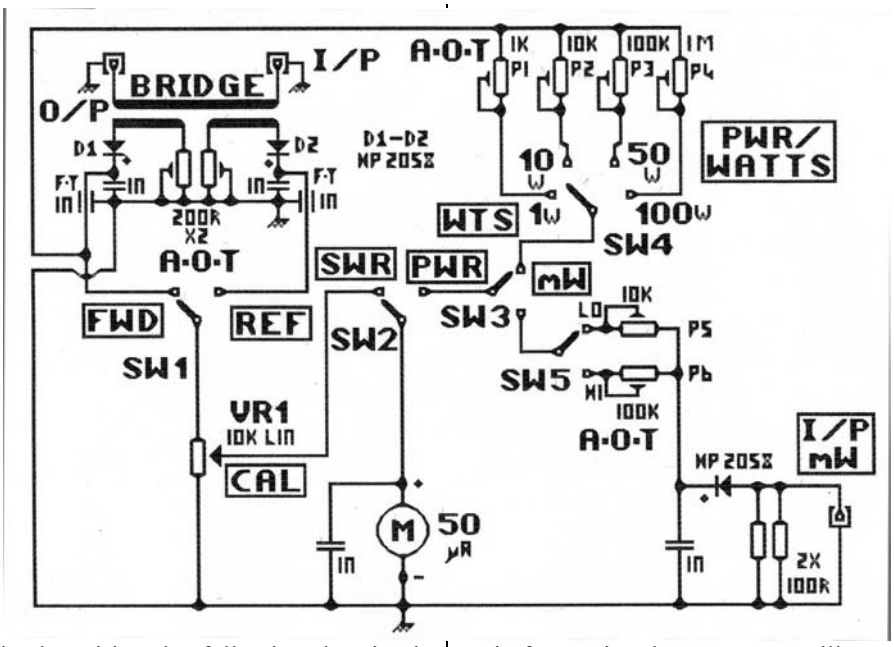
By L. W. Smith, G7GNA

The heart of the V.S.W.R. meter is the 'bridge' or 'head' unit. The pcb is made of double sided 1.6mm thick laminate. (The pcb should be soldered all round the inside of one half of the U shape). If the pcb is made to the sizes shown, the match will be very close to 50r. Details of the metalwork are also given, and are in two parts for the main unit, the two U shapes for the 'bridge' or 'head' unit. Layouts are shown below and are made from 1mm thick copper or brass sheet (all sizes are in mm).

The meter used was a 50µA, but a 100µA can be used if one finds it easier for calibration.

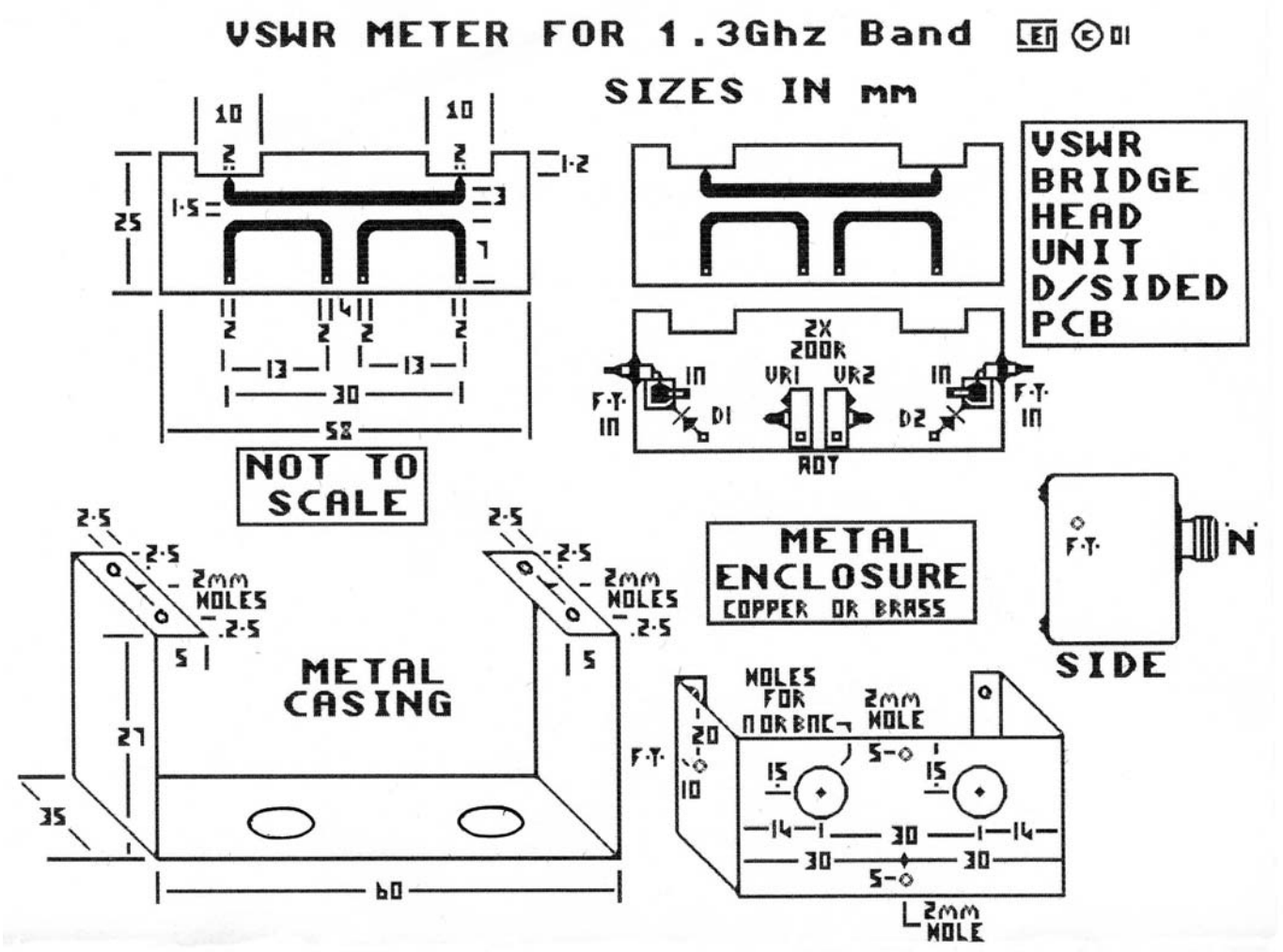
As can be seen from the circuit and metalwork, it is quite a simple unit to construct, as everything is within the drawings. The only thing left is the setting up; do this by comparing readings against a known calibrated unit.

Switching is simple, and nothing hard in the wiring, by following the circuit diagram. Other methods of switching can be adopted if required; it's down to the constructor - his/her own choice.



I/P mW

This part of the meter was added to the unit for testing low power oscillators and the pre-driver stages of a transmitter. Again it is simple, and setting up can be done on completion as above.



Data Protection

By Dave Lawton

The BATC registration within the Data Protection Act was due for renewal last June. On 1st March 2000 the Data Protection Act 1998 took effect. A process called notification has replaced the registration scheme established by the 1984 Act.

Under the 1998 Act there are exemptions from notification one of these being a 'Not for profit Organisation.' It has been determined that the BATC falls under this category and therefore a 'I do not Intend to Notify' form has been returned to the Data Protection Notification Department.

However the BATC will continue to treat the personal data it keeps in strict confidence and the records kept are only used for Membership records and mailing of CQ-TV Magazine. Your data will not been given to third parties and is only available to the Club's Committee.

Along these lines I do occasionally receive requests from one member requiring the address of another. It has always been Club policy and will continue to be that even in these circumstances I do not give out this information. I am however quite happy to pass on any letter sent to me for forwarding onto another member so contact can be made.

In the past, the BATC has been able to accept Eurocheques for various payments, but this system is no longer available. (Eurocheques have been in use for many years and are not to be confused with "The Euro"). The BATC hope to open a bank account in Euros, which will enable our members in the Euro countries to pay using that currency. However, until it is set up the acceptable preferred methods of payment are as follows: -

- Sterling cheque drawn on a UK bank
- British postal orders
- Credit or debit card transaction (Visa or Mastercard ONLY) (NOT Switch)
- Cash - Sterling notes (at your own risk!!)
- Cash - US Dollars (also at your own risk and subject to conversion charges)

Our web site has a fully secure method for credit card transactions. To cut down on the paperwork you can pay at subscription renewal time for more than one year of membership if you wish.

73's Brian Summers Hon. Treasurer.

SCART Club International Contesting Team

By Giles Read G1MFG

John G7JTT and Giles G1MFG activated G7SEX portable on behalf of SCART (the Solent Club for Amateur Radio Television) during the September international ATV contest. Parked up on top of Butser Hill near Petersfield in Hampshire (IO90MX) and fighting very windy conditions, John and Giles were active on 70cm, 23cm, 13cm and 3cm. There was a disappointing amount of activity during the contest, with only a handful of stations being worked. Best DX was on 70cm to F6KPL (IN99IO), a distance of 155km.

Our tally by band was as follows:

- 70cm - 2 stations worked
- 23cm - 6 stations worked
- 13cm - 1 station worked
- 3cm - no activity

Giles operated from the relative comfort of his motor home 'battlewagon' which has a permanent installation of 23cm and 13cm, with 70cm specially added for the occasion. He had terrible trouble with pager interference on 2m through his IC2800RH dual bander and was unable to use it for talkback. He and John kept in touch using a pair of PMR466 walkie-talkies, which on more than one occasion were the final link in the talkback chain! Giles also suffered a Heliax failure on 13cm, but was able to fix it on the second day in time for a QSO with G8LES.

Although Giles was equipped for 23cm, John provided the contest 23cm (and 3cm) stations, plus talkback on 2m. Operating from the relatively cramped conditions of the back of his car, John manfully kept calling CQ all night while Giles was tucked up in bed! During the night the temperature plummeted and John was glad of his six layers of warm clothing.

Overall, the event was rather disappointing. partly we suspect we would have worked more stations if our 2m talkback gear had been better, but generally there simply weren't the people out there. Where were you all? We hope to see pictures from you during the next contest...

The Solent Club for Amateur Radio Television (SCART) meets on the first and third Tuesday of each month at the Royal British Legion club at Park Gate near Fareham. Visitors are always welcome to come to our very informal meetings. SCART runs a net every Monday evening at 8.30pm local time on 144.750MHz FM, and all-comers are welcome.

GB3VW East Yorkshire Repeater Group 13cm ATV Repeater

By Richard G7MFO

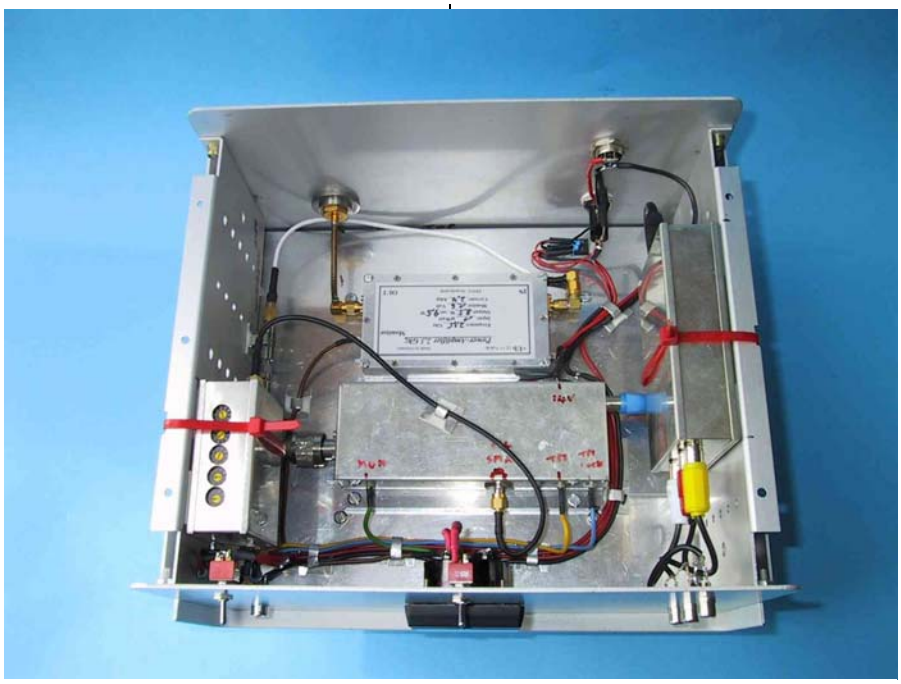
GB3VW is located at South Cave near Hull (IO93RS) and has an input of 2330MHz and an output of 2435MHz. The base of the mast is 152m above sea level with the receive aerial at 22m above ground level and the transmit aerial at 20m above ground level. GB3VW is the first ATV repeater to be licensed in the 13cm band in the UK and is the only ATV repeater to have an input and output in the 13cm band in Europe (as far as I know).

Bill G3RMX switched GB3VW on Wednesday 29th August, just before rushing of to a meeting of the Hornsea Amateur Radio Club. The switching on of the repeater coincided with the start of the 30th Anniversary celebrations at Hornsea Amateur Radio Club. Most of the committee members of the East Yorkshire Repeater Group are members of Hornsea Club.

The Aerials are Alford slots made out of copper pipe with a slot already milled into them. These were purchased from Stuart Marshall at the BATC earlier in the year. Stuart has also made the slotted waveguide aerials and filters for GB3XY in the past and is well worth getting in touch with. The 'feed' was made using notes from the microwave handbooks. Two interdigital filters were purchased from the 'table top sale' at the BT Microwave Round table. One of the advantages of purchasing the filters at the Round Table was that, I was able to check to see that they where suitable for ATV use before purchasing them, as test equipment was available.

The receiver comprises of a Low Noise Block Converter (LNBC) that was purchased from DB6NT, it has a built in 23cm notch filter. This is mounted at the top of the mast with the receive filter in a 2ft length of 4" soil pipe filled with foam and is located just below the Alford slot. This then feeds a converted satellite receiver (Pace 9200) via high quality satellite cable. The receiver is configured to always power up on the correct channel as a precaution against power failures.

The transmitter uses an exciter from RSE from Belgium. Theses are very high quality modules using mainly surface mount components and consist of three units: -



GB3VW Transmitter

1. ATVS1320PRO ATV Transmitter
2. BBA-20 Baseband, Audio Board
3. Phase locked loop unit

The above was purchased already built at a small extra charge to save time getting the repeater on air. The only problem we had with the RSE transmitter was that the instructions could have been a bit clearer for the setting up of the baseband unit and PLL. Also I could not understand why the exciter had a SMA input connector for the PLL and the PLL had a BNC output connector, this was quickly remedied with removal of the BNC connector and a SMA put in its place.

This exciter is followed by a 9watt PA purchased from Philipp Prinz DL2AM from Germany. This was also purchased already built. The amplifier only needs a drive power of 1mW, so 20dB of attenuation was placed in-between the transmitter and amplifier. This in turn drives a converted PCS high power base station amplifier running 40W. (Since purchasing the amplifier from a source in the UK, I noticed when I was across at Friedrichafen, that they were available already converted for about £100). This is connected to via a 33m length of Westflex and the transmitter filter to the Alfred slot at the top of the mast.

The Logic and software was produced by Bill G3RMX and is basically the same as GB3XY 3cm repeater. This uses a PC and a few PIC's to control the repeater test card, sync detection, video switch and the Morse tone generator. An excellent article on the repeater logic can be found in CQ-TV 187.

This new 13cms ATV repeater is part of the East Yorkshire Repeater Group. GB3VW site is shared with GB3XY 3cm ATV repeater, GB3HS 2m audio repeater and GB3HU 70cm audio repeater. We also run a site at Aldbrough on the east coast with GB3HA 70cm Audio repeater and GB3EY 24cm ATV Repeater.

Since the repeater went on air I have managed to receive it at the home QTH using a LNBC and a folded dipole over a distance of 22kM with a P4.5 report, pointing the dipole out of the shack window! This is a full P5 on the main shack aerial. I have also received very good reports from other amateurs around the area.

GB3VW & GB3XY side by side

The only problem we seem to be having now is the wide take up of 'domestic' video senders, which have an output frequency near to the output of GB3VW.

This project cost over £1000 to fund and was possible by the help and generosity of local amateurs (two in particular) and enabled the project to come to fruition without drawing on any of the repeater group funds. I would like to thank RMC committee and all the people who helped in getting the licence. Any reports of sightings of G3VW would be welcome and should be emailed to myself at: -

Richard@g7mfo.karoo.co.uk

Web site for RSE is: -

http://www.rse-electronics.com

Web Site for Philipp Prinz is: -

http://www.dl2am.de

Web site for DB6NT is: -

http://www.db6nt.com/

Email for Stuart Marshall is: -

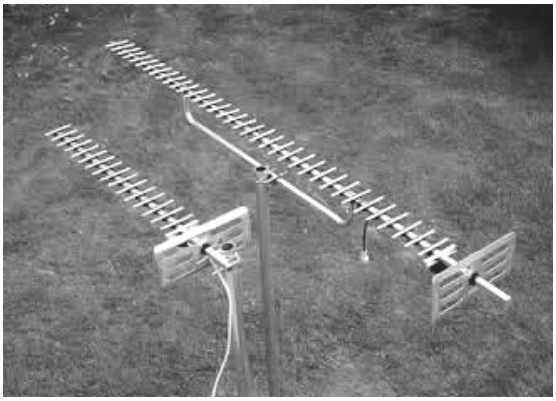
g6nhg@qsl.net

40W amplifier info web site: -

http://www.qsl.net/dl4mea/13ss/13ss.htm

South Cave Antenna Farm, East Yorkshire Repeater Group GB3HS 2m Audio, GB3HU 70cm Audio, GB3VW 13cm ATV, GB3XY 3cm ATV

Severnside Television Group



Our 23cm aerials are specifically designed for ATV use, although they can be used for other modes as well. Wideband characteristics mean that you need only one aerial to cover the repeater input and output channels. Our famous wideband yagis come fully assembled in two versions:

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70 revisited

By Ian Waters, G3KKD

An attempt to breathe new life into an underused band.

Foreword

First a little history, mainly for those who have come more recently into ATV and did not have the pleasure of helping to make it.

When we started ATV transmission in the early 1950s, the 70cm band, in those days from 420 to 440 Megacycles, was virtually unused. There was no problem in accommodating a 405 line double sideband AM transmission channel 6 Mc/s wide. In fact three channels were sometimes used for multi-link relays.

Then things changed. The band was restricted to effectively 432 to 440MHz, other modes moved in and ATV changed to 625 line and colour. As the band could not accommodate colour ATV and other modes, we moved to the next higher band and developed FM transmission and repeaters on 23cm. 70cm has of recent been very little used.

But things are changing again. Digital bandwidth compression and modulation now offers the prospect of good quality colour pictures using a bandwidth, say 2MHz, which can co-exist with other modes. This will, hopefully, give a new lease of life to 70 and ATV generally. The combination of digital and the propagational characteristics of 70 should lead to some really interesting results.

Existing 70cm Transmission Equipment

My existing 70cm transmitter dates from the mid 1960s and is of course fully valved with a 4CX250B in the final. It has never been really happy since it was changed from 405 line positive to 625 negative modulation. Originally there was also an AM sound transmitter operating 3.5MHz below the vision with the two combined into a single aerial using a combiner described in CQ-TV in 1968. I have to admit that this equipment has seen little use recently and has become hard to maintain. It feeds a 64 element stacked dipole aerial with a gain of 18dBd. As this is made totally from brass, silver soldered together, it has stood the ravages of time very well and is usable.

Philosophy

Because I have a rather well stocked junk box, I have a policy "make what I can out of what I have". Provided that things work correctly I resist buying new components. This results in some rather individual designs, not easy to copy. So this is not a constructional article, but rather the sharing of some design ideas. The following description is mainly at block diagram level, with detailed circuits only given for the more unusual stages. Anyone wishing to work along similar lines will have their own favourite ways of doing things and their own junk boxes. If anyone would like more detail I would be glad to supply it.

New 70cm Transmission Equipment

After all too long an absence I have recently been doing some work on 70 cm. I had three reasons for this:

1. The feeling that 70cm has been far too much neglected. We need to maintain our presence on that band. This led to the idea of evaluating the quality of the band limited B&W picture that could be transmitted in to-day's 70cm band without mutual interference with other modes.

2. The belief that we will soon be able to employ digital bandwidth compression and modulation. While I am as yet unable to do anything about the digital part, it seemed a good idea to have some modern RF equipment ready.

3. The need for a reverse video link in the Cambridge, GB3PV, repeater area. Ideally this should be on 13 or 3cm, but trees make 23cm a bit difficult and would make higher bands more so.

So it was decided to test a narrow band VSB AM signal on 70.

New Transmitter Block Diagram

The block diagram of the transmitter drive stages is given in Figure 1.

The video is first processed to provide black level clamping and adjustable sync stretch using conventional circuits.

In order to use fairly precise sideband shaping and permit the transmission frequency to be adjusted within the band, intermediate frequency (IF) modulation is used.

The modulator initially provides a narrow band VSB AM IF signal. The intention is to also provide a digitally modulated IF when his becomes possible.

The IF carrier, of 36MHz, is generated by a conventional crystal oscillator. This frequency is close to that advocated by the Germans (see CQ-TV 193) to enable surface acoustic wave (SAW) IF filtering of a future digital signal to be used. It is also close to the normal AM VSB transmitter IF of 38.9MHz.

Sideband Filtering

The design of the modulation and VSB filtering used was governed by two considerations.

1. To enable the transmission to be received by a standard System I television receiver with a frequency converter.

2. To restrict the bandwidth to a degree that would permit useful black and white pictures, while being as narrow as possible to minimise interference with other modes.

Figure 2 shows the idealised sideband response of a standard System I transmission with the VSB

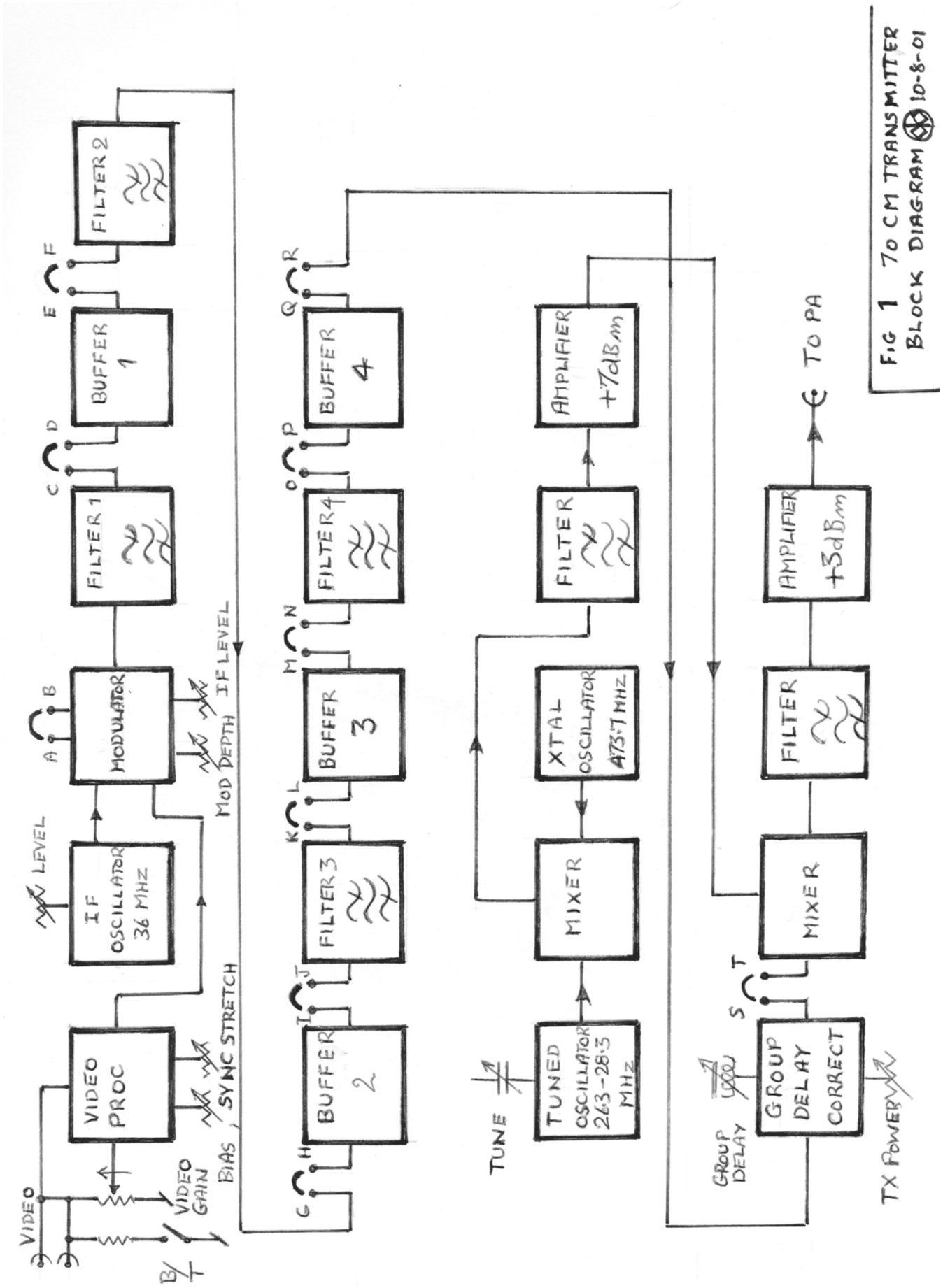


FIG 1 70 CM TRANSMITTER BLOCK DIAGRAM 10-8-01

characteristics of a receiver superimposed. This suggested the use of channel limited to something of the order of +/- 1.0 to +/- 1.25MHz centred on the carrier, i.e. the area where most of the luminance modulation is concentrated. This is also shown.

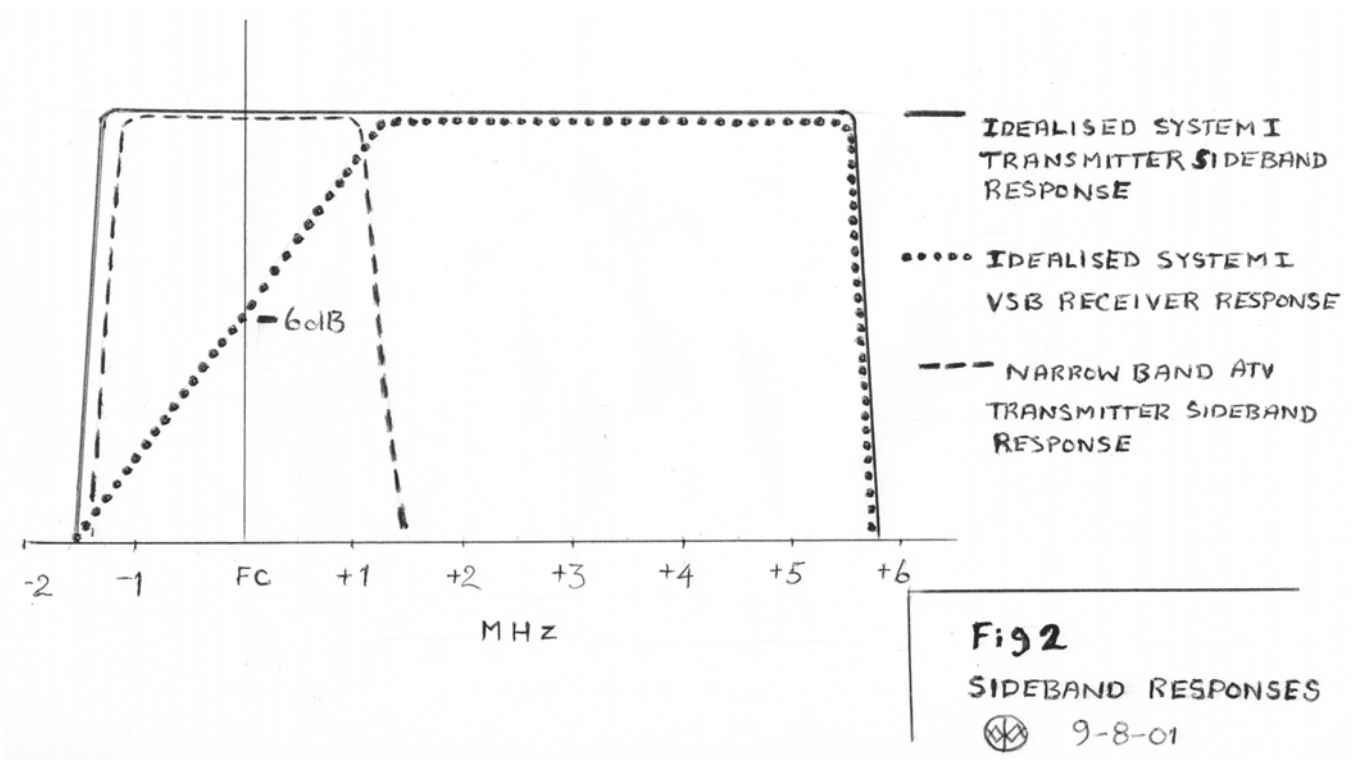


Fig 2 SIDEBAND RESPONSES 9-8-01

The question arose as to whether such a limited bandwidth, say about 23% of normal, would yield a result worth all the effort. As discussed in a subsequent paragraph "Results" the conclusion is that it is.

The actual bandwidth employed may well be varied depending on circumstances and the occupation of the 70cm band at any particular location.

Figure 3 shows the circuit of the modulator and a section of sideband filtering.

Ideally sideband shaping should be done using surface acoustic wave (SAW) filters. These have a very good shape factor and being phase linear do not introduce group delay errors. A search of the web revealed various SAW filter suppliers, but none offered any with the required specification. I was equally unsuccessful in finding the source of those used in Germany. So

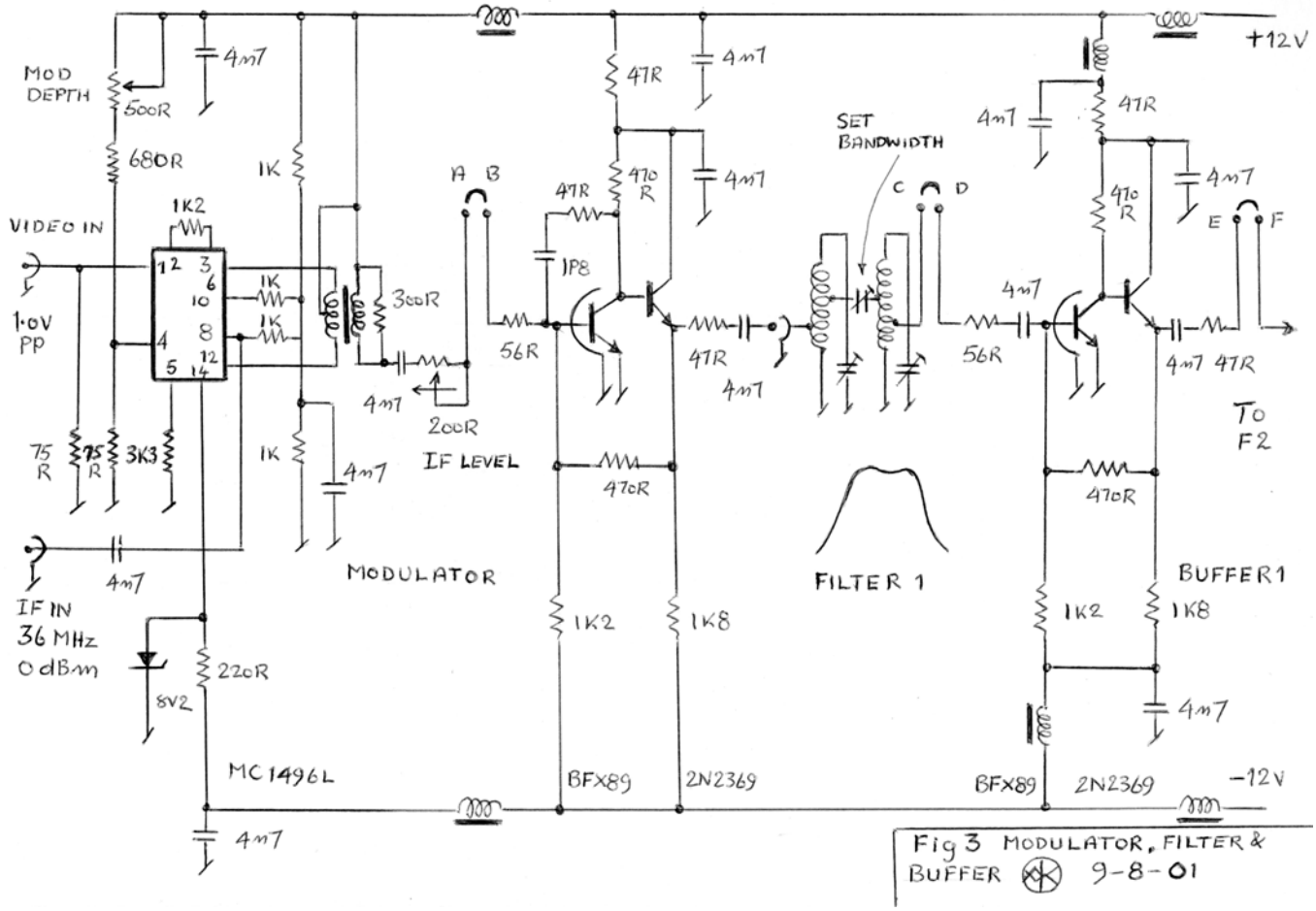


Fig 3 MODULATOR, FILTER & BUFFER 9-8-01

not having access to such exotic devices recourse had to be made to good old-fashioned short wave wireless techniques.

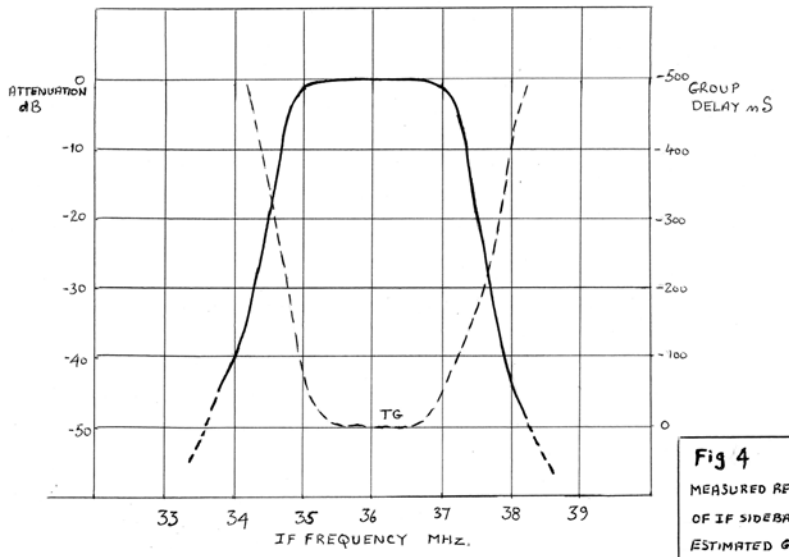


Fig 4
MEASURED RESPONSE OF IF SIDEBAND FILTER
ESTIMATED GROUP DELAY
9-8-01

The sideband filter is based on bandpass sections each consisting of two high Q, parallel tuned, critically coupled circuits. After much experimentation with one and more sections the arrangement shown in Figures 1 & 3 was arrived at. Four identical sections are used each isolated by a buffer amplifier. One section gave inadequate sideband suppression, two gave a reasonable result, three would probably have been satisfactory but four have been used to make certain.

All coils are 11 turns of 16 SWG copper, 7/8in diameter, air spaced with inputs and outputs tapped 1 turn from earth. The tuning capacitors are 50pF air spaced. The coupling capacitors are 5pF connected between taps at 5 turns from earth.

The measured bandwidth of the combined filter is shown in Figure 4. It can be varied by the coupling capacitors and for the present application it has been set to have a -3 dB bandwidth at + and - 1.25MHz, balanced about the 36MHz IF carrier. While the response is not exactly "brick wall", it is quite good - sidebands at + and - 2MHz from the carrier are suppressed to be about 45 dB below the carrier level.

The measured decay of TV sidebands relative to a carrier, before any filtering, is given in Figure 5. The source was a computer generated test card consisting of multiburst and colour bars. It may be seen that the modulation at up to +/- 2MHz from the carrier is about 22dB below carrier. Adding this to the attenuation of the sideband filter suggests that energy radiated at +/- 2MHz from the carrier will be about 60-70dB below carrier.

This should be adequate to prevent much interference outside the channel in use!

Each filter should be aligned individually using a sweep generator. To this end links are provided at the input and output of each stage to enable a sweep generator and a detector to be connected. The overall response may be checked by using a c.w. signal generator and a spectrum analyser.

Another way to measure the transmitted bandwidth is to modulate with a constant amplitude video sine wave, from a video oscillator or signal generator, and measure the sideband level. Figure 6 shows the measured sideband level with modulating frequency. It will be seen that the results in Figures 4 & 6 correlate admirably.

Yes, I know this filter is old fashioned, large, clumsy and lacking the precision of a SAW filter. It is however easy to make and not expensive. Its use does not distract from the main object of the tests and it could be replaced later.

Group Delay Correction

As is well known any circuit, except a SAW filter, which restricts bandwidth introduces group, or envelope, delay errors as the cut off frequency is approached. The sharper the cut off the greater the errors. If not corrected these produce rings and overshoots on the received picture.

While I do not have the equipment to measure group delay, that produced by the filter must be somewhat as shown superimposed on Figure 4, probably rising to 500nS near to cut off. To correct this it is necessary to introduce an in-band delay of a similar amount.

Figure 7 shows the simple but effective group delay corrector. The inductance of the coil (6 turns of 38 SWG enamel copper on a 0.2in former with ferrite core) is adjusted to give a phase shift and hence a delay at the centre IF frequency which virtually corrects the error.

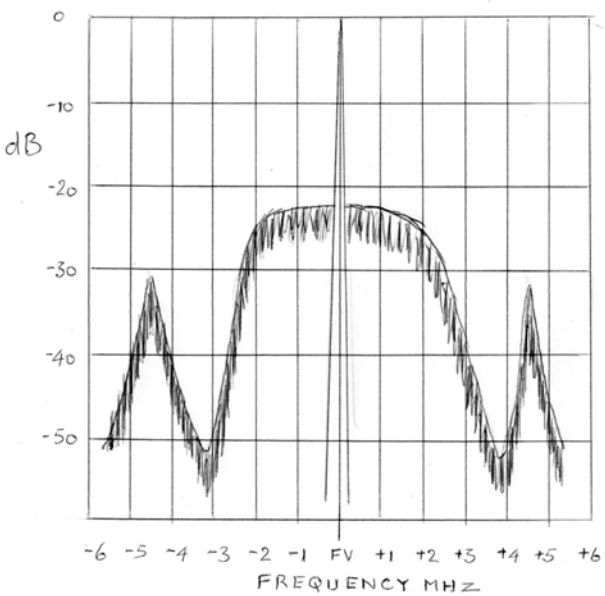


Fig 5
AMPLITUDE MODULATED TV SIGNAL SIDEBAND LEVEL VS CARRIER
9-8-01

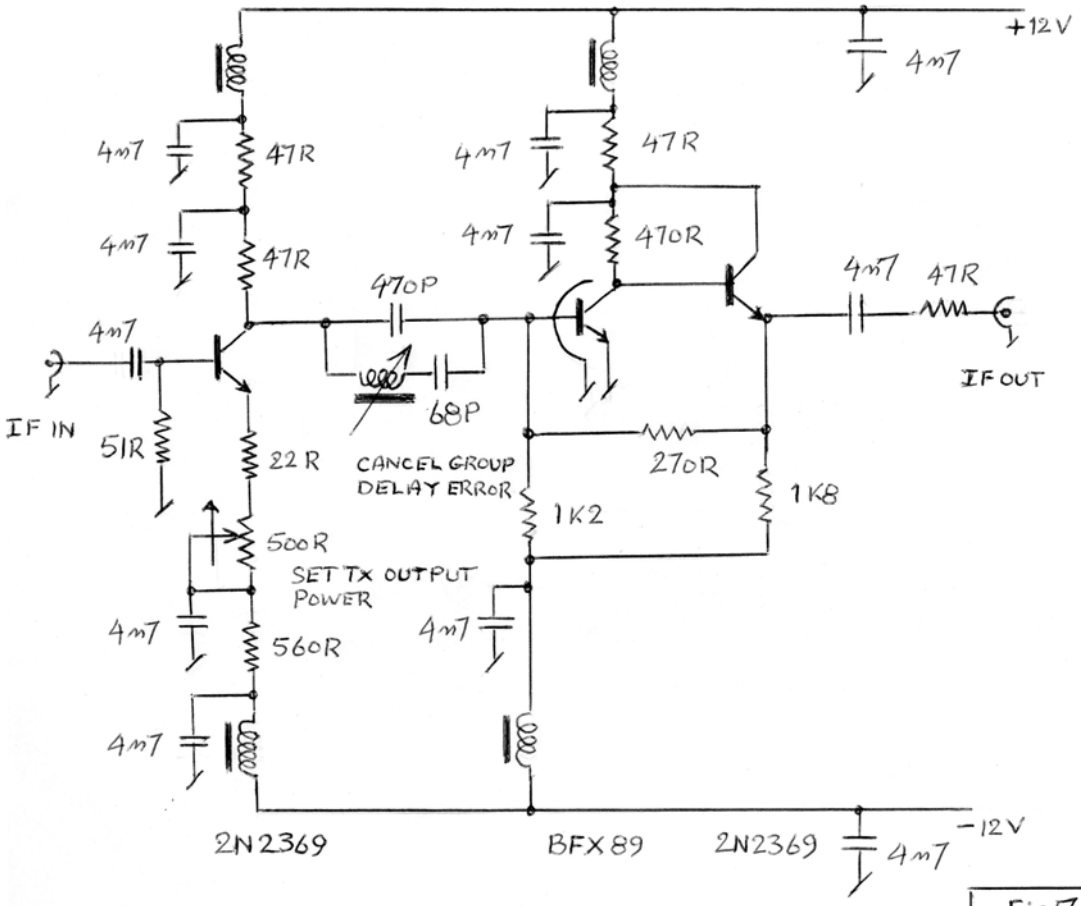


Fig 7 GROUP DELAY CORRECTOR 10-8-01

Group delay errors may be observed by modulating with a pulse and bar test signal (Figure 8a) - in my case very conveniently provided by the Amiga ATV test card program - and observing the output of the corrector using a simple diode demodulator. It will be seen from (Figure 8b), that the pulse to bar ratio has been degraded to about 50%. This is a function of the limited bandwidth. The uncorrected pulse, when viewed on an oscilloscope with an expanded X scan, will appear as in (Figure 8c), The overshoot is obvious. The pulse, when corrected by adjusting the inductance, is as in (Figure 8d).

It is desirable to adjust group delay by observing the demodulated IF output rather than the output of a 70cm receiver, as any mistuning of the receiver could introduce conflicting errors.

Note that broadcast transmitters, which for system I need to correct group delay errors over a 6.75MHz passband, use up to 6 rather more complex correctors in cascade. This simple circuit has proved effective for the limited passband in use here.

Up Conversion

The IF is up converted to carrier frequency by a balanced mixer and up-conversion oscillator.

The current 70cm band plan (see RADCOM March 2001 page 53) is shown in Figure 9 with the frequencies of the repeaters in the Cambridge area superimposed. The plan permits fast scan TV between 435.000 and 439.750MHz.

However a TV carrier frequency about 437.25MHz seems to be appropriate to

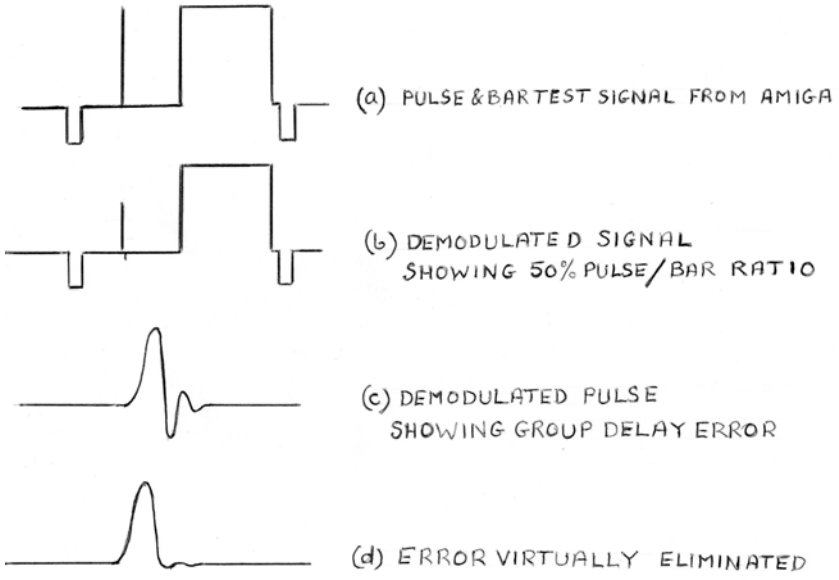


Fig 8 GROUP DELAY WAVEFORMS 10-8-01

avoid the repeater channels used in the Cambridge area.

(As an aside RADCOM also says that the IARU recommends TV carriers to be in the range 434-434.5 and 438.5-440MHz! Have they never heard of sidebands that with a 44 MHz carrier would be outside the band?)

To enable the carrier to be positioned so as to avoid, or at least minimise, mutual interference with other modes, the up-conversion oscillator is made tuneable from about 400.00 to 402.75MHz. This allows for the sidebands of a transmission some 2MHz wide.

As the modulation is symmetrical about the IF carrier, it does not matter if the up-conversion oscillator is on the high or low side. The low side was chosen.

As I believe phase noise can be important with digital, the up-conversion oscillator does not use phase locked loop techniques. Initially a free running 400MHz oscillator was tried. Although built like a battleship, the frequency stability proved inadequate.

After some experiment, an arrangement in which the output of a free running oscillator tuneable from 27 to 28.75MHz, is mixed with a crystal controlled signal of 373MHz was adopted. The long-term stability is about 150Hz and more than adequate. After mixing the local oscillator signal is filtered using a 3-pole filter to remove unwanted products and amplified by a hybrid IC amplifier to the +7dBm required by the mixer.

The output of the mixer passes via a four-pole comb line filter, with a bandwidth of 8MHz and an insertion loss of 2dB, which removes any local oscillator and unwanted mixing products. Details of this filter were published in CQ-TV number 195.

After filtering, the signal is amplified by a hybrid IC to a level of about +3dBm to drive a power amplifier.

Solid State Power Amplifiers

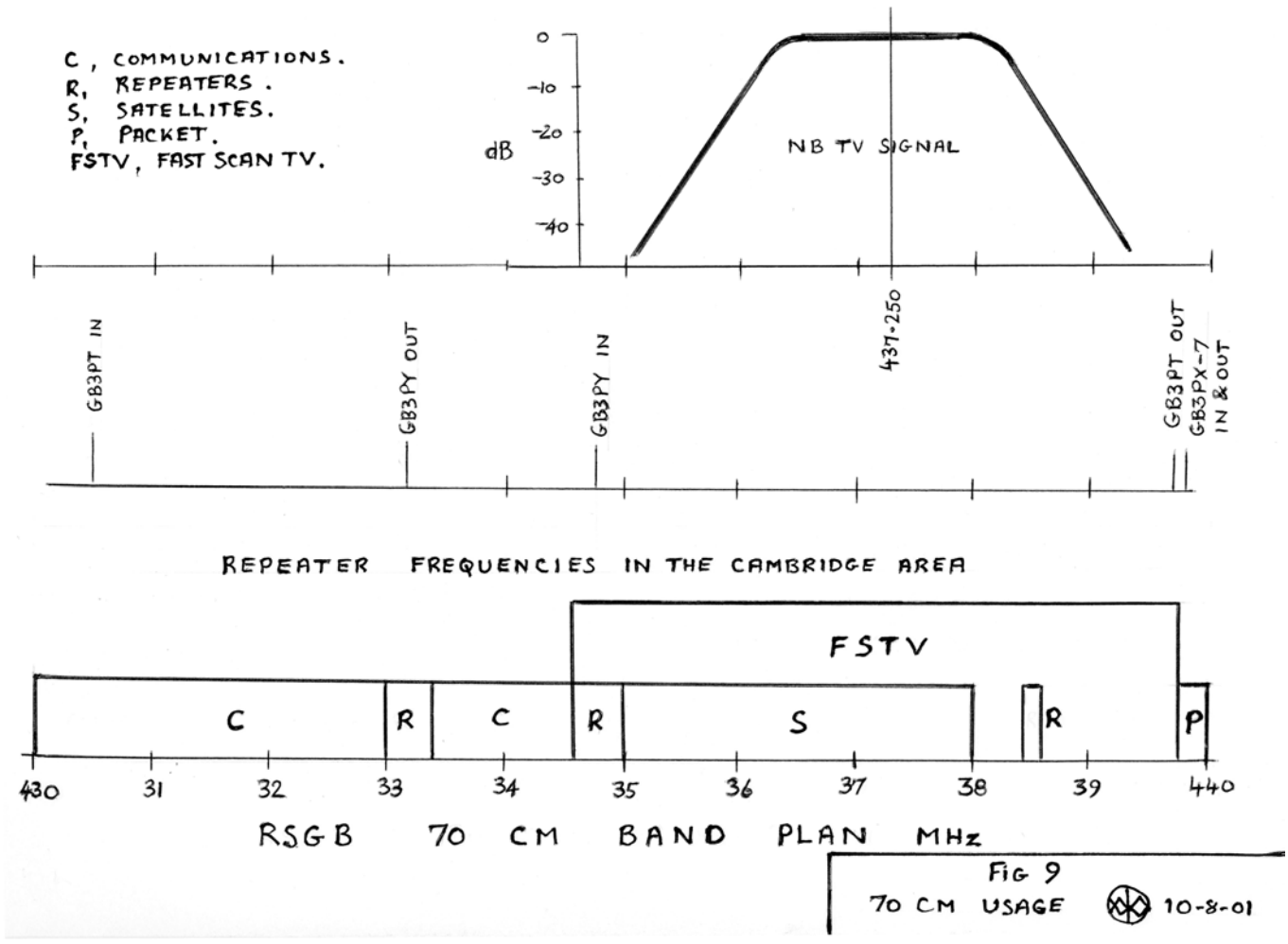
I am fortunate in having a quantity of solid-state RF modules. These are of two types. As used in UHF TV transposers and in UHF TV transmitters.

The transposer amplifiers are linear class A with outputs up to 6 Watts peak sync when amplifying combined vision and sound ie with Ips at -60 dB (more when used for vision only). They come in two versions for Band IV and V. The Band IV ones have been found to work very well on 70cm with a gain only 1 dB lower than that in their intended band.

The transmitter modules had power outputs of 1.2kW peak sync with class A stages driving class AB final amplifiers. They are broadband from 470 to 860MHz. It is possible using a hacksaw to cut these up into slices capable of 100W or so. They also work very well on 70cm.

Using some of these I have constructed an initial amplifier chain giving some 15W ps for +3dBm of drive.

I realise that having these is my good fortune, but I mention them here as some will probably appear on the



surplus market and it will be worth keeping an eye open at rallies etc.

Receiver Considerations

For reception I have used a down converter (actually an up converter), which could be similar to that, published in the BATC publication "An Introduction to Amateur Television" page 46.

This converts the 70cm signal to some UHF TV channel unused in the district for feeding to a conventional TV set. If the received signal is strong this is satisfactory. However the conventional receiver bandwidth extends to perhaps 5.5MHz above the vision carrier. Thus all frequencies from say 1.25 and 5.5MHz are contributing noise and probably unwanted signals while adding nothing to the received picture. To overcome this I have inserted a bandpass filter in the feed from the converter to the receiver. Obviously this filter needs to be tuned for the channel in use. The inclusion of this filter will, by reducing the bandwidth, also enhance the receiver sensitivity for DX reception.

Results to Date

At the time of submitting this article to the editor I am embarking on a programme of on air tests to explore range and interference immunity. I hope to publish details of these in a future edition. However a few tests made to date are quite encouraging.

Picture Quality

I have fed a variety of test cards, local camera pictures and off-air broadcast programmes into the transmitter (not radiated!) and have observed the results on a receiver with converter. I have been quite favourably surprised at the quality achieved. The pictures are of course black and white and look a bit 1940ish. The vertical and horizontal resolution is unbalanced and this is obvious when viewing a grid pattern. The results are however, in my opinion, very worthwhile and suitable for ATV video telephone type of use. They even have entertainment value. They would have looked better with 405 lines, but that is history.

Interference Immunity

I have radiated 5mW ps from an antenna at the top of my garden and received the signal on my main 70cm array. This feeds via a low noise preamp to a splitter. One output feeds the 70cm TV RX that shows a P5++ picture. The other feeds a narrow band communications RX. While watching the picture, radiated on 437.25MHz, I have explored the band from 432 to 436MHz (the limit of the communications receiver coverage). TV sidebands start to be heard at 435.55MHz (i.e. 1.7MHz below TV carrier) and increase in strength as the carrier is approached. This ties up very well with the measured IF sideband response. There is virtually nothing to be detected below 435.55MHz. Other traffic including distant beacons can be heard normally. This leads me to be optimistic.

As is well known energy in TV sidebands is bunched at 15.625kHz intervals above and below the carrier with very little energy between. If by ill fortune a TV sideband interferes with a narrow band transmission, a small shift in the TV carrier frequency will probably cure the problem. This is the reason why the IF and up-conversion oscillators need to have good stability.

Where Do We Go From Here?

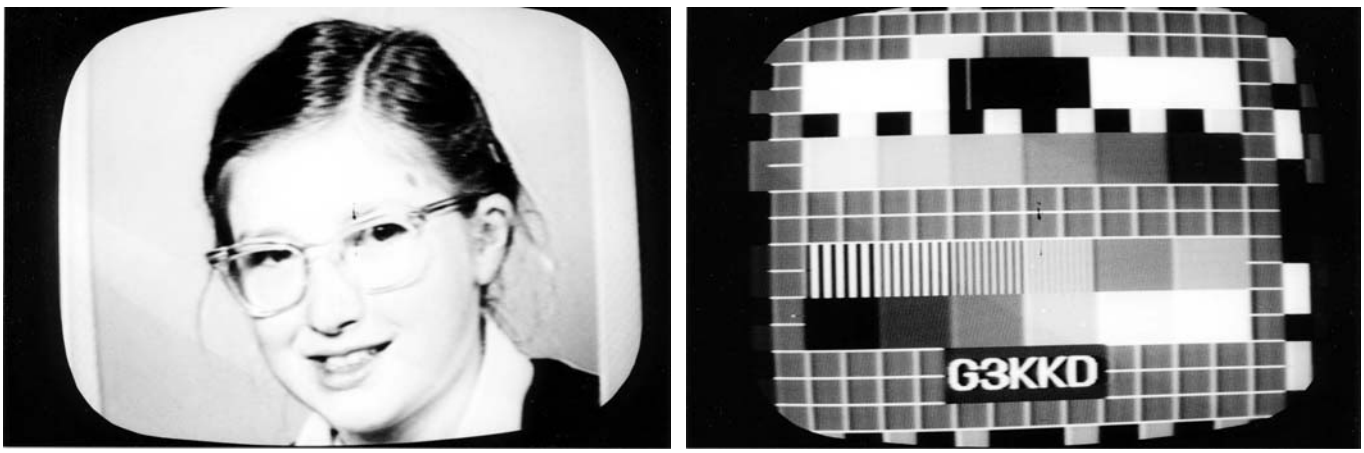
I see two options.

1. Who would like to join me in some interim activity on 70cm? There was a time when, even under ordinary conditions, ranges on 70cm of 40-50 miles could be worked regularly, with much more during lifts. I might even use the new transmitter to drive my 4CX250B PA.

2. How about some of you clever fellows, who understand computers and things digital, coming up with some circuits and details for compression, modulation, decompression etc?

The Digital Cliff

Consideration of the digital signal strength cliff edge effect, (One has a perfect picture or nothing), found with terrestrial digital broadcasting, suggests that setting up an ATV link using digital modulation may be difficult. We may have to set up the link, align aerials etc. using some other modulation and then switch to digital. To this end the interim AM modulator could find more application than originally intended.



70cm, 1.25MHz bandwidth, off air pictures

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By the Membership Secretary

Years	Surface	Airmail
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- *May* - 20th March
- *August* - 20th June
- *November* - 20th September.

Please send your contributions in as soon as you can ***prior*** to this date.

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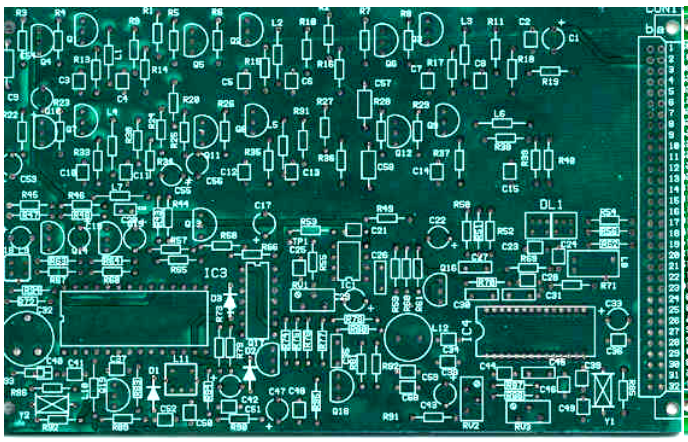
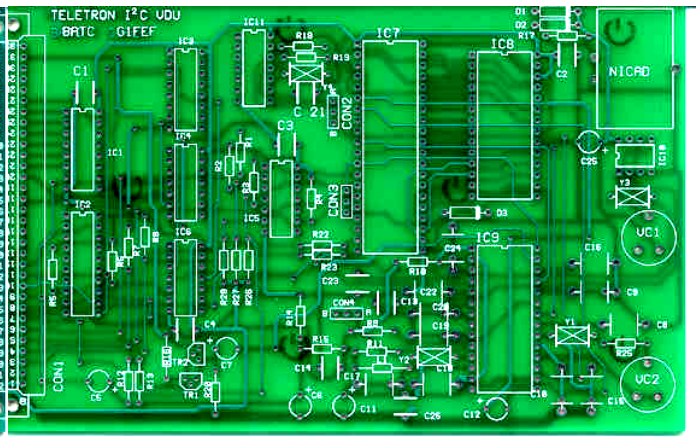
43	SAA5231 Genlock IC	**£8.80**	**£0.30**	.....	.....
44	SAA5243PE Teletext IC	**£14.70**	**£0.30**	.....	.....
45	PCF8583 Clock IC	**£7.00**	**£0.30**	.....	.....
39	LM1881N Sync separator IC	**£3.50**	**£0.30**	.....	.....
81	I²C 27256 EPROM	**£9.70**	**£0.30**	.....	.....
38	PCF8574P Input expander IC	**£4.70**	**£0.30**	.....	.....
10	I²C Relay PCB	**£6.50**	**£0.43**	.....	.....
9	PCF8574A Input expander IC	**£4.70**	**£0.43**	.....	.....
RX, TX and SSTV PCB's and General Components					
47	70cm up converter PCB	**£13.50**	**£0.43**	.....	.....
50	108.875 MHz crystal	**£8.20**	**£0.30**	.....	.....
68	4.433618MHz crystal	**£3.25**	**£0.30**	.....	.....
69	5.0MHz crystal	**£3.25**	**£0.30**	.....	.....
86	24cm solid-state amplifier PCB	**£10.50**	**£0.43**	.....	.....
88	XR215 phase locked loop IC **	**£5.00**	**£0.30**	.....	.....
Stationery & Station Accessories					
73	BATC blue diamond clutch pin badge	**£1.75**	**£0.30**	.....	.....
74	BATC cloth badge	**£4.00**	**£0.30**	.....	.....
75	BATC equipment label (6)	**£0.25**	**£0.30**	.....	.....
76	BATC square windscreen sticker	**£0.10**	**£0.30**	.....	.....
78	BATC test card	**£0.50**	**£0.43**	.....	.....
79	BATC reporting chart	**£0.10**	**£0.43**	.....	.....

Total Goods and Postage - Amount Enclosed £.....



The Sync Pulse Generator PCB (item 7)



The I²C VDU PCB (item 41)

The indicated **P&P** prices for Members Services are for postage within the UK only. Will members outside the UK please either try to estimate the extra postage required, or write for a quotation. All cheques **MUST** be drawn on a UK bank. ***Items marked thus: ** are available only until present stocks are exhausted.***

Members Services orders ***ONLY*** to: **Mr. P. Delaney, 6 East View Close, Wargrave, Berkshire, RG10 8BJ, England.** Tel: 0118 940 3121 (Evenings, Weekends only please). Email: services@batc.org.uk Items from these lists can **ONLY** be supplied to **CURRENT** members of the BATC. These lists supersede all previous ones.

A description of the various PCB's and components can be found in the 'What's What' guide, or on the CQ-TV Internet pages at www.cq-tv.com (A printed copy available on request, if you send a S.A.E.). Components for club projects are not available from Members Services unless contained within these lists. All club crystals are HC18/U (wire ended). To avoid delay and inconvenience, please be careful to include the correct payment with your order – please do **NOT** send stamps or cash. Post and packing costs are for despatch of one item to United Kingdom members.

The BATC cloth badge (item 74)

Circuit Details can be found as follows:

An Introduction to ATV: PCB's 10, 40, 41, 47, 86**. CQ-TV 174:** PCB 7

CAMERA TUBES A tube guide appears in CQ-TV 149 and 150. Tubes are now difficult to obtain and members requesting information on availability, prices or other types of tubes or equivalents are asked to send a stamped addressed envelope for their reply.

BATC Publications

Publication	Each	Qty	Total
An Introduction To Amateur Television (225gm)	**£5.00**	.....	.....
The latest handbook full of detailed information on how to set up your ATV station, plus lots of new video and RF construction projects.			
The Amateur TV Compendium (155gm)	**£3.50**	.....	.....
The BATC handbook featuring construction articles on video units, 24cm and 3cm ATV, a Digital Frame Store, and much more.			
The Best of CQ-TV (150gm)	**£3.50**	.....	.....
A compilation of the best construction articles from CQ-TV's 133 to 146			
CQ-TV Back Issues:	**£1.50**	.....	.....
The following issues are still available. Please circle those required: 142, 143, 144, 147, 150, 153, 154, 156, 158 159, 162, 163, 164, 166, 167, 168, 169, 170, 171, 173, 174, 175,176, 177,178, 179, 180, 181. 182, 183, 184, 185, 186, 187, 188,189, 190, 191			
Special Offer: Any four of the above issues	**£5.00**	.....	.....
192, 193, 194, 195	**£3.75**	.....	.....
The BATC CD	**£5.00**	.....	.....

Total Goods and Postage - Amount Enclosed. £.…….....

Please note that the above books (except 'The best of') and CQ-TV issues 171 onwards are available in Adobe Acrobat format for download from our web site, www.cq-tv.com. They are also included on the BATC CD. (The CD also contains a full keyword search index) Please note that the versions on the web site do NOT include the colour covers or any colour inserts. This is to improve download times.

The indicated prices for **Publications** include postage within the EEC. Will members outside the EEC please either try to estimate the extra postage required, or write for a quotation.

Publications orders ***ONLY*** to: **BATC Publications, Fern House, Church Road, Harby, Notts., NG23 7ED, England.** Tel: 0152 270 3348 (Evenings/Weekends only). Email: publications@batc.org.uk. Publications can also be ordered via our web site at www.batc.org.uk

PLEASE MAKE CHEQUES PAYABLE TO 'BATC'.

Satellite TV News

By Paul Holland G3TZO

It's Back!

Satellite TV News returns after a summer break enforced primarily by pressure of work. Having officially retired from BT after 37 years I thought that things might have been quieter - but that not quite how its turned out so far!

With the winter nights now looming its time to turn up the shack heating, stoke up the receivers, squeeze the last bit of signal out of the dishes and settle down to some extra terrestrial TV searching. In this edition of Satellite TV news there is news of a number of upcoming launches and the usual mix of news and new equipment reviews.

Launch Date	Satellite	Launcher	Deg	Payload
0112	Astra 1K	Proton	19.2 E	46 Ku Tp' s & Ka Tp's replacing Astra 1B & 1C
0101	Astra 3A	Ariane 5	23.5E	20 Ku Tp's replacing Kopernikus 3
0204	E Bird	Ariane 5	25.5 E	20 Ku Tp's
0205	Hot Bird 6	Atlas 5	13.0 E	28 Ku Tp's replacing Hot Bird 5
0206	Hot Bird 7	Ariane 5	13.0 E	40 Ku Tp's will replace Hot Bird 3
02 TBA	Europe*Star 2	TBA	45.0E	20 Ku Tp's
02 TBA	Amos 2	Ariane	4.0 W	22 Ku Tp's

New Launches

The New Year will bring the usual crop of launches that aim to increase or replace existing capacity. As usual the dates below are all +/- a month or so as they are dependant on so many variables – not the least being the success of preceding launches.

Astra 2C located at 19 Deg E

The Astra 2C satellite launched back in June is temporarily deployed at 19.2 Deg E, pending the successful launch of Astra 1K. With Astra 1A approaching the end of its expected lifetime after 13 years of operations in orbit, SES has decided to deploy Astra 2C temporarily at 19.2 Deg E. It can provide additional back-up capacity providing 32 active transponders. Following the launch of Astra 1K (see below) Astra 2C will relocate to 28.2 Deg E. Manufactured by Boeing Satellite Systems ASTRA 2C is a BSS 601 HP type spacecraft (HP = High Power) with a design lifetime of 15 years.

Astra 1K

Due t
o be launched in December Astra 1K is probably one of the most complex satellites in the Astra fleet. The satellite has the following specification;

Transponder capacity:
52 Ku-band & 2 Ka-band for the first 5 years & 46 Ku-band & 2 Ka-band thereafter.

TWTA output power:

Ku-band 105 Watts / Ka-band 66 Watts

EIRP: Ku-Band:
44.4 to 52.2 dBW over Pan-European 53.5dBW over UK/Ireland 46.1 to 53.5 dBW over Continental Europe
EIRP: Ka-Band:
55 dBW over Betzdorf

Stabilisation system: 3-axis type

Expected lifetime: 13 years

Power consumption: 12400 Watts

Astra 1K has three primary roles providing;

- Full replacement capacity for ASTRA 1B, plus back up capacity for ASTRA A, C and D bands.
- Two-Beam frequency reuse - one beam over UK/Eire, the other beam over Continental Europe
- Ka-band Return Path - full back up for ASTRA 1HKa-band Return Path, plus extended geographical coverage.

Having switchable spot beams it will be possible for SES to target the UK and Germany with tightly focussed footprints on each country.

Eutelsat News

W3A

One of Eutelsat's most sophisticated satellites, combining Ku-band and Ka-band frequencies, on-board multiplexing (SKYPLEX) and steerable spotbeams W3A will be launched in the second quarter of 2003. Co-positioned at 7 Deg E with W3, it will provide coverage of Europe, Africa and the Middle East.

***e*-BIRD™**

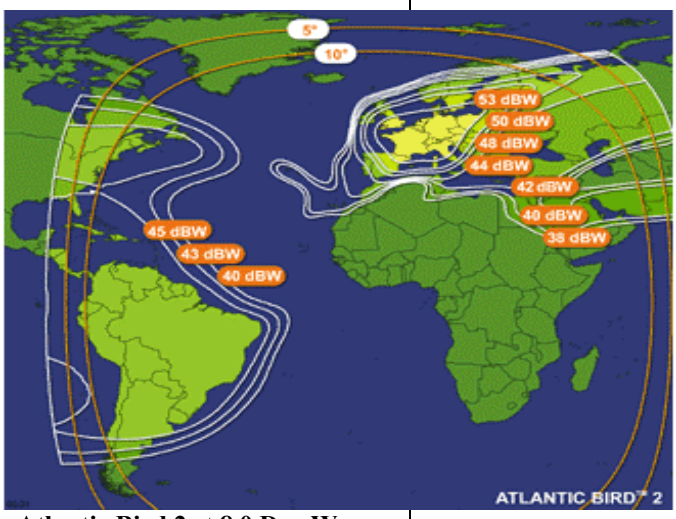
This satellite will be optimised for broadband access, predominantly serving Internet and Business TV applications. The satellite has a design that is optimised for the asymmetric nature of Internet traffic. *e*-BIRD™ will launch in the second quarter of 2002 and provide coverage of Europe through four beams. The launch of *e*-BIRD™, which will be positioned at 25.5 Deg E, will create Ku band capacity at an orbital slot normally favoured previously for inclined orbit birds at the end of their life.

Express AM1

Planned for launch early 2003, EUTELSAT has concluded an arrangement for 12 Ku-band transponders on this satellite with the Russian Satellite Communications Company. From its orbital position at 40 Deg E it will provide full coverage of Europe and enable further expansion policy into south Asia in conjunction with the SESAT satellite.

ATLANTIC BIRD™ 1 and 2

Due for launch in the second half of 2001, the two ATLANTIC BIRDs™ will provide flexible bandwidth and connectivity for video, audio and data traffic from North and South America direct into Europe, the Middle East and large parts of Africa. ATLANTIC BIRD™ 1 will be located at 12.5 Deg W and ATLANTIC BIRD™ 2 to 8 Deg W.



Atlantic Bird 2 at **8.0 Deg W**

HOT BIRD™ 6 and 7

Due for launch in the second quarter of 2002 HOT BIRD™ 6 and 7 will employ on-board processing and utilise Ka-band frequencies to enable multiple video or data streams to be uplinked from different locations providing a platform for what is being dubbed "micro-television broadcasting"

Intelsat News

Due to have been launched before you read this is Intelsat 901 which will replace Intelsat 705 at 18.0 Deg W. The specification of this satellite (Courtesy of Intelsat) is reproduced in the table above;

Intelsat 901	
Total Transponders	C-Band: 72 (in equiv. 36 MHz units) Ku-Band: 22 (in equiv. 36 MHz units)
Polarization	C-Band: Circular – Right Hand or Left Hand Ku-Band: Linear – Horizontal or Vertical
e.i.r.p. (C-Band) (Beam Edge to Beam Peak)	Global Beam: 31.0 up to 34.5 dBW Hemi Beam: 36.0 to 40.4 dBW Zone Beam: 36.0 to 42.9 dBW
Uplink Frequency	C-Band: 5850 to 6425 MHz Ku-Band: 14.00 to 14.50 GHz
Downlink Frequency	C-Band: 3625 to 4200 MHz Ku-Band: 10.95 to 11.20 GHz and 11.45 to 11.70 GHz
G/T (C-Band) (Beam Edge to Beam Peak)	Global Beam: -11.2 up to -7.7 dB/K Hemi Beam: -8.0 to -3.3 dB/K Zone Beam: -7.4 to +3.2 dB/K
G/T (Ku-Band) (Beam Peak)	Spot 1: Up to +8.5 dB/K Spot 2: Up to +8.6 dB/K
SFD Range (Beam Edge)	C-Band: -89.0 to -67.0 dBW/m² Ku-Band: -87.0 to -69.0 dBW/m²

NEW SKIES

New Skies is the company that took control of part of the Intelsat satellite fleet back in 1998. Its first launch will be NSS 7, manufactured by Lockheed Martin Commercial Space Systems, which will provide Ku- and C-band commercial telecommunications services, including video distribution and contribution, Internet access, corporate business networking and fixed services such as telephony and data. The satellite will be located at 21.5 Deg W over the Atlantic Ocean, providing coverage to Europe, Africa and the Americas where it will replace the NSS-K and NSS-803 satellites. NSS-803 will be re-deployed to the Pacific to replace inclined orbit capacity there. NSS-7 is a hybrid Ku- and C-band satellite based on the A2100 AX satellite bus. It will provide multiple uplink and downlink footprint coverages at C- and Ku-band, with interconnectivity on a channel-by-channel basis. As with Astra 1K it is designed to facilitate 'asymmetric' traffic tailored to current Internet traffic patterns. The added interconnectivity, asymmetric loading capability, and high downlink power levels will facilitate the use of small receive systems.

The A2100 AX satellite incorporates additional on-board redundancy for critical units minimising the chances of operating with a single point of failure during the 12-year design life.

Ku Band Tp's will operate in the 10.99 GHz to 12.92 GHz band with Eirp at beam centre of 51 dBW.

The satellite is planned for launch in January and will be operated from New Skies' satellite operations centre in The Hague.

Transponder News

Eurobird 28.5 Deg E

SES has announced that will be using a 72 MHz transponder to carry initially 15 TV channels broadcasting in 13 languages serving primarily cable TV systems. This is likely to expand to 30 channels sometime later next year.

Astra 2A 28.5 Deg E

Eurosport's 24-hour sports news channel is to join the Sky Digital package any time around now. Launched last September on cable TV, Eurosport News provides sports headlines every 15 minutes and also provides onscreen 'windows' displaying video, text and graphics.

Arabsat 2A, 3A 26 Deg E

TV de Mauritanie can now be found on 12.015 GHz (V) in MPEG2 clear. (SR 27500, FEC 3/4). Sahar Universla Network is also now on 12.015 GHz (V) in MPEG2 clear in Farsi. (SR 27500, FEC 3/4)

Astra 19.2 Deg E

Polish commercial channels Polonia 1 and Super 1 have recently joined the Astra digital free-to-air line-up on 11.992 GHz (H) (SR 27500, FEC 3/4).

Hot Bird 13.0 Deg E

Nine new channels are now present on 11.785 GHz (H) in MPEG2 clear in Spanish. (SR 27500, FEC 3/4). They include; TVE International, TVE International Asia-Africa, Tele Deporte, Hispavision, Canale Clasico, Canal Nostalgia, Canal 24 Horas and as we closed for press a Test Card.

A new 24-hour streaming Polish news channel TVN24 has launched in analogue and can be found on the former VIVA 2 transponder 11.178 GHz (H) in free-to-air PAL.

The German channel XXP Spiegel TV is now on 12.265 GHz (v) in MPEG2 clear in German. (SR 27500, FEC 3/4).

Eutelsat' W2 16.0 Deg E

Islamist service Zeitouna TV transmits from 1900-2100 GMT (2000-2200 local Tunisian time) each Saturday and Wednesday. The channel can be found in MPEG-2 clear on 11.013 GHz (H) (S/R 5632, FEC 3/4).

Dr Dish on TV

Readers of the German Tele Satellite magazine will be familiar with the name Dr Dish, a non-de plume for its editor Christian Mass. Christian has in the past operated an ad hoc TV show via one or other of the DFS Kopernikus satellites featuring amateur satellite enthusiasts and new equipment reviews. Thanks to a new sponsor, Dr.Dish-TV has started broadcasting regularly from September. The three-hour programs are broadcast live. And will be on air bi-monthly on the first Friday of the month. The programme can be seen via Intelsat 801 at 31.5 Deg W on 11.485 GHz (V), SR 6.110, FEC 3/4. The footprint will cover the UK with an Eirp of 45.0 dBW. The program will be bilingual in German and English.

Sky Analogue Closure

Sky closed its analogue service in September, effectively switching off about 100,000 customers. Channel 5, Eurosport and CNN are among a dwindling band of English language analogue services now at 19.2 Deg E.

New Gear

As those attending the Satellite TV trade shows and reading the various magazines will know there are an increasing number of Satellite TV receiver PC cards being sold. With the advent of DVD+ RW (read/write) technology launching this autumn there is a further move towards convergence between the PC and TV. The products below provide interesting examples of how digital satellite TV reception will fit into this picture.

Hauppauge WinTV FTA PC Card

Hauppauge has launched WinTV Nova-T, a PC card that includes both a free-to-air terrestrial digital receiver and video recorder. The Nova-T utilises the hard disk inside the PC and will digitally record up to 20 hours. PC owners with the new generation of DVD Rewriteables will now be able to create DVD's with up to 2.5 hours of DVD quality footage. Prices will start from £149.

TechniSat SkyStar 2

The TechniSat SkyStar 2 PC card will allow you to receive free-to-air digital satellite TV and radio programmes, plus access data streaming and the Internet via Satellite services on-offer (including the ability to download software, partake in multi-casting and use audio visual features). The basic specification for the card provides;

- Full MPEG-2 compliant digital TV and radio functions
- Symbol Rate Mb/s 2000-45000 SCPC and MCPC compatible
- Automatic Channel Search
- DiSEqC 1.0
- Full teletext functions
- Compatible for receiving information data
- Data streaming max 90 Mbps

The card provides excellent compatibility with Mediaplayer to access TV and radio satellite programmes on the card, has picture quality on a 17 inch monitor running at 1284 x 768. It provides navigation of

TV, radio and data channels with alphabetical, satellite and genre sequence options, plus ease-of-use when connecting to Internet via Satellite ISPs (like Europe On-Line). The SkyStar 2 PC card is available from SAT-Europa at £89.00 inc. VAT, contact 0845 130 3111.

TechniSat Streamstore 24

The specification for this receiver mirrors a trend at the top end of all manufacturers model ranges to incorporate Hard Disc Drives (HDD) into digital receivers. These receivers are being marketed as Personal Video

Recorders (PVR's) with the Sky PVR available just in time for Christmas.

The description of this receiver illustrates what I believe will be the standard for this new generation of digital (DVB compliant) receiver.

The key features are;

- an integrated 20 G/Byte hard drive for up to 12 hours of recording.
- 2 Common Interface slots
- Dolby Digital AC3 sound
- EPG automatically updated overnight to include up to 14 days of programme listings, and includes a programme search function.
- DiSEqC 1.0 switching

Echostar have announced a new receiver (not yet launched), which will add to the above spec full-motorised capability. I will record the details in this column when they become available.

Over The Air (O.T.A) download for software updates.

Echostar is now providing Over the Air (O.T.A) download services for its digital receivers via Hotbird at 13.0 Deg E on 12.539 GHz (H). You can make use of this O.T.A. download facility to download the latest updated software version for all Echostar receivers when available. For those with a non O.T.A software in their receiver you will first need to install the bootstrap script. This is required only once and can be downloaded from the Echostar web site downloads area. The latest software version for your receiver can then be selected from a drop down menu once again located in the "Downloads" area (echostar-int.com/downloads/software/software)

The loading process is as follows; Switch the AC power of your receiver off. Connect the receiver with the PC using a serial cable wired as per the table below. Start the Echostar loader by clicking on the icon "Echostar.exe". It is possible that an error message will pop up because the loader is default set to Com2. If this message appears just click on OK. Using the menu that appears select the correct COM port using the COM port setting option. A message will pop up that the COM port setting is changed. Click on the OK button if you agree with the change. Click on the 'DOWNLOAD' button. Select the correct software version for your receiver by using the browse option. Loading the wrong software inside the unit could cause software problems and affect the functionality of your receiver – so be warned. When the correct software is selected a message shows up which indicates that you have to turn off the receiver power. This can be ignored so just click on OK. Switch the AC voltage on. If everything is OK the message 'dnld' appears on the front panel. Don't switch the power off. Wait until the download is finished. When the download is finished the message 'Download complete' appears on the PC screen and the RECEIVER starts up. According to Echostar it is preferable you now reset the receiver to the factory defaults.

Pin	Wired To	Pin
2		3
3		2
4		6
5		5
6		4
7		8
8		7

3-D TV From the International Space Station

Though not strictly Satellite TV I thought readers might be interested in details contained within a recent European Space Agency press release regarding tests on 3 D TV. Though tests of 3D TV seem to go back many years the technology is clearly advancing. With the courtesy of the ESA I reproduce a snippet from their paper here.

"A live transmission from the International Space Station User Information Centre in Noordwijk has demonstrated a new technique for shooting, recording and transmitting 3D TV images. The stereoscopic TV images were transmitted live from Noordwijk to Berlin via a Eutelsat satellite and projected onto a large screen. The system developed by TMP of Bayreuth (Germany) is based on time-sequential coding of both video signals for the left and right eye in the standard PAL format. This makes it possible to record 3D TV images on normal videotape (Betacam or other professional formats) by using existing studio production and transmission standards and hardware. The multiplexed 3D-video signal can be transmitted via conventional TV satellites and is also compressible in MPEG enabling use of a low-cost digital transponder. In addition to the use of a special 3D camera, production and transmission of the signal requires only, on the transmitting side, a special multiplexer unit. At the receiving end, a special demultiplexer is needed, while for the viewing of the 3D images, any of the existing techniques for generating/viewing stereoscopic images can be used such as;

- a video projector or VGA computer screen with field-sequential play-out of the images and viewing with "active shutter glasses"
- one or two video projectors with active or passive vertical/horizontal light polarisation filters and viewing with passive polarised glasses
- a projector or a computer screen for viewing with anaglyphic (red/green) glasses"

It is envisaged that further tests may be carried out from the International Space Station itself when operation which should provide some spectacular images.

Conclusion

That's it again for another edition. Despite the long lay off there was a mighty slim postbag since the last issue back in February. Feedback is always welcomed – at least I know somebody is reading it!!

As usual the contact number is 01948 770429, fax to 01948 770486 or email to paul.holland@btinternet.com.

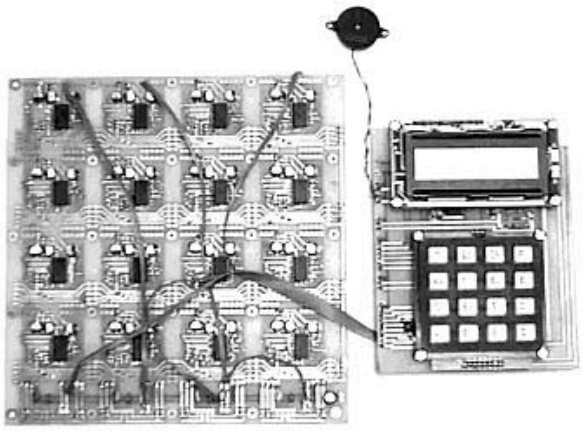
Worthing Video Repeater Group

GB3VR GB3RV GB3SR GB3BR

http://www.videorepeater.co.uk/

The MATRIX – A versatile and flexible switching solution

The MATRIX has been designed to provide a versatile solution to the problem of connecting video and audio equipment together in frequently changing combinations. As the name implies a switching matrix method is employed that allows any input to be connected to any single or multiple number of outputs. For further details see CQ-TV 194 page 13 or for current details, our web site above.



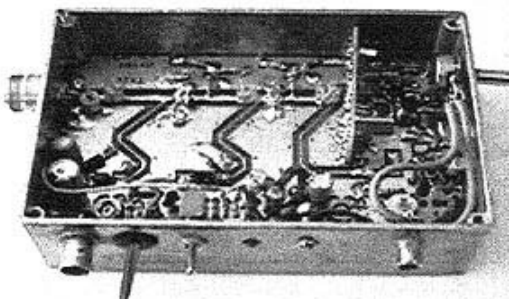
The group is pleased to announce, that kits as detailed below are now available.

Introductory offer 8x8 Video only MATRIX (upgradeable to 16x16) **only £73**

Introductory offer 8x8 Video & Mono audio MATRIX (upgradeable to 16x16) **only £104**
Upgrade for introductory offer boards to full 16x16 switching **£26 / £52**
16x16 Video only MATRIX **£99**
16x16 Video & Mono audio MATRIX **£156**
16x16 Video & Stereo audio MATRIX **£213**
Additional 16x16 switch boards (specify Video or Audio) **£57**
P&P 2.50 per order.
Enquiries to Geoff G8DHE on Tel. 01903 237726 or Email matrix@g8dhe.cix.co.uk

1 Watt FM-TV 24cms Transmitter

The 1 Watt transmitter, now on its fourth version, generates its signal directly on the required frequency which can be set anywhere in the band, using colour or B/W video signals. On board intercarrier sound and standard pre-emphasis are included. The kit contains the PCB, all the on-board components, heatsink, diecast box and comprehensive instructions. Building time is about three evenings work.



The price for this is **£85, P&P 2.50**.

Over 750 units sold to the amateur market alone.
Enquiries to Geoff G8DHE on Tel. 01903 237726 or Email atvkit@g8dhe.cix.co.uk

Orders (only) should be sent to: -
Worthing Video Repeater Group, 2 North Farm Rd., Lancing, Sussex. BN15 9BS
Cheques payable to "WVRG".

3cms ATV Tests in North Wales

Submitted by GW3JGA

The Arfon Repeater Group is investigating the practicality of providing a 3cms receive facility at the 24cms ATV Repeater GB3TM

Test were carried out on 26th July 2001 when Barry GW8FEY and Brian GW4KAZ set up their 3cms gear at the GB3TM site and John GW3JGA took his portable gear to the viewing point car park on Prestatyn hillside.

Various transmitters, receivers and aerial systems were compared including a specially constructed wide-angle sectoral horn. The unrestricted sea path from Prestatyn to the GB3TM repeater site is approximately 37 miles (60 km).

Weather conditions were excellent and signal levels were very much higher than expected – which probably means that if we want realistic results we will have to do it all again in the pouring rain!

3cms Sectoral Horn

GW3JGA Portable Prestatyn

Barry GW8FEY at GB3TM

Brian GW4KAZ at GB3TM

ATV Tests Prestatyn

G1MFG - Other, Pre/De Emphasis Network PCB

By L. W. Smith, G7GNA

Figure 1 shows a simple PCB layout and the circuit diagram of a de-emphasis add-on unit for a transmitter (F.M 75 ohms video input/output). The PCBs below are shown at 90% of actual size (including PCBs for Figure 2 and 3) and can be either single or double sided. If using a double sided PCB then all grounding should be soldered both sides. A PCB using SMD is also under consideration, with a PCB mounted BNC socket fitted for front panel mounting.

Figure 2 shows another version, which can be made to be used for either de-emphasis or pre-emphasis, by changing a few components on the board and in one case adding links. Instead of the two 150Ω resistors used in the prototype, one can be replaced with a link and the other with a 300 Ω resistor.

The de-emphasis or pre-emphasis version(s) has a pre-set pot control; this is used in setting up the video level output (deviation). Although shown connected on the PCB, the video control can be removed and a 100Ω front panel mounted control added for both versions.

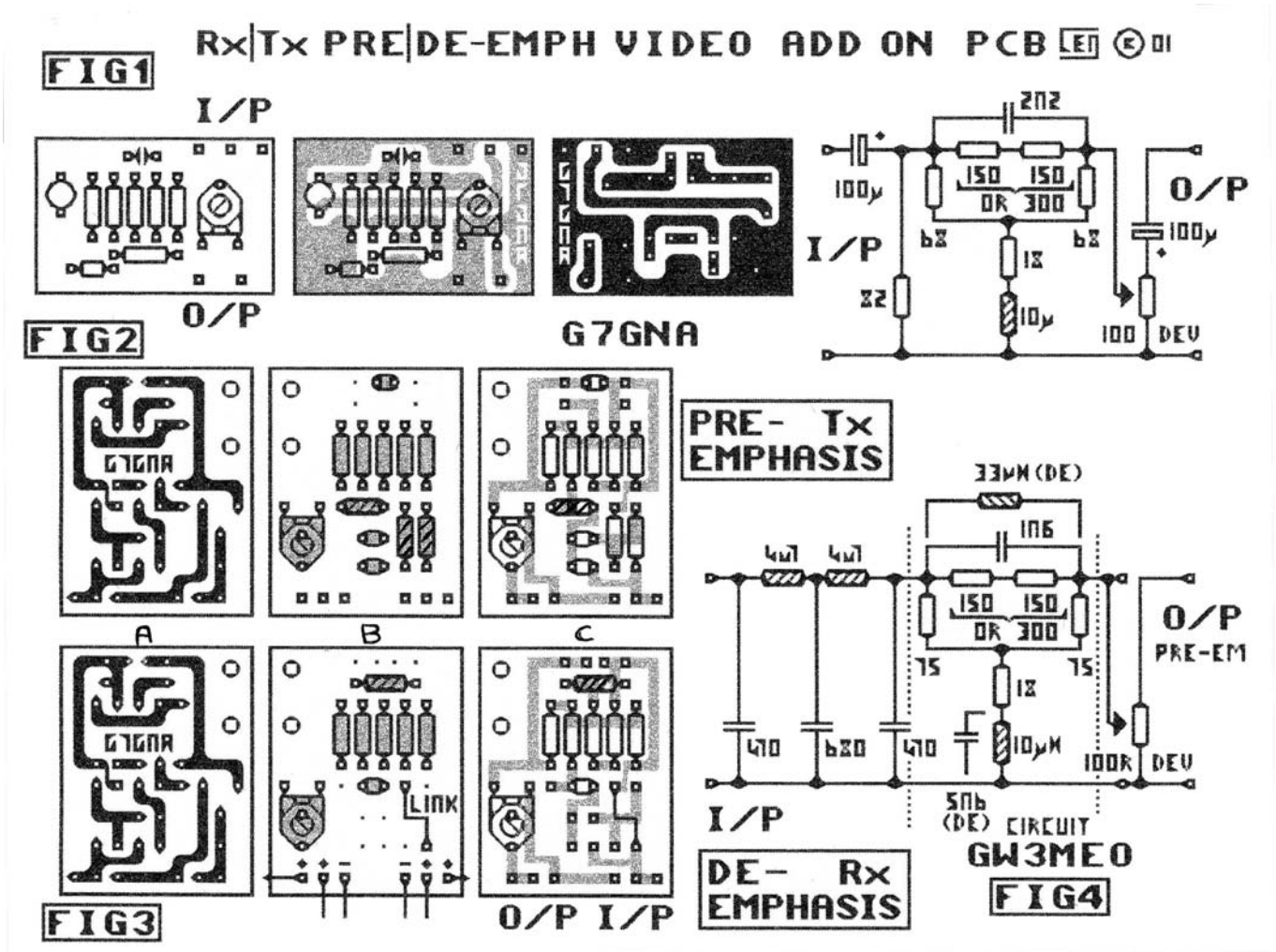
The idea to make the PCB came to me because it was required to be used with the G1MFG 23/l3cms transmitter and receiver modules, although the same PCB can be used with other units if required. The PCB was made smaller for one particular unit, and has also been built on Veroboard; all worked with no problems being encountered.

As you can see in Figures 2 and 3 the PCB layouts are shown: -

- A - Copper track side
- B - Component side layout(s) (different for pre-emphasis and de-emphasis – see Figure 2/3).
- C - Component side looking through to the copper tracks.

Figure 4 Shows the circuit diagram; note the alternatives to the circuit for the de-emphasis circuit. This circuit is by GW3MEO and is shown on the paperwork that is supplied by G1MFG, which comes with the G1MFG modules. The PCB is easy to follow and component values are not shown. The PCB is for those who have purchased one of these kits from G1MFG and to which the extra circuit has not already been added.

With kind permission from G1MFG to allow this PCB to be published - PCB designed by G7GNA.



In Retrospect

CQ-TV 195

In the article "AFDs and Aspect Ratios" there was a small typo in that the caption under the widescreen test card picture on page 10 read "4:3 picture in a 16:9 coded frame", when it should have read "16:9 picture..." Thanks to Peter Vince for pointing this out.

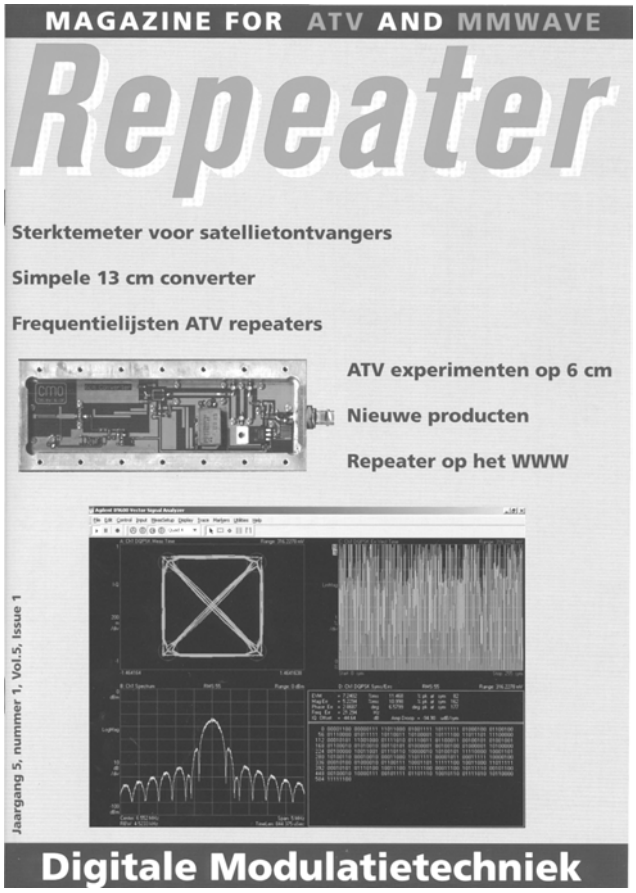
There is a mistake in the "Mods to the G1MFG modules" article. On page 40, column 4, "Installation", step 4, the text should read Change R6 to 75 ohms (already done on 23/24cm Gold receivers), instead of referring to R7.

Members only!

As mentioned previously (CQ-TV 188, page 42), we have set up a 'members' only' section on our web site. Access to these pages requires a username and password. This quarters codes are: -

Username: amember

Password: contests



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Let's Do It

Review by Peter Delaney

"Let's Do It" is a book of around 380 pages, available in the case of the review sample as a CR-ROM of .pdf files, read with Acrobat Reader. This version also contains a "Read Me First" file, which is not in this format (and was not readable by your reviewer's PC!).

The book is a *practical* guide to electronics, starting with basics and leading up to programmable devices and an assortment of projects. It is *not* a textbook, but a 'user-friendly guide', written much as a friend might give guidance or ideas in a letter. The author (who has been a member of BATC for many years) draws upon his own experience, often adding humorous comments that make the book easy to read.

Information is included on setting up a workshop, and health and safety matters, various construction methods, and all the main component types. There are some television specific chapters - chapter 20 being about ATV in general, whilst chapter 14 includes details of a project to make an analogue to digital and a digital to analogue converter for monochrome television. Other projects include memory and PIC programmers, audio amplifiers, power supplies and test equipment - and a vibrating pcb etching table.

In view of the fact that the book is aimed - in part at least - to those to whom electronics is an unfamiliar topic, there are a few points that maybe could have been tidied up. The section on op-amp theory, for example, uses the usual convention of a + and - input and an output - but without indicating that there are also power supplies needed The small microphone elements are (almost consistently) referred to as "Lectret" instead of the normal "electret" . The 'Reference" chapter also uses both the words "meter" and "metre" for the length measurement (only the latter spelling is correct!), whilst the use of K or Killo for the 'times one thousand' multiplier could confuse the newcomer (k or kilo is the accepted form). The definition of "source" - does not include the FET use of the word, although such devices are shown elsewhere. There is a useful set of illustrations showing various component types, as symbol, line drawing and photograph, but could, perhaps, help the newcomer with a few more labels. The diode diagram, for example, could have a note as to which electrode is indicated by the 'line' (although in fairness, this particular point is mentioned in the 'rule of thumb' section); similarly the symbols for thyristor and transistor could have the electrodes labelled; whilst a + symbol to show which part of the electrolytic capacitor symbol corresponds to the + shown on the line drawing would help. These are minor criticisms, however, and do not detract from the usefulness of the book as a whole.

One chapter comprises "Abbreviations and acronyms - some you know some forgotten and others you never knew" It is a *very* comprehensive list - many the amateur electronics enthusiast may never find other than in this book!!

This is a useful book, which can be recommended to anyone wanting to try electronics as a hobby - and may teach or remind many 'old hands' of a thing or two as well. To those who have entered amateur television from an 'operating' or 'production' interest, rather than from an 'electronics design and build' one, it will open up a whole range of new possibilities!

The author has subsequently advised that the "Readme" file is also a print-out that comes with the CD - the software used by your reviewer is not the usual Microsoft product !!

"Lets do it" costs £10 plus £1.50 postage from Eric Edwards, 11, Old Village Road, Barry, CF62 6RA, UK. Email: eric@eddy11.fsnet.co.uk - ED

For Sale

Panasonic WJ-AVE55 vision mixer. As new, no mods, handbook included. **£250**. (See CQ-TV 182 for my comments). ***Contact Tony Jaques on 061 865 9398, email: Tony@ajaques.free-online.co.uk***

JVC 707 S-VHS-C camcorder – ALL functions manual or automatic. Time lapse plus many other features.

Complete with batteries, charger and a titler. Can be used as a studio camera – all excellent and boxed.

£275 ono.

Also: An identical one that has a fault (won't always load a cassette) – but repairable or very suitable for a studio camera. Apart from described fault it's physically in excellent condition. £100

ACT Video Image Processor Unit. Has, brightness, contrast, saturation, detail, fade and split controls –

works well and in excellent condition. Complete with P/S. £20 ono.

Newnes Service Manuals – 1967-68, 1968-69, 1969-70, 1970-71, 1971-72, 1972-73 (x2), 1973-74.

£3 each + P&P. or the lot for £20 + P&P.

Contact Keith: Kdafriday@aol.com 07712260744 024 76461572 (West Midlands)

FOR SALE:

30 metre coils of Andrews LDF250 Heliax, brand new, includes a pair of N-type male connectors and grounding kit. Current catalogue price is approx. £3.50 per metre, plus £5 each for the connectors. Yours for just £40 plus postage. Alan@beech-ra.demon.co.uk or 02380 251993

Wanted

Spares for Sony Data Projector VPL V500 QM - A single LCD display (1 of 3), so looking for a scrap projector or a source of second hand spares eg. IR remote, handbook etc. ***Contact John Stockley, G8MNY, on 020 8688 3089***

Wanted: CAC-12 Camera mic holder for Sony EVW-300P Camcorder. Also for same camera, Lens remote control, ECM-672 Microphone and rainjacket!!

Also looking for another EVW-300P camcorder. Wanted for Hitachi FPZ31 series cameras, camera cable, View Finder, (ENG type). Wanted Sony VO-5850 U-matic VCR.. Wanted Sony EVO-9700P Video 8 Hi-8 Desktop editor. Contact Ray Hill telephone number 01989 762839

1. New or used 1 inch tapes suitable for a 'C' format VTR; e.g. Ampex VPR2-B, also any 'C' format recordings of vintage TV programmes.

2. Philips VLP700 and VLP830 Laser Disc Players, spares and service manuals or circuit diagrams, photocopies acceptable.

Please email Tony Statham, c/o rona.marks@ntlworld.com or phone on 01707 326127.

Wanted: Information about where I can get a C12-12 PA Transistor as used in the DJ4LB 70 cm TV Transmitter (from VHF Communications Mgazine in the late 70s). Do you have one in your junk box? I need to get back on 70! ***Please contact Dave Crump, G8GKQ on 020 8950 3085 or e-mail thecrumps@bigfoot.com.***

Does anyone have a manual for an IKEGAMI HL55 camera. This is a 3 chip broadcast camera. Here`s hoping! Mark Bloor, Email replies to mascott@currantbun.com or telephone 01425 474152 Evenings or weekends

I am restoring a EMI image orthicon camera channel model 206.

The model 207 is the same it having a zoom lens where the 206 is Turret.

The part that I need to get the camera up and running is a (line scan, eht unit 6.)(9a/d 206494 & 9a/d 206495) in the camera head.

The other parts i need for cosmetics is a viewfinder Hood and the red cue light cover. As far as i know this emi Camera channel is the only surviving model in New Zealand as It was not used by the nzbc (tvnz) in large numbers. It may have been a sample. This is why i hope one of your readers

Might be able to help me obtain these parts, as i understand these cameras and boards where used in large numbers in Your country.

Ashly Giles zl1ag,

ashlygiles@hotmail.com

Miscellaneous items

Digital-ATV at HAM RADIO 2001

The digital Amateur Television test provided by a group around DJ8DW from Wuppertal university at the HAM RADIO 2001 fair in Friedrichshafen, Germany, was built up over a 9 km distance from the "Elektronikschule Tettnang" building to hall 6. On 434 MHz plus/minus 1 MHz 80 watt power output were used in GMSK modulation and a fourfold 11-el. yagi group at each location.

On Friday morning the video and sound transmission in MPEG2 quality was successful at times, but strong inband short-time carriers interrupted it more and more. So an originally planned long path test over 26 km from Austria was cancelled.

Several TV monitors at the combined stand of DARC public relations and AGAF e.V. were showing all three days long, how well an undisturbed 3 generation digital-ATV link can work. On 1255MHz plus/minus 3 MHz 10mWatt in QPSK modulation with FEC (forward error correction) provided excellent video and sound quality, received by a cheap digital satellite TV settop-box in MPEG2. After intentionally interrupting the path an error message from the settop-box menu appeared on a black TV screen, but after realignment the live picture was back with some delay.

Uwe Kraus, DJ8DW, will soon present a detailed description of 3. generation DATV which is designed to enable experienced TV amateurs to use the new single chip MPEG2 coders and decoders from Fujitsu and a universal modulator for GMSK, QPSK or 8VSB. web info: www.darc.de/g/datv/datvindex.html

Klaus, DL4KCK, AGAF e.V

More Info

I read Dicky Howett's article on telecine machines in CQ-TV 195 with interest. If any one wants more info on the rather severe difficulties get a copy of: - "The Technical Problems of Television Film Recording" by A. B. Palmer, A.M.I.E.R.E., published in "British Kinematography" September 1964.

Brian Summers

GB3TM Amateur Television Repeater has Internet Gateway.

Following the commissioning of GB3TM, Amateur Television Repeater by the Arfon Repeater Group some seven years ago, interest in A.T.V in the coverage area of GB3TM has greatly increased, which is very encouraging for the hobby in the North Wales area.

Derek GW0BCR, one of the GB3TM users has, for some time, been experimenting with video links on the Internet.

Derek thought that a natural progression for experimentation would be to link the video and audio from the Internet, through his station onto GB3TM.

In April, Derek approached the Arfon Repeater Group, presented his proposal, which the group and David GW8PBX, GB3TM's repeater keeper and committee member, fully supported.

The result of this was a proposal to the Repeater Management Committee of the RSGB, with an application for a Notice of Variation completed in April 2001.

We are pleased to announce that on Saturday 7th July 2001 Derek GW0BCR received the Notice of Variation to his licence, as GB3TM-1. This is believed to be the first NOV to be issued for a combined video and audio gateway for a repeater in the UK.

Experimentation will now continue with the linking of GB3TM through Derek's gateway GB3TM-1.

Initially, Derek will be in full control of the gateway and will be responsible for the video and audio transmissions from his station. This is, in essence, similar to the usual video source generated by his station, but switched to an Internet gateway rather than from the local camera at his station.

Users of GB3TM will then be able to have a QSO with stations on the Internet, thereby expanding the possibilities to worldwide contacts in video and audio.

Derek has proposed a working window of between 17.00 and 18.00 local time, each day, for the gateway operation, with a further period, maybe once a month, on GB3TM's activity night on Tuesday each week, so that he can learn and carry out further experimentation with the system.

Derek is using Iphone software, and will be on the Ham Radio and RptrLink, chat rooms, using the call sign GB3TM-1.

If you have video and audio access to the above, then a contact through GB3TM on the Isle of Anglesey in North Wales is a possibility.

For further information of the Arfon Repeater Group, log on to their web site a www.gb3arg.org.uk.

Submitted by Brian V. Davies GW4KAZ, Chairman of The Arfon Repeater Group.

From: "Les Rayburn" <les@highnoonfilm.com>

Sent: Friday, 24 August, 2001 12:02 AM

Subject: TV on longwave!

Pleased to report that yesterday afternoon I was able to transmit narrow band TV signals on 174khz. Using an old Palomar Engineering transmitter in AM mode, and the software designed by Con, ZL2AFP, I was able to successfully transmit and receive these signals out to a range of about 1/2 mile.

Initially, I had used the Palomar Transmitter and fed it into my existing lowfer antenna system...but has both

Lyle and Stewart had predicted, it's high "Q" > design proved to be unsuitable for AM transmission. I then jury rigged an older coil that I had (Q=200) and tuned the system to resonance with it. Using this less efficient tuning arrangement, I was able to successfully receive my transmissions inside the shack at a distance of about 40 feet.

After making some adjustments to the software...I used my Icom 746 has a mobile receiver in the car. This system uses a mag mounted version of the LF Engineering active whip has an antenna. I took along a tape recorder, has my laptop was at work.

Using this system, I drove around the neighborhood and recorded the narrowband television signal from the shack. I had focused a small b&w camera on a test card reading "XM" for the test.

I took careful notes of my location, and drove a little further away every 10 minutes or so. After returning to the shack and playing the tape back into the soundcard, I discovered that copy was maintained out to about 1/2 mile.

The range was not very impressive but has expected. LF proves to be a lousy place for a high bandwidth mode like AM. In addition, the summer time static levels and low power (1 Watt) will really limit the range.

However, it did prove that narrowband television on long wave is possible and it was a heck of a lot of fun!

I plan to test this software on 2 meters when I return from my business trip, expecting much better results there. Look for an article complete with photos and the newest software from ZL2AFP on the Noise Floor site soon. Hopefully others will experiment with this mode on both LF, HF, and VHF.

I think on the amateur bands this mode could provide a very useful "DX mode" for ATV, though some would debate wether it was ATV at all. It does provide a nice 3-4fps live video signal in a very limited bandwidth, and has already been proven on 20 Meters in limited tests.

In my book, that means its not slow scan TV, not digital TV, but still TV. I encourage hams to experiment with narrowband television.

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