CQ-TV

Issue 239 December 2012

2012 BGM
Balloon flight
DATV Reception
Project Vivat!
ATV QSO Party
Vectorscope NTSC to PAL

ISSN 1466-6790

Caption Contest

Here are the entries for last months caption contest (photo below):

"Now where did that Tele cart go?..... OOPS!"

"UHHH Darn...forget to lock the wheels again!"

James - W8ISS

"Psst, before they notice, the box of cream cakes are by the blue chair".

Peter - G8DKC

"I swear that new vision mixer was there a moment ago... oh... WATCH OUT BELOOOOOWWWW!"

John, High Wycombe

...and the winner is John from High Wycombe, Congratulations, a caption generator will be on its way shortly.

This months photo is below, comments please to: editor@batc.org.uk

CQ-TV 239

Contents

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You may also telephone **01400 414243** but we cannot guarantee availability at any particular time. If you call you will be presented with a menu, so you can be connected to the correct person. If the person is unavailable you may leave them voicemail.

You can also send any committee member a text message on the above number, just prefix your message with their two letter keyword followed by a space, followed by your message.

Finally, you can always write a letter.

Deadlines and Copy Submission

Our aim is to produce four issues of CQ-TV each year.

We no longer have specific deadlines for anything that you want including in the magazine, as this put some people off submitting. Please send your contributions in just as soon as you have completed them and are happy with the content. Please send the text of your article in a plain text file, if you have pictures that you want including in your article, please send them, in the highest possible quality, as separate files. Pictures already embedded in a page are difficult to extract at high quality but if you want to demonstrate your preferred layout, a sample of your finished work with pictures in place is welcomed, ideally as a PDF or Open Office document.

You may email your content, providing the size, per email is under 5MB. If you have a larger contribution to send, please contact the editor who can provide alternative facilities for sending copy, including FTP and other upload services.

Please note the implications of submitting an article which are detailed on the contents page.

Editors Preamble

Your new committee has been hard at work on your behalf, doing our best to keep the BATC at the forefront of todays ATV world. Recently we have been discussing the best way forward to manage the BATC bearing in mind the many faceted aspects of ATV the club is now involved with.

To this end we have decided that the best way forward would be to adopt the same framework that many other similar organisations have, for example the RSGB, namely to make the move from a club to a company, limited by guarantee.

The committee have voted on this issue and the majority decision was to make this move, in fact there were no votes against the move, just two abstentions.

In order to complete the process and move the club to a limited by guarantee company, we need to hold an EGM and receive a majority vote for the proposal. We realise that trying to organise a physical meeting to achieve this is not going to happen, so instead we have made available a voting mechanism for all members; you can vote on the proposal either online, by logging into https://www.batc.org.uk or by post using the enclosed voting slip.

In order to provide some background information, and assist you in an informed decision, we have been operating a limited by guarantee company for some years now anyway (BATC Limited), which has been used, very successfully, to operate and manage the streamer service. The reasons we did this, instead of via the club, was partly to register the company for VAT and reclaim it on the purchase of the server, and also to ease interactions with other companies (we have some commercial sponsorship on the streamer website).

Moving forward, we are already involved in discussions regarding the ATV RF bands with the spectrum committee and being able to deal on a more equal footing with larger/commercial organisations such as the CAA would be made easier, as they are more comfortable dealing with a peer, aka another company, rather than a “club”.

Of course it will also ease our administrative burden, as we are currently running two separate entities and amalgamating them means half the paperwork !

If the proposal is carried, then as current members of the BATC (club) you would automatically become members of BATC Limited (that’s “members” not “shareholders” - an important distinction). If anyone would like more general information about what a company limited by guarantee is and why it is advantageous for an organisation such as ourselves to adopt this framework, your committee is happy to respond to any enquiries. Please write, telephone or email:
committee@batc.org.uk

How you vote on this proposal is your free choice, but your committee is convinced that this is the best way forward for the BATC and would urge you to support the proposal.

In the meantime, Merry Christmas and I hope you enjoy CQ-TV 239.
73’s Chris - G1FEF

Note: This DVD is supplied on +R media only.

We have produced a DVD containing electronic versions of CQ-TV and the CQ-TV articles index. Also included are electronic versions of our three most recent handbooks, ‘Slow Scan Television Explained‘, ‘Amateur Television Handbook‘ and ‘An Introduction to Amateur Television‘ as well as the Lighting eBook.

The archive contains all past issues of CQ-TV and is updated 4 times a year, to include the current issue of CQ-TV.

The DVD is playable in a PC and the data files will ‘auto-run‘ when the DVD is inserted.

The video section was prepared by Brian Kelly and contains videos from Bletchley Park 1999, one from Shuttleworth 2002 and one from 2004. The DVD is available to members for just £5 inc. postage to the UK and EEC. Note that these videos have been made with the H.264 codec and so you will need suitable software to view them.

http://www.batc.org.uk/club_stuff/pubs.html

2012 Convention and Biennial General Meeting

by Trevor Brown G8CJS

Well it is an even year so we just had to hold a BGM. This time it was in Basingstoke, only a 4 hour drive each way and an overnight in a hotel for me. I must be more careful about letting these people with dodgy southern accents organise events, but it was an exceptional event. My thanks go to Noel for all the work. We had a full programme of supporting lectures and apart from a couple of computer crashes managed to get them all recorded and stowed away in the Streamer Archive almost as soon as they had finished being delivered on the floor of the lecture theatre.

Do I know more about DATV than I did before? - yes, but it was not all about DATV. Dave Mann delivered a very interesting aerial lecture and highlighted some designs that clearly would not work, but would I have thought it through and realised the short comings of some of the designs? The answer is no, so I for one left better informed and much the wiser.

The hotel was excellent, not just for the meal room and location (less than a minutes' drive from the venue), but because it had a bar and I love to chat to members and find out what they want from BATC, what are we doing right, what needs work and where do we go from here. One topic in the bar was Cyber membership and where did it come from.

It is more years than I care to remember when I was editing CQ-TV, which involved typing up copy, drawing diagrams and gluing it together in a twice size paper master, for the printers. It was never a committee post I wanted, but problems arose and I could not persuade anyone else to take on the task. Did I learn and was this education more than the old army adage of "never volunteer for anything"? well yes. Throughout that time in my life I was supported by Ian Pawson on this project, both on the phone and via my computer at 1200 baud. This continued until Ian worked out how to make an electronic magazine and then finally took on the role of editor. Initially the copy was laser printed by Ian onto special A4 paper and photographed in 16 page blocks by the local printer in Rugby. When we moved printers to Clipper, print things were a little higher tech and Ian managed to set up a system where we sent Clipper an electronic file and they made CQ-TV directly from that. Once CQ-TV was sent as an electronic file direct to the printers via the internet, then the next step was obvious, why not electronic direct to the members.

This was a brave step but, CQ-TV was and still is expensive to print, and even more expensive to post abroad, often to countries where the exchange rate makes it an expensive investment for members. What did and has always surprised me was resistance from committee members. Now with a more than 60% of the club opting for electronic delivery, I am convinced it was a good move and I was told so several times by members in the bar. The take up has been member's choice and as committee members that is what we should be doing, coming up with innovation, trying it on the members and collecting the feedback. It's a pro-active approach to solving problems within the club.

Other bar feedback was the streamer (which goes from strength to strength) and the On-Line Shop. The latter did worry me when I started it, as it was an investment in an old idea that stopped some time back. I had to do it differently if I was not to get the same result. The changes were to link it to the club PayPal account, and not to restrict it to members only, but to chase non members with an invite to join the club; so far this has worked in all but 5 cases. So we have a shop that provides income to the club and attracts new members.

The first product was a new badge and investment in some 24cms FM receiver kits imported from New Zealand. The badges were not a problem, but the receivers were an old design and although most of the chips were available the front end modules were not, so I put together enough parts just to cover the front end modules. Grant the designer was a big help, but New Zealand meant we got stuck for import duty, on front ends and PCB's and had to sell at cost plus duty. I think we moved about 20 kits followed by the PIC colour Bar generator and the Electronic Test card generator. The test card generator was again an old design and we could only find sufficient parts for around 20 kits.

Then DigiLite hit the shop and we must have moved around 150 bare bones kits. My only regret is that we did not sell complete kits, but I do my best and every day is a step along the learning curve of running the On-Line Shop. We have now added a customised wall clock that comes printed with your own call sign, QTH or anything else you can think of! I love mine, but the postage did hurt the marketing. Now the shop is into profit I have decided to reduce them to £4.99 (hint, get your orders in, we will not be restocking this item), it's about to become a collector's item!

So after the bar and the small groups came Sunday morning and I have to face you all, do I worry? - that is a definite yes. Thank you all for your help, it is a daunting task and if I got any flack it was not from the members on the floor. Noel did ask me how long I needed for this event and I opted for an hour. It is really disconcerting when you run an agenda against a computer screen counting down and then counting up in red to say you have overrun. I have visions of somebody else who has worked hard putting a lecture together and not getting to deliver it, because of me, but then it is important to hear from members and find out if they are happy and where they would like to see improvements in the club, so we can take on board their feedback.

We got through the reports, we adopted a new constitution for running the club which reflects the age we live in, with

Brian Jordan G4EWJ

Dave Mann accepts the award on behalf of Rob, M0DTS

Malcolm Johnson, G0UHY

Colin G4KLB accepts the award on behalf of David G8AJN

The presentation of the Grant Dixon Awards by Peter Blakeborough

less pseudo legalese and less restraints on the committee so we can move at a speed that reflects the world we now live in. When the old constitution was written I still remember one committee member telling me a floppy disc in the post works fine and at the time it probably did, might even have been a 5¼ disc, though I am sure it was not an 8" disc. I hope I talked you through particularly the On-Line Shop as this is the first BGM since it started.

The last part of the BGM is always my favourite and that is the Grant Dixon award. For those of you that never met Grant, I can only describe him as the grandfather of BATC. I read his articles and he brought ATV into my life, long before I ever got to meet him. I have had the pleasure of listening to him at BATC events, of staying at his home while we burnt the midnight oil on R&D for his Televisor. I have been fortunate to accompany him to Holland on several occasions when we ran a BATC stand at IBC, and now in his memory we have this yearly award - and in conjunction with the CQ-TV editor I get to select the recipient. This year it was the DigiLite team which was in itself difficult; as so many people worked on the project, which took the F4DAY idea to a new level. I am sorry if you helped on this project and did not get recognition. The four people who did receive the Grant Dixon plaque did so on behalf of a team with many unsung heroes.

Brian Jordan G4EWJ, Malcolm Johnson, G0UHY, Robert Swinbank M0DTS, and David Kenward G8AJN are the official recipients of the 2012 Grant Dixon award.

Dave Mann collected the award on behalf of Robert Swinbank M0DTS.

The new constitution can be seen at http://www.batc.org.uk/club_stuff/const.html.

My thanks to Graham Hankins for the photographs and all the people who attended, Noel for the event and the members of BATC that helped me stumble through the meeting.

Please make sure you read the "Editors Preamble" this issue. There is an important decision every member should be involved in.

Project Vivat! Update 3

by Paul Marshall

And so to paint . . .

It's been a while since the last report on this project, but don't be fooled – it's been making good steady progress and the results are plain to see. What's not obvious is the huge amount of work put in that's not seen – the underneath of the truck, the front and back sub-structures and the planning towards the technical equipment installation.

Just before Christmas 2011 on a very cold day the vehicle was driven across to a workshop on the other side of the River Trent from here and a very mucky process was begun. Thanks to team member Dave Hill, the shot blasting of the under-side could begin. The preparation for the road was done by myself and team member Richard Harris outside on my drive in the freezing cold. Once the *obvious* problems such as vehicle electrics and bits of metal hanging off here and there had been sorted, the truck was ready and driver/mechanic Sam Booth was behind the wheel and on the road.

Thanks to some powerful shot blasting equipment, years of corrosion and road dirt was soon history and replaced by a lovely protective black 'goo' which should last a very long time. Upon the vehicle's return a few weeks later the special shot blasting sand could be found everywhere and in everything. Fortunately it was known that this would happen and everything that was removable had been removed for safe keeping. Stuck in the depths of winter, the vehicle was returned to the storage barn to await the better weather.

As we in Britain all know, the 'better weather' didn't really arrive this year and enthusiasm amongst the team for doing the next big task – preparation for painting – was low. A certain amount of resolve appeared as the Queen's Diamond Jubilee approached, but we really didn't have much time before the event. However, it proved to be a pretty good motivator and the available members of the team comprised of myself, Dave Hill, Jill Marshall, Paul Hundy and Dicky and Margaret Howett (and anyone else who showed up looking bored!) were soon in action. The front and back were known to have severe rot problems so the first bit to be tackled was an 'easy'bit - the passenger side, rubbing down and making good as required. Even this 'easy' part proved to be immensely time consuming, boring and very cold given the weather at the time. Even this basic task proved to be much harder than first thought due to the over-spray from the under-side painting. The paint proved to be as tough as we had been told it was – it really was hard going.

The finished paint job

At some point the problematic front and back of the vehicle had to be addressed and armed with cutting gear, large hammers and a gung-ho attitude both areas succumbed to the onslaught of the gang. The back wasn't too bad after all as it just needed some new sheet metal pieces making and fitting along with copious amounts of the dreaded filler here and there. The front was a different story. Here was a real mess. The inner structure of the front (made of steel) had given up to the tin worm and was coming apart all over the place. The junction of the dash area with the windscreen was rusted through and just to make matters worse, old (repaired) accident damage on the front offside wing was in a terrible state. This was something that we needed driver/mechanic Sam Booth's help and advice with. After a lot of investigation, thought and weighing of the options it was decided that the old 'wings' would be retained, the internal steel structure to be patched and a whole new aluminium front skin to be fabricated. It sounds simple in that sentence but the reality was many evenings and weekends of work.

Finally, we were on the last leg with the driver's side rubbing down and patching accordingly with a good going over everything else in sight. The dash board had to put back in and team member Rob Harvey did a great job sorting out the electrics before re-assembly. At the last minute – after the vehicle had been booked in to the spray shop – it was *remembered* that the wooden roof slats were caked with acorns, leaves and twigs after years of being parked up outside under trees. Between alternating compressed air and long rakes most of it came out leaving a neat rectangle of 'natural' rubbish lying round the truck's perimeter. What a messy job that was!

Sam at work on the front

The next day Sam fired up the truck and took her back across the River Trent to another vehicle specialist for a twin-pack paint job in bronze green with a grey stripe. Even at this stage there were problems as we weren't sure about the historical accuracy of the exact shade of bronze green. The reality is that nobody is going to argue if we don't say, so we will draw a veil over what was finally chosen! Upon arrival at the paint shop we were greeted with the news that it was going to cost more than the estimate because despite all of our efforts the prep wasn't really good enough. That was a bit of a blow after all the work outside in the freezing cold. Still, it wasn't too much extra in the end.

About a week later the 'phone rang to say that the truck was finished. Sam and I went to have a look and it was indeed a lovely sight after all that hard work.

Cleaning the trim

Now the problem was how to return the truck to home as Sam wasn't available to drive it. The answer came in the form of a beaver tail truck belonging to the spray company which they could deliver it back on at what seemed to me a very reasonable fee. On a bright, sunny Saturday morning the beaver tail truck pulled up outside my house with the truck on the back – wow, what a sight!

Washing down the interior

We now have a completely viable 'shell' and the more interesting part of the job can begin in earnest. The interior has also had a lot of cleaning and 'making good' carried out and the special Formica needed for the inside has been sourced and purchased. Richard Harris has fitted the first piece of equipment – the AVR – and Dave Hill has sorted out the internal lighting which is completely original having survived intact. We now have a vision mixer unit which we are awaiting final clearance on from the donor and we have the missing Marconi Line Clamp Amplifier donated to 'the cause' by John Trenouth. The target date has slipped, but we will be ready for the anniversary of the Coronation broadcast in June 2013. Dicky Howett has been logging progress on video and more photos and videos can be seen on the project website at:

www.projectvivat.co.uk

There's a long way to go, but at least from here on in it's in the warm and dry!

Make a note of the new batc number:

01400 41 42 43

Circuit Notebook No 111

by John Lawrence GW3JGA

Sat-Rx Valid Signal Detector

GB3TM Up-grade

Repeater GB3TM is being upgraded by the installation of a 70cms 437MHz DATV input.

For receiving DATV, a crossed dipole aerial has been installed. This will feed into a pre-amp and up-converter (SUP-2400)[1] and then to a low cost satellite receiver, such as the Comag SL30/12 or SL65/12.

Unfortunately, in the absence of an input signal, the receiver outputs an 'On Screen Display' (OSD) a symbol and text stating 'no signal'. As a result, there is always a video output, so the usual video signal detector [2] does not work.

Fig. 1 Valid Signal Detector

Valid Signal Detection

This problem was discussed by Ian Waters G3KKD in CQ-TV 224, page 23, [3] where he produced a circuit to overcome this difficulty. As the OSD only occupies about 2.5% of the picture area it is possible to set a threshold level and rectify the video above this level. This produces a relatively high voltage for a normal picture compared to a low voltage for the OSD 'no signal' caption. In this way a valid input signal can be detected and a signal passed to the repeater logic.

In Circuit Notebook No.95 [4], I described a circuit for measuring irregular shapes using a video camera and processing the resultant signal by clipping it at different levels and gating out the un-required items. This seemed ideal for processing the 'no signal' OSD. From this circuit, the following version was developed.

Sat RX Valid Signal Detector

The Valid Signal Detector is shown in Figs. 1, 2 and 3. It s built on a prototyping board to allow for modifications and is housed in a die-cast box with its mains power supply.
The circuit is shown in Fig.4 and the waveforms in Fig.5.

Fig. 2 Rear View

Circuit Description

The video input from the receiver is looped through and the signal buffered by the emitter follower TR6. Here the video signal divides, one route going via R1, C2 to the Sync Separator, IC1, (LM1881). (The other route is via C1 to the black level clamp).

IC1 generates a negative going 'burst pulse' at pin5 coincident with the back porch. This pulse feeds both the black level clamp circuit TR1 and TR2 and the Monostable IC2a (4538).

The normal line waveform showing the 'no signal' symbol is shown in Fig.5. (A)

The burst pulse triggers the monostable IC2a to produce a line delay shown in Fig.5. (B). The delayed output triggers

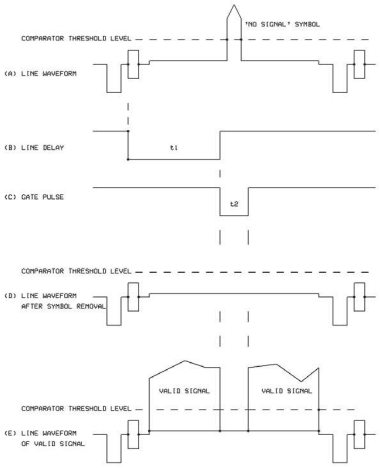


Fig. 5 Waveforms

monostable IC2b to produce a gate pulse, as shown in Fig.5. (C). The monostable circuits can be set so that the gate pulse 'sits over' the OSD.

Comparator

Following the signal path through C1, the signal arrives at the 'black level clamp' which clamps the signal to 0V during the burst pulse. This ensures that video entering the comparator TR3 and TR4 has a known stable reference point. The base of TR4 is set to approximately +200mV and any video above this level appears at the collector of TR4. This is passed to pin1 of the NAND gate IC3a (4011). Providing that pin2 is high the output will appear at pin3. Pin2 is connected to the output from IC2b and the negative going 'gate pulse' prevents any output during this period. This effectively removes the OSD signal. The output from IC3a with the OSD 'gated out' is shown in Fig.5.(D) and the output resulting from a valid video signal is shown in Fig.5.(E)

The output from IC3a is rectified by D1 and the voltage stored in C9 with R11 to provide a discharge path. This voltage is inverted by IC3b to provide a positive signal from TR5 to indicate when a valid input video signal is present.

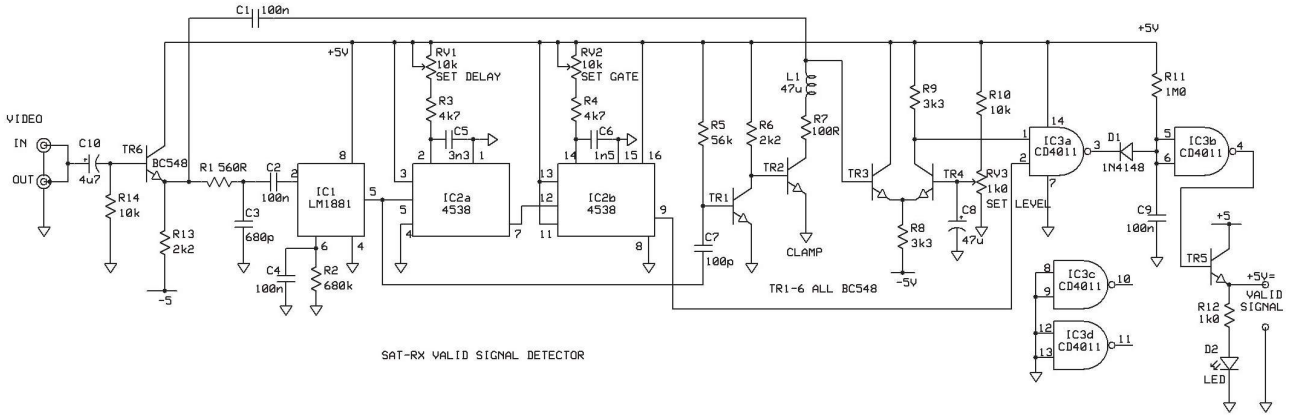
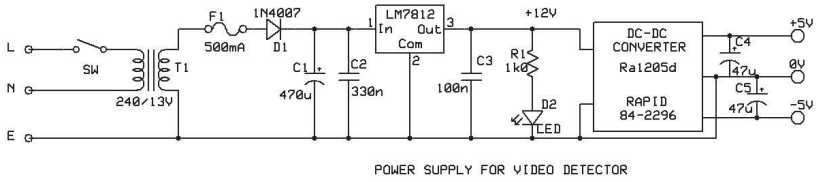


Fig. 4 Circuit Diagram

Power Supply

The mains power supply is conventional and is shown in Fig.6.



Last Minute Modifications

The repeater receiver has been changed to a mains powered 'Silver Crest' type. This looks very similar to the Comag versions, but has a 'No Signal' OSD in the form of a horizontal white bar with text.

This horizontal OSD can be removed by a simple modification to the circuit in Fig.4.. The input to IC2a, pin5 is now taken from pin3 of IC1, (the Vertical Sync Output), instead of pin5. IC2a is now triggered from the vertical sync. Capacitor C5 is changed to 2.2uF to provide a suitable field delay and C6 is changed to 1.0uF to provide a field gate pulse. The timing of each monostable is adjusted so that the gate pulse 'sits over' and removes the horizontal OSD.

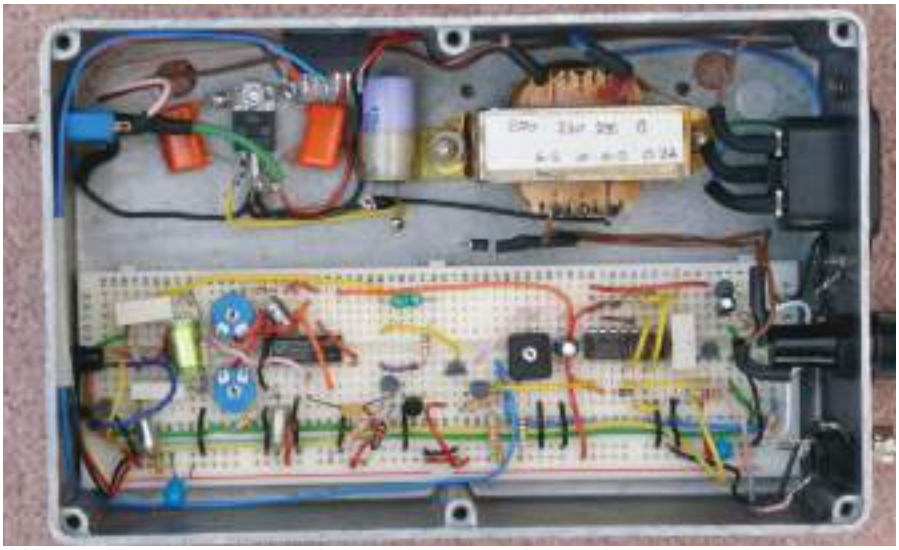


Fig. 3 Internal view

References

[1] Zinwell DIRECTTV SUP-2400 B Band up-converter module BBC (source, ebay.com). Also see www. M0DTS.co.uk 436 up-converter

[2] 'Valid Video Detector' Circuit Notebook No.83, CQ-TV 204, Nov. 03, page 39.

[3] 'A DATV Signal Detector' by Ian Waters G3KKD, CQ-TV 224, Nov.2008, page 23.

[4] 'Area Measurement of Irregular Shapes using CCTV', Circuit Notebook No.95, CQ-TV 220, Nov. 07, page 7.

!!! Your Club Needs You !!!

You don't have to send in a full blown article for publication, a photo and a paragraph on any ATV related topic is most welcome !

editor@batc.org.uk

Members News

The BATC now has over 800 members most of whom have a technical interest in using television as part of their hobby. Over 80% of members have an amateur radio callsign and this implies that they are interested in television transmission; this is unlike the early days of the BATC when most members were interested in building cameras and other studio equipment and few were interested in transmission. Over 20% of our members live outside the U.K. and this enables us to keep in touch with television developments around the world.

So with all this potential activity we hope to make this a regular column of Amateur Television news and events from BATC members. Please email all your news to me:

secretary@batc.org.uk

in time for each edition of CQTV.

BATC Convention

This was held at one of the new very smart Schools / Academies in Basingstoke in October 2012. With about 60 members in attendance over two days there was an interesting lecture programme and a wide range of products on display. The lectures were recorded and can be viewed in the archive section of our streaming server:

www.batc.tv

It is hoped to try to make this an annual event. Next year it may be held in the North of England where we hope to attract a larger number of visitors. Tables will be available to sell or demonstrate ATV products and we welcome contributors to the lecture programme. Further details will be announced on our web site.

Studio Equipment

There is no news from members building their own studio equipment. Home construction is still a lively activity due to the developments of digital transmission equipment, see below, but the days when you could build a television camera on the kitchen table are unfortunately over. There is room for home construction in new areas of activity. For example, Mike Cox has done much work on developing and demonstrating 3D systems. If you are involved in the design or construction of video equipment then please send in your news.

Video Streaming

BATC's streaming facility continues to provide a fascinating insight into what's going on in ATV around the world. Video from Australia, Argentina and the USA is usually available. For those not interested in R.F. transmission it provides a simple way of showing the world your video via the members streams. Also it enables TV repeaters that are too far away to be received over the air to be watched. Many repeaters are streamed 24 hrs a day but some are restricted due to bandwidth charges.

The cheapest method of sending video down the internet seems to be via the cable companies like Virgin Media who exclusively use fibre optic cables. We have a very powerful server run by Chris and although it could not cope with the millions of viewers that YouTube gets it can certainly cope with several hundred. Its busiest times are when we are showing Live Events, see the appropriate button on the main page. Recent developments include the ability to show widescreen pictures in full screen mode and further changes are planned.

TV Repeaters

Malta. Phil, G8XTW, reports that while on holiday he found an ATV repeater on Malta: 1250MHz input, 10GHz o/p, analogue only, composite syncs sets up repeat mode. He hopes to take some equipment to Malta on his next visit.

Sydney, Australia. Garry VK2CRJ, he is working on DVB-S and DVB-T transmission (They have more bandwidth available in Australia!). His first attempt is to get signals into the Lawson repeater VK2JPL. So far he concludes that DVB-T works fine over a path where the analogue picture is about P3.5. To see more activity in Australia look at our streaming web site, members and repeater streams. Most activity is before 12 noon GMT.

New Zealand. Grant, ZL1WTT reports that the only frequencies available to them for ATV repeaters are from 1240 to 1300 MHz. They used to have an allocation in the UHF TV band, 614 to 622 MHz but this has now been replaced with a single DVB-T channel of 502 to 510 MHz. This is capable of being received by domestic terrestrial television sets, very useful. I am not sure why New Zealand does not have a a 70cm band allocation, we find the DVB-S running at 2MS/sec is very effective on 437 MHz often with ranges of several hundred miles.

Cambridge. Ian, G3KKD has been transmitting ATV since the 1960's, and operates through his local repeater, GB3PV (of Pye fame). He reports that activity has declined from 15 stations to now only 4 fixed stations and 2 portable who come on sometimes on summer evenings. This repeater continues to operate well in analogue and digital modes. Brian G6HFS now looks after the repeater and also streams the repeater via batc.tv from his house. Apart from Ian, other local stations are Peter G8JAN in Downham Market, Brian G6HFS near Cambridge and Gerald G8AKL at Bluntisham. Activity night is Thursday at 19.00 clock time.

Ian also transmits digital TV on the 70cm band. He can run 10kW erp on 437Mhz, 2 MS/s 7/8 FEC but has had just one contact with Arthur G4CPE. Ian is looking for more contacts on 70cm. He is also surprised that with all the Digilite kits now sold that there are not more stations on the band.

So what can we do to publicise ATV in the Cambridge area for Ian; please mention ATV at your local radio clubs and email any ideas to me: secretary@batc.org.uk

Bristol. For many years Viv and Ivor have run two repeaters in Bristol, GB3ZZ, 23cm and GB3XG, 10GHz. Unfortunately after 20 years of operation, the site for GB3XG at Dundry has become unavailable and this repeater has closed down. This is a common problem these days often due to the proliferation of cell-phone sites and the large revenues that they can generate. If you know of any potentially suitable repeater sites anywhere in the UK please let me know.

Leicester. Peter, G7AVU has recently taken over the Leicester repeater, GB3GV. He will be upgrading the antennas, provide additional inputs from other bands, and generally re-furbish the site. We look forward a boost in Leicester's ATV activity.

London. Roger G8IUC, Norman 2E0MNP and others are upgrading the North London repeater GB3EN. More power and new antennas are promised in the near future.

Lancashire. John G3RFL is building the new 10GHz repeater GB3FY, this will be in Fleetwood. See the latest details on his web site: http://www.g3rfl.co.uk

Digital Developments

DATV- Express. Charles, G4GUO, has contributed greatly to this project which he showed at the Convention, since then he has decided to replace the ARDF6750 PLL/modulator with an ARDF6755 and says that the basic DATV-Express board will now operate from 100 MHz to 2.4 GHz when it is released early next year. See the latest details on: http://www.g4guo.blogspot.co.uk/

SR-Sytems, Justin, G8YTZ, has made a great job of mounting their Minimod series into a precision machined case. This takes a standard or digital video input and can provide a DVB-S or DVB-T output from around 50 to 2200 MHz. This is a great solution if you wish to buy a fully assembled and tested unit. See his advertisement in this issue. Justin also gave a lecture on ATV to the Surrey Radio Contact Club.

DigiLite, a low cost digital TV transmission kit, continues to be promoted by the BATC and goes from strength to strength with many BATC members contributing to the design. See the BATC on-line shop and the BATC forum, http://www.batc.org.uk/forum/ for the latest information and developments.

Many members and repeaters are using digital modes these days. It is of course easier to buy a digital receiver than an analogue receiver, often for prices as low as £30 or €40. I can see a day in the near future when analogue transmission will be a thing of the past. Most transmissions are still 4/3 aspect ration, 625 lines. With the low cost of camcorders hopefully we will see the introduction of widescreen transmissions and even HDTV in the near future.

I hope you have found the Members News of interest and I hope that there aren't too many errors. Please keep me informed of any news for inclusion in the next issue. Send this by email to: secretary@batc.org.uk

Just got a call from Steve Congdon, brother of Walton Congdon W1ZPB, saying that Walt passed away on December 3rd 2012.

Walt is giving his body to medical science, but there will be a memorial service at St James in Greenfield, MA on December 29th at 1 pm.

Steve said Walt's xyl, Betty requested that this information be passed along to all of his amateur radio friends.

Walt was a real gentleman and we will all miss him.

Some years ago, I visited him by canoe at his cottage in Northfield.

Sigurd Kimpel, KJ1K

Wanted

23cm 1W (or similar) power amplifier. Must work with the G1MFG module.

Ian G8XZD
longashton@hotmail.com
Bristol area.

Another Media Player

by Mike Cox

About 18 months ago, I wrote a short piece [CQ-TV 234] about the Emprex Digital Media Box BMP-001. This described how I had bought one of these after reading John Lawrence's piece in CQ-TV 233, and subsequently bought a second one to make a 3D still store. By the addition of a VGA relay switcher, this has become the control facility of the 3D system used for lectures etc. However, at the recent BGM, one of the BMP-001 apparently failed in that it would not respond to the remote control. Having no detailed circuit information, I looked around for another BMP-001, but they seem to have disappeared from the market. I then discovered that a defective USB memory stick caused the control problem.

Looking around the market for a replacement showed up some interesting alternative devices, most of which have HDMI outputs, as this seems to be the AV interface of choice. So I bought a Sumvision CYCLONE Micro 3 media player. [from Amazon*, since you ask. And I hope they paid the right amount of tax on the transaction!]

This is showing up a problem with some modern kit, in that the Control Panel is bigger than the unit it controls. [Fig. 1] I am sure you can think of many uses for this player – series of stills driving a repeater, stand signage at a show, or your holiday photos and videos.

One of the advantages of this unit is that it has 8 GB of internal memory, which can be written to using a computer. This is equivalent to several hours of HD video playback, or many .jpg slides. While the computer is transferring files to the CYCLONE, it takes power from the USB connection.

In addition to the HDMI output, there is a 4-pin 3.5 mm socket to take a standard A/V connection to three RCA plugs [Comp. Video, and L/R audio.] There is a snag however in that only one output can be active. So you have to decide whether you need a PAL/NTSC output,

Fig. 1

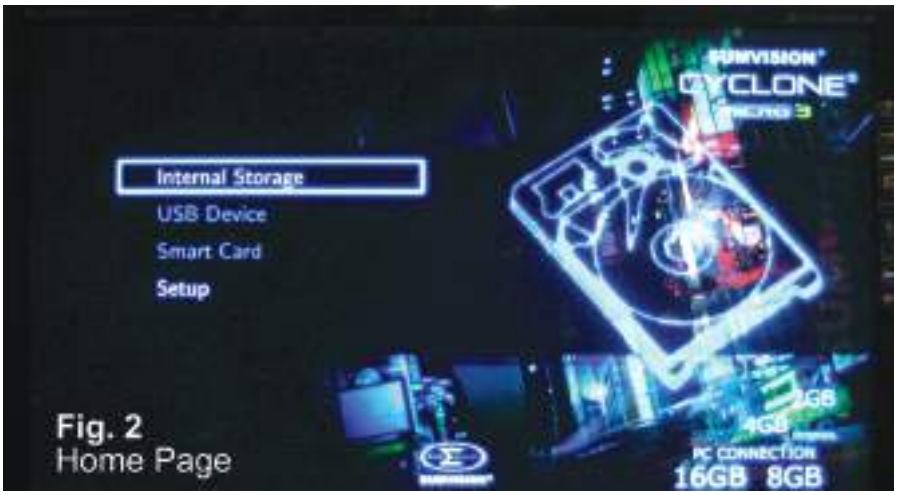


Fig. 2
Home Page

Fig. 3
Storage Menu

Fig. 4
HDMI Output

Fig. 5
System Menu

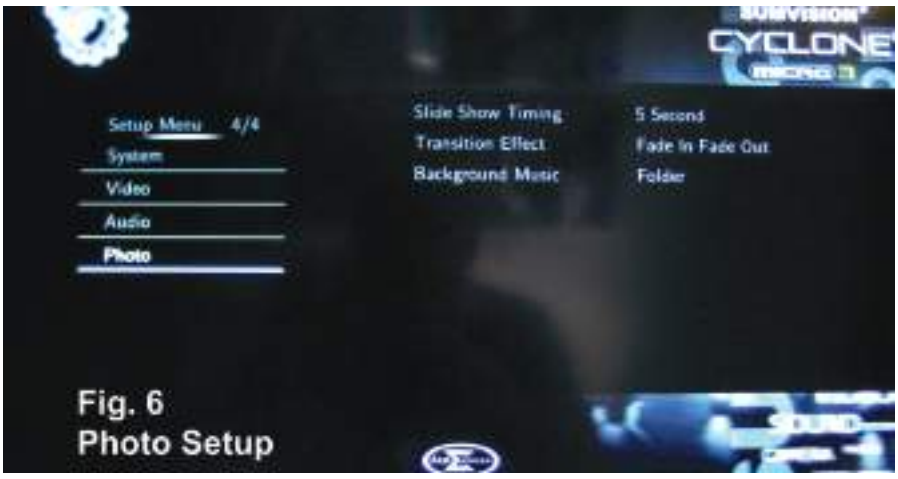


Fig. 6
Photo Setup

Fig. 7
Video Setup

or an HDMI HD output.

To appreciate the facilities of the unit, look at the Home Page [Fig. 2].

At the left, you have 4 choices. Note that as we have neither SD card nor USB device connected, their labels are greyed out. I loaded the BBC Test Card F into the Internal Storage, so if we click OK on that, and after two more clicks, up comes the Test Card. [Fig. 3, Fig. 4]

If you now load an associated .MP3 file into the internal memory, you can have a sound track to the picture(s).

Figs. 5, 6 and 7 show the other menu pages for the unit. The Video page allows resolution to be set from SD up to 1080P at 24, 50 or 60 Hz, so caters for a variety of displays.

Audio is embedded into the HDMI feed, so there is no need for separate audio feeds, although there is a coaxial audio output for SPDIF format.

All the usual formats are supported – MP3, WMA, AAC, APE, OOG for audio, JPG, BMP, PNG for photos, and MKV, AVI, MP4, MPG, FLV, VOB, DAT, RM/RMVB for video. However, it would not replay a file from the Sony HDR-TD10 camera as a 3D display – only as a 2D one. To be investigated.

The manual is obviously not written by someone whose first language is English, but is intelligible.

All in all, a useful bit of kit. It would make a good test fixture for HDMI displays, with say, a Test Card and music loaded into the internal memory. I have no commercial interest in Sumvision, other than as a customer. I feel it worth drawing the Cyclone Micro 3 to your attention as good value for money, but there are other units around.

If I can find a pair of cheap projectors with HDMI input, I might make a higher resolution 3D media player.

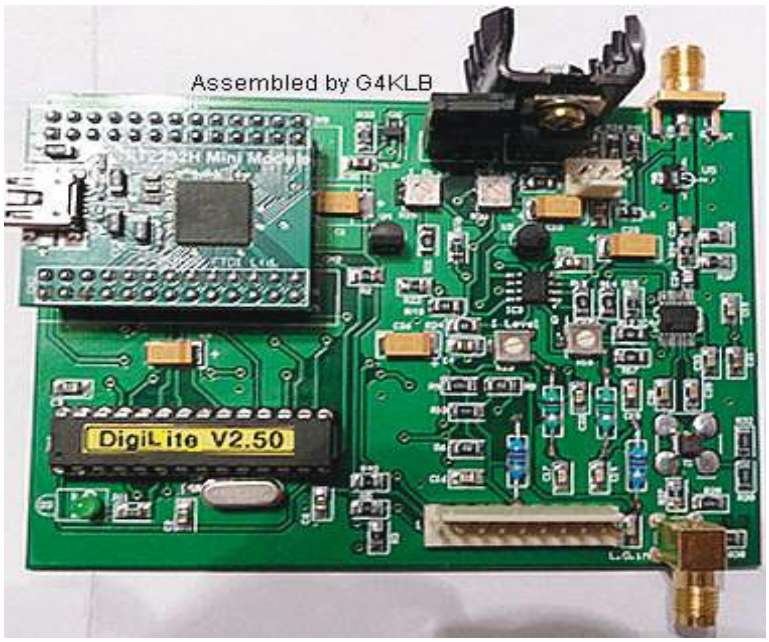
Watch this space!

www.sum-vision.co.uk

www.amazon.co.uk

Using the DigiLite on 70cm

by John O'Loughlin and Gary Grivna K0GX



Above : A UK build of the 70cm DigiLite by G4KLB

When we began to put together a 70cms version of the DigiLite it soon became obvious that there was no accurate setting up procedure so we decided to look into the various options and tried to compare the results to see which was the most accurate and which was the simplest. Here are the items we addressed and results we achieved in building a 70cm version of the DigiLite.

The AD8346 modulator was replaced with an AD8345. Whilst the AD8346 covers 800Mhz to 2.5GHz, to reach lower frequencies the AD8345 should be used. This device covers from 140MHz to 800MHz putting the 436MHz band in the centre of its range.

N.B. Because the AD8345 has a much higher RF output it has an exposed pad on the bottom that improves heat dissipation when it is soldered to the circuit board. Since the DigiLite board was designed originally to be used on 23cms it has no provision for this pad, the junction-to-air thermal impedance is three times higher than when it is soldered to a ground plane. 70cm boards should have good air flow and improper adjustment could increase the RF output causing more heat.

LO input

AD8345 typical input is -2dbm. The Ultram output measured 10dbm, so with the 12db attenuator in the Digilite it's a match!

RF output

AD8345 typical output is about 0dbm. The MAR6 P1db is so close to that one may as well remove it and its input attenuator and run the AD8345 straight out. We replaced the MAR6 with a Sirenza SGA-5589. We increased its input attenuator loss by changing the resistors to 127 ohms shunt, 46 ohms series setting up the SGA-5589 for 15dbm out. The more standard values of 120 and 47 ohms would work well too. Improvement of the SGA-5589 performance could probably be made by someone willing to put in the effort to optimize the surrounding part values. The new output actually measured 14.8 dbm, enough to drive an RA60H4047 to 40 watts.

I-Q drive

The AD8345 drive and bias voltages are much lower. Lowering the signal with the pots only would result in an unbalance of the differential input to the AD8345. We changed resistors in the voltage dividers to the AD8345 inputs, R15, R18, R22, R25 to 422 ohms. The voltage at the AD828 outputs will be the same as with the AD8346 therefore the setup procedure will be the same as the 23cm version.

Miscellaneous

Several RF coupling caps were increased too. We have also used the SGA5589 on the 23cm DigiLite to get higher output and for the preamp before the RA18H1213 power amp. We had a couple failures that we suspect were due to operating without a load on the SGA5589.

Here are the new values of the parts we changed:
R15, R18, R22, R25 = 422 Ohms
R34 = 47 Ohms
R36, R37 = 120 Ohms
C30, C31, C28, C29 = 270pF
IC4 = AD8345
U5 = SGA-5589Z (e.g.RFBay on Ebay)
R41= remove
R26=68 Ohms

Please note: The authors of this article reside in the US and have a wider 70cm band available than we do in the UK. With our band limitations we can only use 1Ms/s.

Refer to the chart to select correct components for the Nyquist filter.

Setup Procedures:

When K0GX and I were researching our first 23 cm DigiLite the concept of setting it up by observing the satellite receiver quality meter sounded a little hit or miss. However we were able to find an L band Spectrum Analyzer at a very good price and incorporated it into our setup method. The AD8346 datasheet specifies that the signals at the I and Q inputs should have an AC swing from 0.7V to1.4V. Examining the

DigiLite modulator circuit shows the signals at the AD828 op amp outputs will be twice that, 1.4V to 3.4V. By using an oscilloscope that signal waveform can be easily achieved by adjusting the BIAS and LEVEL pots.

Further circuit analysis determined the main effect of the BIAS pots is controlling the balance of the differential inputs to the AD8346. That controls the amount of carrier (LO) leaking through the balanced modulators to the RF output. The LO leakage can be eliminated by adjusting the BIAS pots while observing the Spectrum Analyzer.

Setting up with these methods resulted in 99% quality, the highest the receiver displays.

Dave G8AJN assured me in email conversations that it really is possible to get a usable signal using just the satellite receiver 'quality' meter, so I starting wondering how that could be.

We setup the DigiLite on the bench and observed the results of adjusting the pots on an oscilloscope, a spectrum analyzer, a satellite receiver and a digital voltmeter.

The voltage affecting the differential balance of the I-Q drives can be measured on the LEVEL pot from the wiper to the TLE2426 end. With the LO nulled out, the voltage measured about 8mV with the DVM. When the BIAS was adjusted for 0V the LO leakage was about -50db from the signal. The bias was then adjusted until the quality meter reading decreased to 90%. At that point the voltage was 150mV and the LO leakage was -15db under the signal. This demonstrates that the DigiLite tolerates large offsets and that the BIAS pots can be set for a very acceptable LO leakage with just a DVM.

We also checked the DigiLite's tolerance of LEVEL pot misadjustment. The nominal peak to peak level is 2V. The Q LEVEL was adjusted from 2.5 Vpp to 1.5 Vpp with no change in the 99% quality reading. The quality fell off the cliff to 0% at about 1.3 Vpp. The same results were seen when adjusting the I LEVEL. Again this demonstrates that the DigiLite tolerates large offsets.

These tests show setting up the Digilite with only a DVM gives results very close to using an oscilloscope and spectrum analyzer.

The I and Q signals are generated by logic outputs switching from common to 5V, therefore the level of the signals leaving the Nyquist filter will be the same, within a few percent, on all units. Because their input is consistent the LEVEL pots could be adjusted to a standard ratio or even replaced by fixed resistors, 68 ohms from B1 to B2 and 33 ohms on the other side. Setting the pots by measuring the resistance may not be accurate because of the influence of the surrounding components. I have worked out a way to set the LEVEL pots with the DVM by measuring voltages. If you would like a detailed description of the bias arrangements see the last part of this article.

A modified circuit diagram for 70cms is available for download at www.g8ajn.tv/dlindex.html

Digital Voltmeter Set-up Procedure:

Using the DigiLite Config Program, set the Test Mode to IN PHASE.

* Connect the negative lead of DVM to the TLE2426 end of the LEVEL pot (B2) and the positive lead to the other end.
Adjust the BIAS pot for a reading of 200 mV.
* Measure the voltage from the LEVEL pot wiper to the end connected to the TLE2426.
Adjust the LEVEL pot for 100 mV. (sets the drive level)
Measure the voltage from the LEVEL pot wiper (B1) to the end connected to the TLE2426(B2).
Adjust the BIAS pot for 0 mV. (sets the bias/balance)

Repeat for the other channel. (* If LEVEL pots are replaced with resistors the first 2 steps * will not be required.)

Using an oscilloscope is a more accurate method of setting the level if you happen to have access to one.Connect the oscilloscope to IC3 pin 7. Adjust LEVEL pot R23 and BIAS pot R29 for a 2 volt peak to peak sine wave signal swinging from 1.4 VDC to 3.4 VDC. Connect the oscilloscope to IC3 pin1. Adjust LEVEL pot R16 and BIAS pot R30 for the same waveform. Then perform the last step in the DVM procedure to zero the bias LO input.

70cm SOFTWARE SETTINGS by Richard G8BYI

If WinTV6 does not seem to operate happily at the low data rate use the GBPVR program instead. This might be useful if you wish to use one DigiLite on 70cm and another on 23cm as the 23cm can be set up using WinTV6.

To setup PVR for 2MS/s, go into GBPVR's Config Utility and edit the settings for Custom1 Quality.
Video Resolution : PAL 352/576
Bit Rate 1500 Constant
Audio Bit Rate 192
Audio Sample Rate 48kHz
Save and exit.

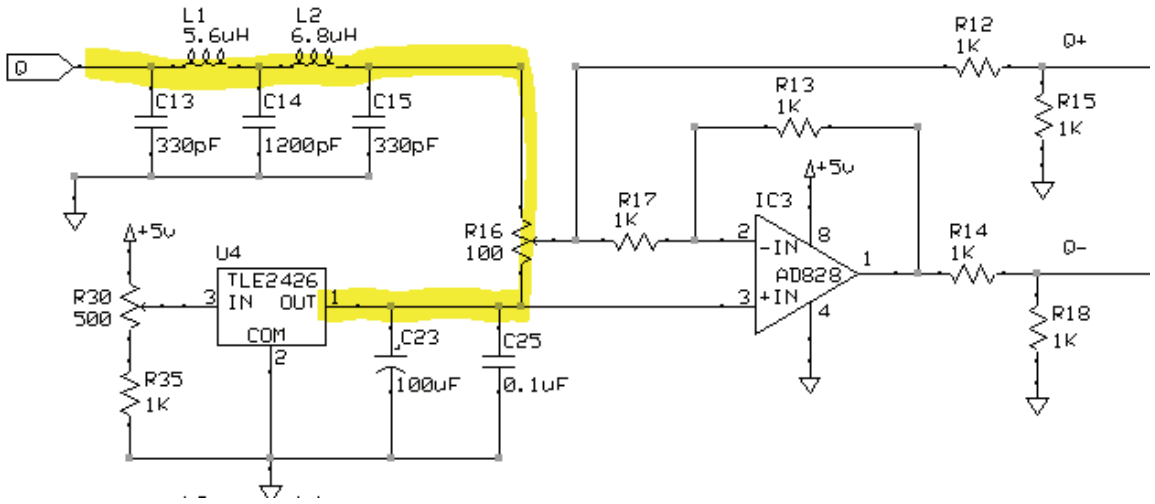
1500 is actually too fast for 2MS/s, but GBPVR won't allow a lower setting. To get around this, you need to find GBPVR's install directory and edit DIRECT.INI
Look for the section [SETUP-Custom1 Quality]. Change the BitRate to 1350.
Save and exit.

Having done this, if you try to edit the Custom1 Quality settings with GBPVR, Config will crash.

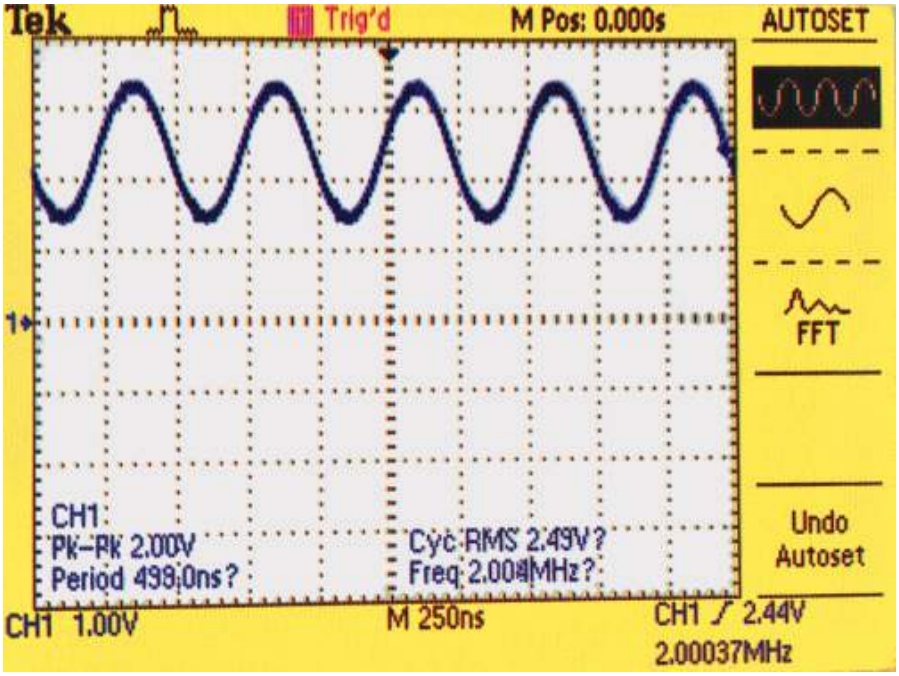
How and why the DVM setup procedure works.

I will refer to the Q signal in this discussion, the I signal operation is the same. The bias at Q+ and Q- should be 1.2 volts for an AD8346. The voltage at the top of R12 and R14 should be double that, 2.4V. The 70cm version has different divider resistors to accommodate the AD8345's lower bias voltage so the same voltage is required at the top of its dividers.

The centre voltage of the signal at Q, the input to the Nyquist filter, is halfway between the power rails, about 2.5V. If the BIAS pot R30 is adjusted so U4 puts out the same voltage as the Nyquist filter your DigiLite will be close to proper bias adjustment, but there are still a few other factors to be considered.



NYQUIST FILTER VALUES					
	C13/16	L1/L3	C14/17	L2/L4	C15/18
4Ms/s	330pF	5.6uH	1.2nF	6.8uH	330pF
2Ms/s	560pF	12uH	2.2nF	15uH	560pF
1Ms/s	1.2nF	33uH	3.9nF	27uH	1.2nF

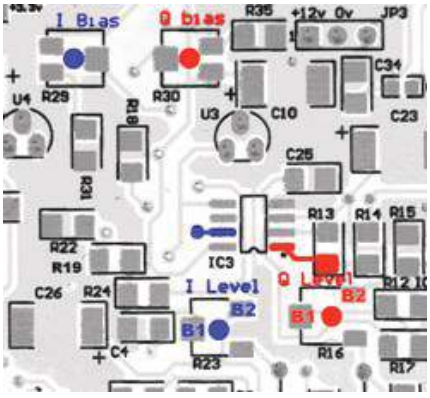


When you raise or lower the BIAS, the difference between the U4 voltage and the filter's center voltage will cause current in the path highlighted in yellow. The voltage drop across the LEVEL pot R16, from the wiper to the C25 end, will cause the bias voltage at Q- to be different than at Q+. Thus by adjusting the U4 voltage a little bit higher or lower you can change the balance of the differential input to the AD8345 or AD8346 and control the LO leakage.

Q- and Q+ drive a balanced modulator. R12 draws current to ground causing the voltage at the wiper of the BIAS pot to be a bit lower than the filter output. As a result, the bias at the dividers is about 2.4V when the BIAS pot is properly set.

Note: If you were to install an AD8345 without changing the divider resistors you would either operate at too high a bias or the balance would be way off centre.

After the LO leakage was nulled out using a spectrum analyzer the voltage from the wiper of the LEVEL pot R16 to the C25 end was found to be < 10 mV. Setting that voltage down to zero caused only a slight amount of LO leakage. Also the Digilite still puts out 90% quality with 150 mV of offset. This explains why setting the bias to zero



with the DVM will reduce the LO to an acceptable level.

Setting the test mode to IN PHASE sends a 50-50 square wave into the filters for consistent centre voltage.

The peak to peak voltage of the I and Q signals were first set to the proper levels with an oscilloscope. The position of the wiper was then calculated by measuring the Vpp in and out of the LEVEL pot. It was found to be 67% or 68% on both a 70cm and a 23cm DigiLite.

The DVM level setting procedure begins by setting the BIAS pot far enough off centre to put 200 mV across the LEVEL pot. The voltage from the wiper to the end is set to 100 mV, the voltage measured on the properly set units. This may seem to be different than the 68% ratio just mentioned but the current through R12 explains the apparent error. This technique will set the level well within the range that will give good quality.

Vectorscope conversion from NTSC to PAL

by Mark Atherton ZL3JVX

Background

A Tektronix 1740 NTSC-only Vectorscope and Waveform monitor recently landed in my lap as a gift. This article covers some of the issues that had to be addressed before it could be used in a PAL environment.

NTSC vs PAL

As supplied, the unit was powered up on 115V and fed with some NTSC video to check that it was basically functional. There was specific interest in condition of the CRT and associated EHT generation. After applying power (while hiding under the bench) the unit appeared to work just fine, however there was quite a bit of jitter on the display.

A quick search on the internet found references to manuals for the "Tektronix 1740 series...". This was the first hint that there may be a possibility of converting the unit to PAL, that is, if the "series" covered the different video standards.

It was confirmed that there wasn't any significant physical damage to the unit, and that it was possible to select 230 volts for mains power. This last feature turned out to be hidden within the fuse unit, and just visible through the fuse cover once the selector had been located.

Finally the 3.58Mhz NTSC sub-carrier crystal was temporarily replaced with a 4.43Mhz unit and it was confirmed that a PAL signal would lock the vectorscope (albeit a bit wonkily).

Manual

Rather than charging in and causing more harm than good, the unit was put aside while a decent copy of the full service manual was located. Tektronix were very helpful, but only a manual for the 1740A was available from them - the 1740 and the 1740A are very different animals.

Ultimately, a copy was located via support@qservice-electronics.com, who charged the princely sum of US$11.99 for a downloadable PDF. This was worth every penny.

The manual did indeed cover the 1741 (PAL) version of the unit, and the schematic had a load-table for both options.

Connectors

As expected, the unit is very well made. The system is built from a series of cards that plug into a motherboard using DIN 41612 connectors. A friend lent me an extender card, which along with decent documentation more or less saved the day.

Dodgy power

Before attempting any form of conversion, the decision was made to fix the jitter issue first. This would probably lead to the lowest risk path of a fully working PAL unit in the long term.

After placing one of the deflection boards on the extender card, it was rather obvious that the regulated rails had rather a large amount of very high frequency noise on them. This initially was taken to be a regulator issue, but replacing the 78xx/79xx devices did not resolve the problem.

Further investigation indicated that the noise was pre-regulator, and that all rails originated from a small switched-mode power unit. Further digging indicated the failure of the secondary noise filter electrolytics. These parts were available to probe on the underside of the motherboard.

As is always the case, the capacitors were located directly under the CRT, and a first glance, a full tube-ectomy would be required. However, by removing the entire card cage and just about anything else that was attached and might get in the way, it appeared possible to replace the components in question by some key-hole surgery.

All of these steps were taken very slowly, carefully, and double checked since a wrongly replaced (and detonated) cap under the CRT could be quite exciting to replace later.

All secondary filter caps associated with +12, +8 and -12V were replaced (100uF, 25V). Clearly the extra cost and effort while the unit was in pieces was likely to save a (painful) return visit as some later date. It was also noted that a HV cap (33uF, 160V) had previously been replaced - this gave some feeling that repairs may be happening in the correct area.
Happily, this resolved all issues and the

effort was rewarded with a very sharp, high intensity display.

Schematics

With some careful extraction of the scanned schematic images from the service manual PDF, it was possible to stitch back together some A3, landscape single pages. Nitro Reader 3 was used to pull out the images, and Paint Shop Pro 7 was used for the re-stitching. All uninteresting boundary elements of the drawings were cropped, so that the full size prints would have the largest detail possible.

This was a few hours work, but again, no more squinting at drawings. The result was 10 sheets of A3 PDFs with minimum borders created from TIFF images 5500 x 3500 pixels. This is in contrast to the original pages that spanned several pages, possibly with pull-out sections all presented on A4 sheets (or was it 8.5" x 11").

Board Changes

After all of the work above, the conversion to PAL was turned out to be the easy part of the project. The field timebase needed to change from 60Hz to 50Hz, this was a resistor change. The unit has a single line trigger to allow inspection of VITS, this was a jumper that needed moving. Crystal was changed to 4.43MHz. The chroma filter had a couple of capacitors that needed changing.

These changes were made on a board-by board basis, with each assembly being progressively re-tested as upgrades were being made. This was all surprisingly easy. There were a couple of value changes that just-didn't-look-right, but running them through RFsim99 (before making the physical changes) verified their correctness in all cases.

Calibration

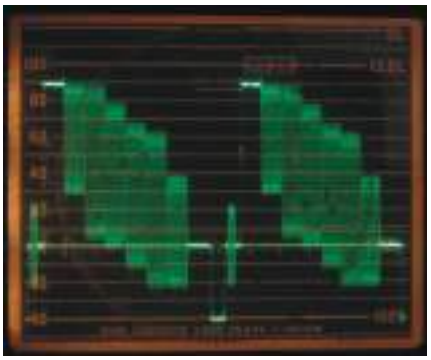
The manual has a comprehensive section on calibration. Not everything needs to be touched since the unit has a significant amount of circuitry that is insensitive to video standard.

The main items that did need twiddling or checking were as follows: Chroma filter, and associated differential delay network. Luma LPF (using Agilent tracking gen and spectrum analyser). Quad coil (adjust for vector symmetry while rotating the big-phase-knob).

Results

One surprise was to discover that the graticule is rear illuminated for waveform and front illuminated for vectorscope. The idea of re-screening the vectorscope was considered for a very-short-period, but with colourbars it is quite obvious that half of the targets are almost bang on.

And finally waveform, with this image taken pre-calibration.



Measurements

As with all new toys, everything needs to be measured.

The new piece of kit immediately spotted low frequency noise on the CVBS from my trusty free-to-air Satellite IRD (usually tuned to colour bars, Optus D1, 12635 V, 5100k sym/sec). Yet again, capacitor problems in the PSU of the IRD; this took 30 mins to fix.

Finally one of the DVD players had chroma limiting on colour bars. Looked like a design issue, so the unit was destroyed and replaced.

Conclusions

Never give up, never surrender. Just because a unit has not been manufactured as you might like does not mean that it is impossible to make it do something useful. Most happy with the results, this is a lovely piece of kit, has been a very interesting project and much has been learned.

Thanks

Alan ZL3UYJ lent me the DIN 41462 extender card, and patiently listened to me at the pub as this project was worked through. He never interrupts, just waits for me to stick my head up for air, then liquid refreshment :).

Since a very early age, Mark has had a strong interest in things-electric. He acquired his first UK callsign age 17 (G8JVX) moments before getting his first Fast Scan TV license (G6ANI/T). Many home brew projects ensued covering 2m through 23cm, included the design and component level construction of a complete analogue ATV chain including a vidicon camera, solid state video mixer and valve TX. Recent projects include a low cost Digital TV Modulator (Digilite-ZL) and low power AMPS micro-base station. After 30 years living in the UK he moved to San Francisco where he lived and worked for another 15 years (KE6LVK). He then moved on to a much more pleasant life in New Zealand (ZL3JVX) along with American Wife and Fat Spaniel. Latest projects include significant technical involvement with KiwiSAT. He has a Degree in Electrical Engineering and is named inventor on five patents.

When the balloon goes up...

by Trevor Brown G8CJS and Anthony Stirk M0UPU

It's always been a pleasure working with the UK High Altitude Society, this time they contacted me to say they would be streaming a live balloon launch on Saturday December 1st .

The meteorological balloon would be equipped with 70cms RTTY based telemetry trackers. The flight had a number of objectives, but is primarily function was to test the "SPEARS" (Special Project Electronic Altitude Release System) a board that will hopefully trigger a rocket motor as part of "The Registers LOHAN project" (Low Orbit Helium Assisted Navigator) see www.theregister.co.uk/Wrap/lohan/ Additionally there was a test of the Iridium Rock Block (http://rockblock.rock7mobile.com) based location tracker.

One of their streaming worries was that if they used the batc streamer for people to see the event live it might overload with viewer numbers. We have never actually overloaded the streamer with viewers and as a result do not know the point at which this can happen. So on Thursday we made the decision to try it on the streamer and email every batc member in the membership database and invite to tune in and watch the launch.

On the actual day we raised 300 viewers and the streamer did not grind to a halt although there are rumours of 80% CPU usage, not to worry our streamer will soon be replaced with a faster piece of hardware with more storage. The present streamer will remain and back up the new streamer. This will double our rental (it's all located on a commercial site), but it's a bullet the committee have bitten. So how did the Lohan launch actually go?

The flight was good fun but a great disappointment, as the balloon was not retrieved due to landing in the sea, not through lack of trying though. There are no plans to attempt recovery as it's in all likelihood drifted and without a working radio or current location the chances of finding it are low to nil. If you do walk your dog on the south coast keep your eye out for 2 boxes full of expensive electronics. The search had to be called off due to it getting dark, there was a boat equipped with laptop and a radio involved in the search but alas nothing was heard.

The reason for the watery landing was a very odd prediction, generally the prediction program is fairly accurate. It uses the National Oceanic and Atmospheric Administration (NOAA) GFS (Global forecast System) model. Just before launch using the 0600 dataset (data is released every 6 hours) the predicted landing was comfortably on the land. The chief suspect was the winds speeds that were due later in the afternoon arrived earlier than expected. See the image below prepared by Astrodog, the lighter colour is the predicted path, the darker the actual path taken.

Many thanks to all of you who taking the time and effort out of your day to help track these payloads. Anthony apologises for losing the video feed just at launch, He forgot he wasn't using 3G and walked out of range of the Wireless access point.

I think the pictures tell the story, but there are more at

http://www.flickr.com/photos/daveake/sets/72157632136764003/

Contest News

International ATV Contest 8/9 September – UK Results

Here are the UK results for the International contest.

70cm							
Pos	Call	Locator	QSOs	Points	Best DX	QTH	QRB
1	M0DTS/P	IO94MJ	4	1041	G8LES	IO91LC	366
2	G8LES	IO91LC	2	414	M0DTS/P	IO94MJ	366
3	G8GTZ	IO91KH	2	367	M0DTS/P	IO94MJ	343
23cm							
Pos	Call	Locator	QSOs	Points	Best DX	QTH	QRB
1	M0DTS/P	IO94MJ	5	2542	G8LES	IO91LC	366
2	G8GTZ	IO91KH	1	972	G4TNX/P	IO93UK	243
3	G8LES	IO91LC	2	876	M0DTS/P	IO94MJ	366
13 cm							
Pos	Call	Locator	QSOs	Points	Best DX	QTH	QRB
1	M0DTS/P	IO94MJ	2	1660	G7AVU	IO93OJ	112
6 cm							
Pos	Call	Locator	QSOs	Points	Best DX	QTH	QRB
1	M0DTS/P	IO94MJ	1	270	G1LPS	IO94EQ	92
3 cm							
Pos	Call	Locator	QSOs	Points	Best DX	QTH	QRB
1	M0DTS/P	IO94MJ	2	1100	G7AVU	IO93OJ	112

Combined Results								
IARU Contest - Section 1								
Pos	Call	Locator	70 cm	23 cm	13 cm	6 cm	3 cm	Total
1	M0DTS/P	IO94MJ	1041	2542	1660	270	1100	6613
2	G8GTZ	IO91KH	367	972				1339
3	G8LES	IO91LC	414	876				1290

Congratulations to Rob, M0DTS who reported:

In general, microwave conditions were good due to the High pressure system over the south of the UK and Northern Europe. Over the weekend I was seeing GB3KM, GB3VL, GB3TN, GB3EY and GB3LO on 23cm at various strengths all up to P5 and 10GHz from GB3LX which is rare! I set-up my portable station on the Saturday fairly early (3pm) to do some 'local' tests with Eddie G0EHV to check out some equipment, we worked on 13 & 3cm 2-way (outside the contest times) without any trouble at 60km so proved the gear was working. Saturday evening brought above average conditions with G8LES and G8GTZ being up to S7 on 144.750 over 350km away, both of which I managed 1-way qso's with on 23cm analogue and 70cm Digital which is a new best DX for me on 70cm!

G8GTZ - Mast

G8GTZ Mast - detail

I packed up at 11pm Saturday night and returned to the same portable site on Sunday at 9am to work G7AVU on most bands just before the enhanced conditions dropped out.

In the afternoon I watched live video up to P4 from the High Altitude Balloon fox hunt in the Netherlands, the weather balloon has a 13cm ATV Transmitter on 2.330GHz on it, and also a 70cm/2m repeater, this is on every year on the same weekend so worth a look for by others.

It was good that, for once, a contest took place during a lift; it's a shame that there weren't more UK stations on the air! Where were you all?

Repeater Contest

Don't forget the repeater contests in December and March – please encourage all your locals to get on the air.

Contact

I can be contacted through e-mail (contests@batc.org.uk), or through my BFPO address: Wg Cdr D G Crump, Defence Section, British Embassy Abu Dhabi, BFPO 5413, London.

23 cms ATV - M0DTS

Contest Calendar

1200 UTC 8 December 2012 - 1200 UTC 9 December 2012 - BATC Repeater Contest

1200 UTC 23 March 2013 - 1200 UTC 24 March 2013 - BATC Repeater Contest

70 cms DATV - M0DTS

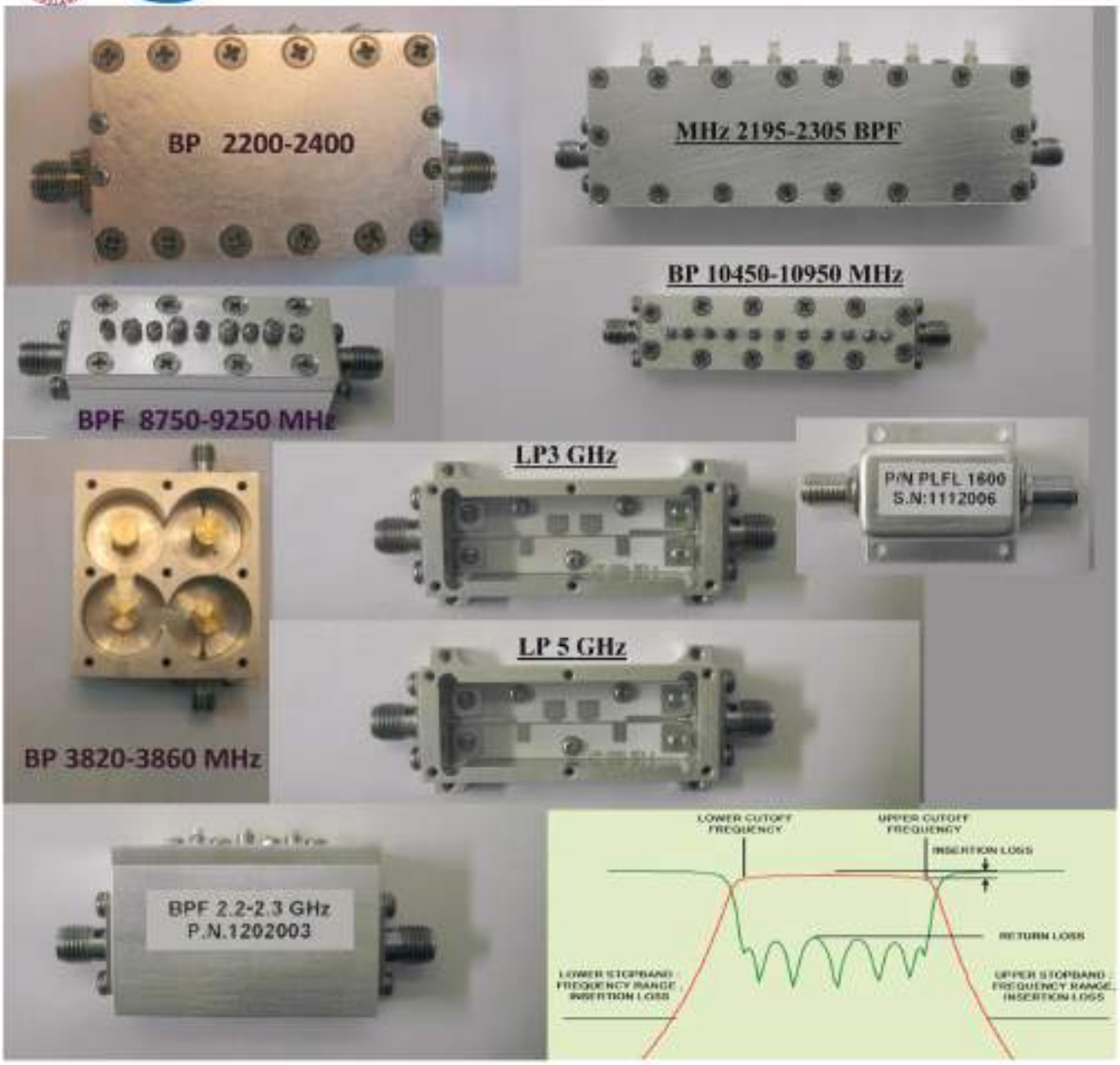
1200 UTC 8 June 2013 - 1200 UTC 9 June 2013 - BATC Summer Fun Contest

1800 UTC 14 September 2013 -1200 UTC 15 September 2013 - International ATV Contest

F.Y.C. security Systems & Wireless Communications Ltd

COMB LINE \ INTERDIGITAL BAND-PASS FILTERS (CAVITY)

We offer Comb line AND Interdigital Band-Pass Filters:



the table to define the filter specification
very date and outline within 2 - 4 working days
cal Numbers of Resonators: 3 - 8
cal Relative Bandwidth (BW\F0): 3 to 20%
cal Frequency Range 1- 18 GHz
mum Quantity 3 units per filter type
cal Delivery is one month max
IRE requested

Email: fyctec@gmail.com

Symbol	Description	Value	Units
F0	Center Frequency		MHz
LCF	Lower Cutoff Frequency		MHz
UCF	Upper Cutoff Frequency		MHz
PB IL	Max. Pass Band Insertion Loss		dB
RL	Min. Pass Band Return Loss		dB
LSB	Lower Stop Band Frequency Range		MHz
LSB IL	Lower Stop Band Frequency Insertion Loss		dB
USB	Upper Stop Band Frequency Range		MHz
USB IL	Upper Stop Band Frequency Insertion Loss		dB
Z0	Input \ Output Impedance	50	Ohm

DATV reception – a practical guide

by Noel Matthews G8GTZ

More and more amateurs are starting to transmit digital ATV signals on 23cms and 70cms for simplex / DX operation and most repeaters also have a digital output capability. This article gives a quick introduction to the various technologies and modes in use and looks at some practical ways to receive these digital ATV signals.

MPEG-2 video encoding and DVB-S QPSK modulation has been adopted as the current standard in the UK for DATV on 23cms and 70cms. This means we are using the same technology as standard definition satellite TV services such as the FreeSat service in the UK and the signals can be received on a standard consumer Free To Air Set Top Box (FTA STB).

DVB-S uses a variable bandwidth modulation scheme, depending on the video and audio bit rates transmitted and the amount of Forward Error Correction (FEC) applied. As a variable bandwidth system, it is ideally suited to 70cms where we are now able to run full colour video and 2 audio channels in 2 MHz. On 23cms, where bandwidth is not at such a premium, we can run 4 Msymbols, thereby achieving better picture quality within a slightly increased bandwidth of 4 MHz.

Note that the DVB-T (OFDM) modulation scheme as used by FreeView has not been adopted by amateurs in the UK and a FreeView box will not receive UK DATV signals. This is primarily due to the fixed 6/7/8 MHz bandwidth of the system, which gives a lower power / bandwidth ratio than 2 or 4 MHz QPSK and requires highly linear PAs and group delay correction over the full 8 MHz spectrum.

DATV activity in the UK

70cms – ATV activity on this band, which has the potential for real DX working, has been revitalised by the use of DVB-S QPSK modulation.

G4DDK SPF5043 pre-amp

Several stations in the South of England have recently worked French DATV stations and M0DTS worked G8GTZ and G8LES at a distance of over 350 Kms. With a bandwidth of only 2MHz centred on 437 MHz (the DATV operating frequency), we can achieve reasonable power levels and linearity from amplifiers designed for narrow band operation and there are some surplus amplifiers from the Freeview re-engineering project appearing on ebay at the moment.

23 cms – Once again DVB-S is being adopted, using a slightly higher symbol rate of 4 Msymbols, which typically occupies 4 MHz and good results are being achieved by stations using DATV for simplex contacts. A noise free digital picture with 2 audio channels can normally be locked when a P2 noisy analogue ATV signal is received.

Most repeaters are now equipped with either DATV receive or transmit capability or both and noise free pictures can be achieved when a digital input signal is relayed via a digital output.

In the future, it is likely we will come under pressure from OFCOM and the primary users on 23cms to be more spectrum efficient and go digital only on repeater outputs. Whilst this is a reasonable approach and the BATC is looking to support repeater groups during such a transition, I do believe we should resist being forced to adopt digital only inputs on ATV repeaters for as long as possible. This situation may change as projects such Digilite and DATV Express are developed further to make live low cost digital transmission without the use of a PC possible.

Higher bands – Tests have been carried out on 2.3 and 3.4GHz with good results and there are a couple of repeaters running digital 10GHz outputs.

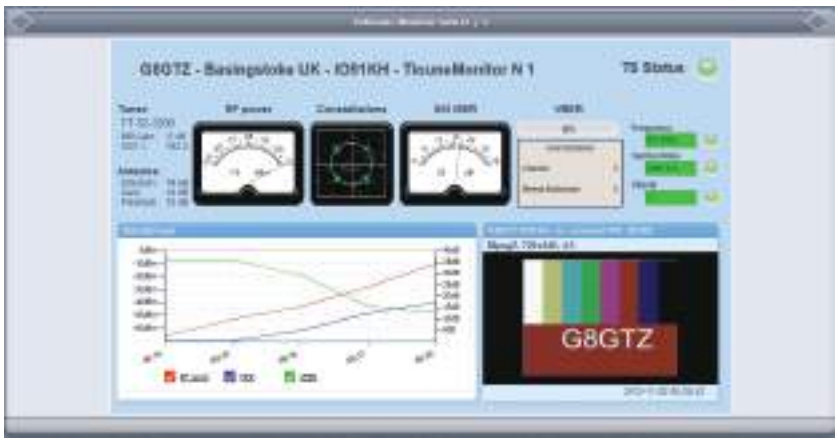
Receiving DATV - Mast head pre-amplifiers

In order to achieve reasonable results on any band above 50 MHz it is essential to use a mast head pre-amplifier. The latest generation of MMICs mean that a sub 1dB noise figure and very good cross modulation performance can be achieved from very simple designs which are easy to build and at very low cost. Sam Jewell, G4DDK, does a kit of parts for a pre-amplifier based on the SPF5043 which, despite its small size, has extremely good performance at 70cms, 23cms and even 2.3 GHz at a cost of only £12. See:
http://www.g4ddk.com/SPFAMP.pdf

The pre-amp should be mounted in a waterproof box as close as possible to the antennae feed point, along with a change over relay if transmit operation is envisaged. As the system noise figure is already determined by the pre-amp, and as long as the cable run is not longer than 20 metres, good quality satellite TV co-ax can be used to connect the pre-amp to the receiver in the shack and also feed DC power up to the pre-amp and antennae change over relay.

Receiving DATV – 23cms

Receiving 23cms DATV is easy! A basic Free to Air (FTA) Digital STB from ebay or Maplin (a lot of people use the Comag range of receivers from Maplin) will tune 23cms without any modification, although most require additional gain in the shack for optimum performance. A satellite L band line amplifier (also available from many suppliers on ebay) will work in most circumstances and if you live in a noisy RF environment, you may need to provide some band pass filtering.



G8GTZ Tutioune monitor page

Even the cheapest satellite receivers seem to have a "pass through" L Band output and your existing 23cms FM ATV receiver can be fed directly from this output without the need for a separate splitter.

To be able to receive a DVB-S signal you will need to know the symbol rate (effectively the bit rate) and possibly the FEC to set your receiver up with the correct parameters along with the frequency of the transmission. Typical parameters for 23cms are 4.000 Msymbols at ½ or ¾ FEC - exactly how these parameters are entered and the receiver is tuned depends on the make and model of STB.

Note, the box MUST be able to receive FTA broadcasts and a SKY or similar dedicated satellite service box will NOT tune to the DATV parameters.

It is also possible to receive DATV signals using a PC DVB-S or S2 satellite tuner card. Once again the set up of the card and software will differ between products but they provide surprisingly good results.

F6DZP has developed the Tutioune PC software specifically for DATV – this runs on the Technotrend S-2300 tuner card and gives very detailed analysis of the signal and also enables web based monitoring of the received signal – see the link below for an example from my DATV station:
http://www.vivadatv.org/tutioune.php?om_id=G8GTZ&station_id=1

Receiving DATV – 70cms

The reason why it is easy to receive 23cms DATV is that the satellite boxes tune L Band (950 – 2150 MHz) which of course includes 23cms. However, in order to receive 437 MHz (70cms) DATV on a standard satellite STB, you need to up convert the signal to L band. Luckily there is a consumer device available in the USA which is used on cable networks to up convert UHF signals to L Band where they are then received on a standard satellite box. These units are made by a company called Zinwell and known as SUP-2400. They are available on ebay, but only in the US and they do require modification, which involves SMD components, to work on DATV.


SUP-2400

In order to help promote the use of 70cms DATV and to compliment the Digilite 70cms project, the BATC shop now has stock of these units either in unmodified form or modified as described in the accompanying article in CQTV. See the BATC on line shop for more details.

To receive 70cms DATV, the modified SUP2400 is put in line between your 70cms mast head pre-amp and the digital STB. As the upconverters are very wide band it is possible a band pass filter will be required between the mast head pre-amp output and SUP-2400 input. The digital STB is tuned to the up converted 70cms frequency – the SUP-2400 has a high side 2400 MHz LO and so 437 MHz is tuned at 1963 MHz. The DVB-S parameters are entered as normal which for 70cms operation are 2 Msymbols with ½ or ¾ FEC.

Receiving DATV – the higher bands

Narrow band QPSK operation is possible on the higher bands and reception is relatively easy on 3.4 GHz and 10 GHz.

As well as the problems caused by the pollution from wi fi and other ISM services, there are no consumer devices to enable easy reception of 2.3GHz DATV signals; although home brew converters down to L band are relatively easy to make.

We do have a fairly large spectrum allocation at 3.4 GHz in the UK and it is relatively unused. It is also easy to receive DATV signals at 3.4 GHz as C band LNBs, available on ebay in the USA for less than $10, cover the band and down convert signals to L band, thereby enabling the use of a standard FTA STB. The band is potentially very interesting for DATV and I have applied for a repeater NoV, GB3BA, on 3407MHz using 2 Msymbols QPSK to provide coverage of the Thames Valley and surrounding areas.

Similarly, the use of modified standard satellite LNBs to cover the 10 GHz amateur band which are readily available on ebay, make for easy reception of DATV signals on that band.

Modifying the Zinwell SUP-2400 for 70cm

by G8GTZ and M0DTS

In order to receive 437 MHz (70cms) DATV on a standard satellite STB, you need to up convert the signal to L band. Luckily there is a consumer device available in the USA which is used on cable networks to up convert UHF signals to L Band where they are then received on a standard satellite box.

The units are made by a company called Zinwell and known as SUP-2400. They are available on ebay but only in the US and they do require modification, which involves SMD components, to work on DATV.

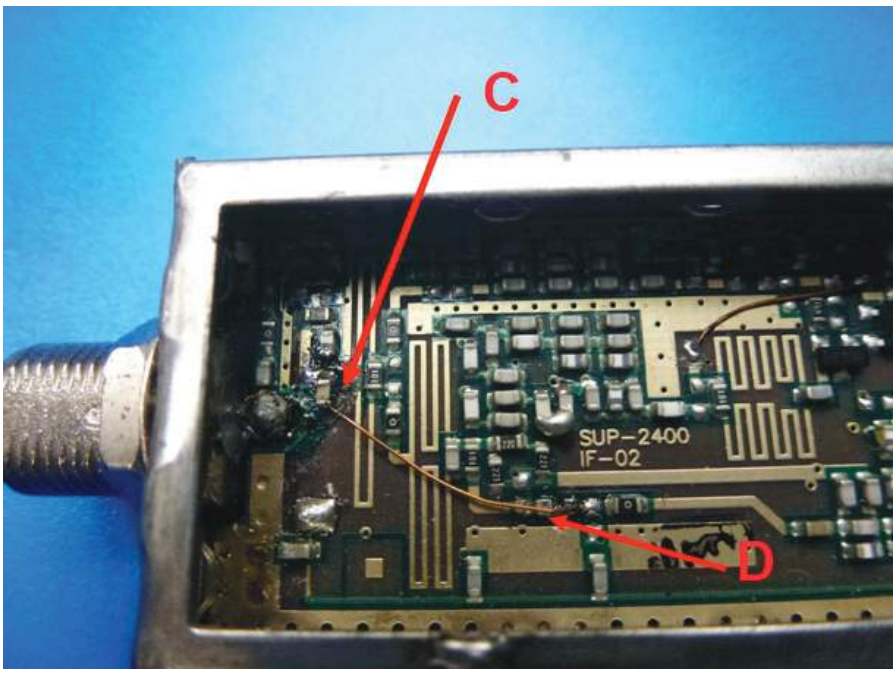
This article describes the modifications required to the unit which were developed by Rob, M0DTS, and published on his web site.

There are 4 relatively simple modifications to be done:

Modification 1 – put a wire link in place on the PCB side with the synth chip between point A and point B.

On the reverse side there are 3 modifications:

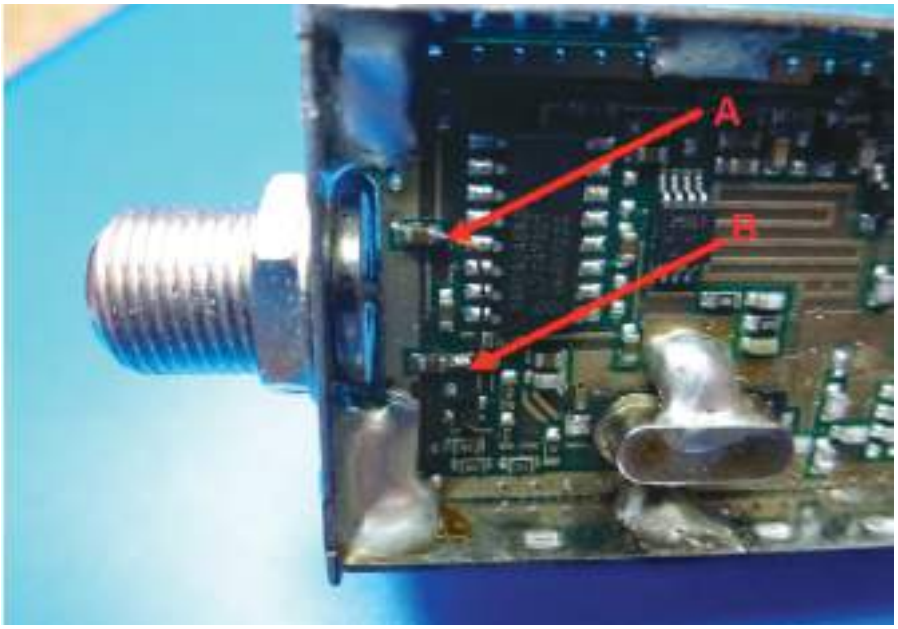
Modification 2 - turn the capacitor at point C between the 2 input lines



through 90 degrees towards the bottom of the board which means only one end is soldered to the PCB.

Then remove the first 0 ohm resistor at point D on the line at the bottom of the board.

Then use a wire link between point C and D to join up the flying end of the capacitor to the far end of where the 0 ohm resistor was.



Modification 3 - Cut the track at point E just above point F where the link is going to be soldered

A wire link is then soldered between the points F and G as shown:

Modification 4 - put a blob of solder across the ends of the 2 surface mount capacitors at point H under the lip at the top of the PCB

Testing

The units are powered up the F type tail from the digital satellite receiver so make sure you enable LNB DC volts in the rxr menu.

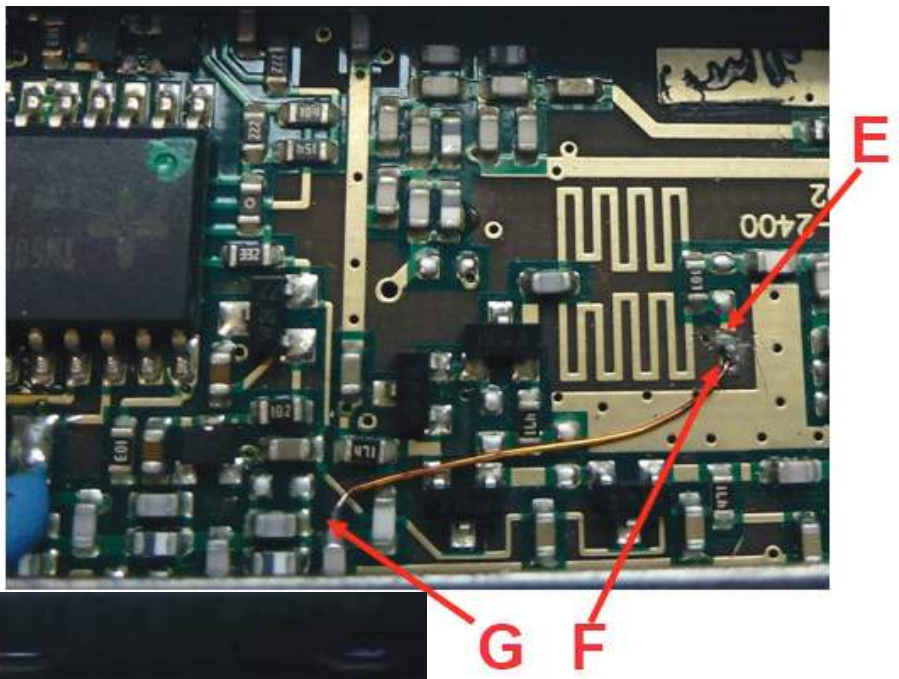
The units also feed power out of the unit towards the aerial (LNB) to power a mast head pre-amp – be careful not to connect a DC short aerial or attenuator! If you do not need this, simply disconnect the DC feed via the existing ferrite core to the input F type connector. This wire can also be used to power the unit if you do not wish to use in line powering.

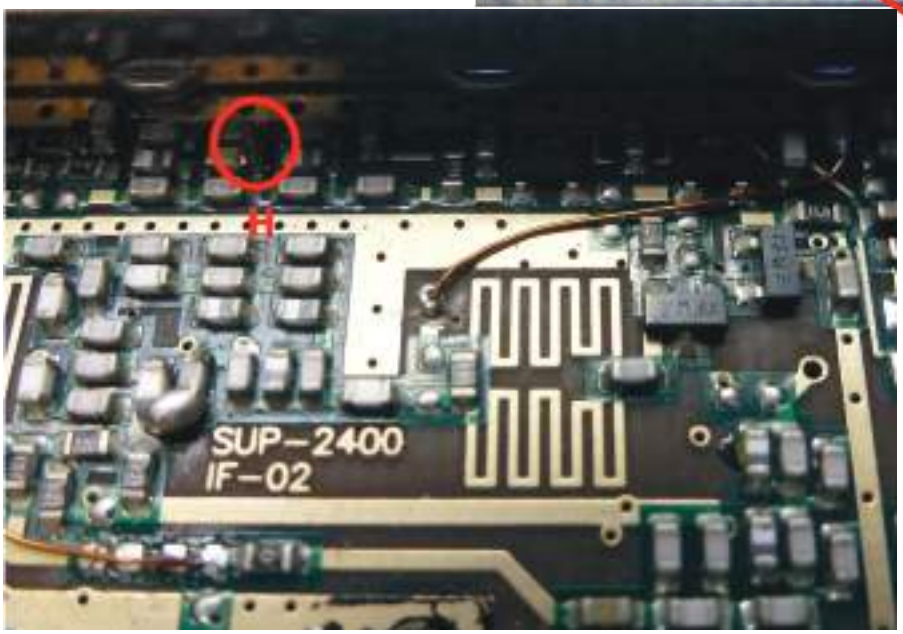
The units have a 2400 MHz local oscillator which means 436 MHz can be received on 1964 MHz. The unit can

be tested using a wideband receiver / scanner and listen for your local UHF repeater – note the LO is high.

Some variation does occur with the LO, which has been designed for wideband digital signals so try tuning around + / - 250 KHz when receiving narrow band signals. Most units seem to tune approximately 200 KHz high – note this offset does not matter for DATV signals.

The units are quite sensitive and can detect -120 dBm (.2 microvolts) so should hear any repeater which is more than an S2.





To receive 70cms DATV, the modified SUP2400 is put in line between your 70cms mast head pre-amp and the digital STB. As the up converters are very wide band it is possible a band pass filter will be required between the mast head pre-amp output and SUP-2400 input.

In order to help promote the use of 70cms DATV and to compliment the Digilite 70cms project, the BATC shop now has stock of these units either in un modified form or modified as described in this article. See the BATC on line shop for more details.

Repeater Channel RB	Repeater Frequency	Approx output frequency
0	433.000	1967.000
1	433.025	1966.975
2	433.050	1966.950
3	433.075	1966.925
4	433.100	1966.900
5	433.125	1966.875
6	433.150	1966.850
7	433.175	1966.825
8	433.200	1966.800
9	433.225	1966.775
10	433.250	1966.750
11	433.275	1966.725
12	433.300	1966.700
13	433.325	1966.675
14	433.350	1966.650
ATV 1	436.000	1964.000
ATV 2	437.000	1963.000

2012 VK3RTV DATV/ATV QSO Party

by Ken Konechy W6HHC
Orange County ARC – www.W6ZE.org

Last year, Peter Cossins VK3BFG and the hams associated with the VK3RTV digital-ATV repeater organized the first world-wide DATV QSO Party in August 2011 to help celebrate the 100 Years of the Amateur Radio Victoria organization providing support for ham radio. This year, the Melbourne ATV Group organized a second QSO Party for DATV and ATV stations on August 24th and 25th GMT. The VK3RTV repeater is the second earliest DATV-repeater in Australia, and no longer has any analogue downlink.

Many Ways to Get Video to Australia VK3RTV

In south-eastern Australia, many hams had contact directly line-of-sight by radio frequencies with the VK3RTV DATV-repeater (near Melbourne). In other parts of Australia and the United States, hams relayed their video to Peter VK3BFG by SKYPE video-connections…who then uplinked the video and audio to the VK3RTV digital repeater using the DVB-S protocol for DATV. Let me detail out the many ways that hams participated in the VK3RTV QSO Party this year:

1. Line of sight 1.2 GHz RF DATV or ATV transmission to VK3RTV repeater

2. SKYPE video connection directly via internet to VK3BFG, who then uplinks the video to the VK3RTV repeater by 1.2 GHz DATV RF

3. USA ATVers connect to the ATN Analog-ATV Network by RF and the received RF signal from W6ATN repeater is then SKYPED by KE6BTX to VK3BFG, who then uplinks the video to the VK3RTV repeater by 1.2 GHz DATV RF

4. SKYPE video connection via internet directly to KE6BXT. Don will simultaneously send your video to the W6ATN ATV Repeater Network by RF and via SKYPE on the internet to

Fig.1 W6HHC 1.2 GHz DATV Video can be seen being received on SetTopBox/ Notebook-Computer

VK3BFG, who then uplinks the video to VK3RTV repeater by 1.2 GHz DATV RF.

Getting W6HHC 1.2 GHz DATV Signal to Australia

During the QSO Party, the W6HHC digital-ATV signal was transmitted on 1.2 GHz using DVB-S protocol for DATV. The signal was then received on a nearby satellite-SetTopBox receiver that sent the video signal over by USB to a Dell notebook computer to be displayed. See Fig 1 of the W6HHC DATV video being received in Orange, CA on the notebook computer screen.

The next step was to take the video display on the notebook computer and send it over the internet by SKYPE video-connection (called "shared-screen" mode or "shared-desktop") to Peter VK3BFG, the net control station. W6HHC chose method-2 in the "many ways list" to SKYPE his received DATV video signal to VK3BFG via the internet. See Fig 2 for a block diagram explaining the complete video signal path. Peter VK3BFG then uplinked the received SKYPE video to the VK3RTV DATV repeater on 1.2 GHz using DVB-S protocol. The VK3RTV repeater in turn downlinked the W6HHC video on 446 MHz using the DVB-T protocol.

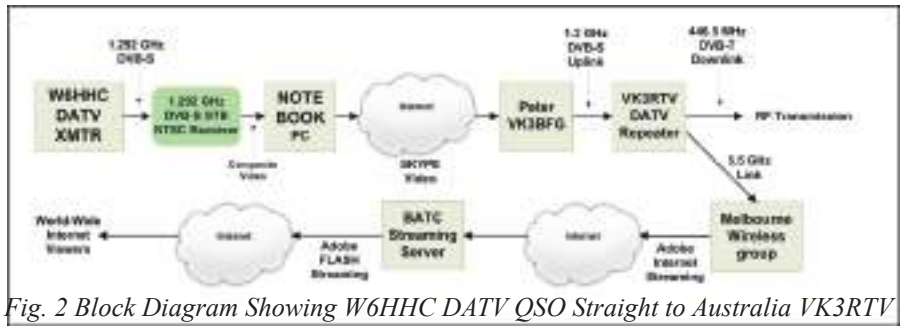


Fig. 2 Block Diagram Showing W6HHC DATV QSO Straight to Australia VK3RTV

As shown in Fig 2, a nearby group called Melbourne Wireless also receive a 5 GHz link from VK3RTV and send the video over internet by streaming video to the BATC (British Amateur Television Club) server. Now the VK3RTV video could be seen all over the world through the www.batc.tv internet URL. It was exciting to watch my DATV video come back from the VK3RTV digital-repeater via the BATC streaming server on the internet using my iPAD as a monitor! This was an interesting combination of ham radio and internet!

Success and Fun for the VK3RTV QSO Party

On the next page are some of the photos that I captured from the VK3RTV QSO Party.

Peter VK3BFG reported that a total of 16 ATVers on Friday night (Australian time) and 18 stations checked in on the Saturday's session. That included SKYPE DX check-ins from South Australia (VK5ADM), Tasmania (VK7OTC & VK7EM) and United States (KE6BXT & W6HHC).

Fig 7 shows a video screen-shot from the "traveling portable DATV station" VK3WWW that visited and set-up DATV at many of the iconic scenic spots around Melbourne during the QSO Party. I am a bit suspicious that some sort of "green screen" may have

Fig. 3 Typical VK3RTV Repeater Test Pattern seen over the Internet

Fig. 4 Larger Picture is Peter VK3BFG testing with Don KE6BXT (smaller PIX in lower corner)
(photo courtesy of KE6BXT)

Fig. 5 BATC Screen-Shot of QSO Party Announcement before the event

Fig. 6 BATC Screen-Shot of John Fisher VK3DQ and his wife Jean VK3VIP. Jean is also president of ALARA (the Australian Ladies Amateur Radio Association)

been involved with their transmissions? But, I certainly enjoyed a personal tour of Melbourne. Well done!!

ATN (the interlinked network of ATV repeaters in the USA) video in Fig 9 could be seen simultaneously on the ATN television network by RF and on VK3RTV via SKYPE. I also checked directly into KE6BXT by SKYPE (method-4 on the "many-ways-list"). I discovered this year that I could no longer do a SKYPE connection "screen share" with KE6BXT. That meant I could send a "video call" to KE6BXT but NOT a "shared screen". And…that meant I could not send the W6HHC DATV video received on my computer screen to Don…but I could send my web-camera video from my notebook computer to Don and on to the QSO Party using method-4. More will be discussed about this new "SKYPE issue" a little later in the article.

Solved some Problems – Found some Problems

Last year I had run into some problems with watching the BATC streaming that annoyed me.

Problem-1 (solved) - - - I discovered last year that I could not use my iPAD to monitor the BATC streaming server. This is because BATC streaming uses ADOBE FLASH video and Apple will not allow FLASH video to be viewed on either the iPAD or the iPHONE because of security concerns. In the OCARC TechTalk96 article, I reported that I had discovered an "APP" that is sold in the Apple iTunes Store that solves the BATC streaming problem on an iPAD. The "APP" product is called Photon Flash Web Browser This APP is a specialized web browser for an iPad or iPhone and sells for US$4.99 on the Apple iTunes Application Store. This APP can handle Flash streaming video, as well as interactive Flash games, as well as pre-recorded Flash video such as often used on Facebook.

Problem-2 (solved) - - - A second problem with the iPAD I had known about was the AUTOLOCK feature that was shutting the iPAD down every 15 minutes (or sooner). That is a terrible limitation for a streaming QSO party. The iPad of a friend of mine had an

Fig. 7 BATC Screen-Shot of the "traveling DATV portable station" VK3WWW

Fig. 8 BATC Screen-Shot of Don VK5ADM checking in via SKYPE from South Australia

Fig. 9 BATC Screen-Shot of Don Hill KE6BXT at his ATN controls during the VK3RTV QSO Party

Fig. 10 Typical W6ATN Repeater Test Pattern seen over the Internet

AUTOLOCK setting available for "Never". But, the "Never" setting did not show up on my iPAD? A long search of the Apple Knowledge Database for iPAD did not yield any answers to the problem. Thank goodness for the "brick and mortar" Apple Stores!! The Apple "geniuses" at the nearby Apple Store sorted out that because my iPAD was used in a corporate environment using Microsoft Exchange Server…Exchange had invoked a security policy that had mandated a password be used for iPAD AUTOLOCK. By eliminating the Exchange set-up (temporarily for the QSO Party) on my iPAD, I could now remove the AUTOLOCK password and I now could see a "Never" timeout setting.

Problem-3 (newly found and solved) - - - This year I discovered that Don KE6BXT had changed around his SKYPE set-up in his station to make some improvements. But, Don's new set-up (or updates by Skype) was preventing me from setting up my SKYPE in the "share screen mode". My "no cost SKYPE" was obtaining a message that I needed to upgrade in order to use the "share screen mode" with Don's SKYPE. That meant that I could only send my web-cam video to KE6BXT…not the video on my computer screen (such as received DATV video or a PowerPoint presentation). SKYPE does offer a SKYPE PREMIUM product that allows all parties to be sending shared-screen. The SKYPE PREMIUM product is relatively cheap. You can use it for one day for US$5 or subscribe to it for one month for US$9. After the QSO Party I used a free trial offered by SKYPE PREMIUM and confirmed the upgrade provides a satisfactory solution with KE6BXT to this new problem. [NOTE – my SKYPE screen-sharing video always has worked well with VK3BFG. I only encountered the problem this year connecting with KE6BXT.]

Problem-4 (newly found) - - - During this QSO Party I discovered another new problem. My iPAD monitoring the BATC streaming using the Photon Flash Web Browser would drop out of FLASH streaming after about 6+ minutes. My "work-around" to prevent drop-out was to move the iPAD screen around a bit with my finger every 5 minutes to keep the "APP" in the FLASH mode. I suspect this is a Photon "APP" setting or a technical issue. I plan to get in touch with Photon technical support and see if I can find a better solution to the drop-out.

Conclusion

The second VK3RTV DATV QSO Party was great fun!! I got to meet (see) a lot of DATV and hams. Combining DATV and SKYPE and internet allows a widespread group of participants and watchers in a QSO party. I think this event was great promotion of DATV!!

I think of the SKYPE function as an "amplifier", that is SKYPE and the internet allow RF video signals to go where they could not have reached before. Peter VK3BFG has a good philosophy to use "balance" during the VK3RTV QSO Parties. As Peter says "…The No 1 premise is to maximise the use of RF and amateur radio frequencies and minimise the use of the internet. We are amateur radio enthusiasts, using computers as tools when required."

I want to thank both Peter Cossins VK3BFG and Don Hill KE6BXT for inviting me to participate and taking the time to allow me to test SKYPE before the QSO Party started. Also, a special thanks to all the folks at BATC who provide the BATC-streaming server.

The author may be contacted at W6HHC@ARRL.net

Interesting DATV Links

- VK3RTV Digital Repeater WEB site – see www.VK3RTV.com
- W6ATN Amateur Television Network (ATN) – see ATN-TV.org/
- Amateur Radio Victoria organization – see www.AmateurRadio.com.au/
- British ATV Club - Digital Forum – see www.BATC.org.UK/forum/
- British ATV Club – select from about 35 streaming repeaters – see www.batc.tv
- German ATV portal for streaming repeaters and forum – see www.D-ATV.net/
- OCARC TechTalk95 article on first VK3RTV World-Wide QSO DATV/ ATV Party in 2011 – see www.W6ZE.org/DATV/
- Orange County ARC entire library of newsletter DATV articles – see www.W6ZE.org/DATV/
- Yahoo Group for Digital ATV - see groups.yahoo.com/group/DigitalATV/

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editor@batc.org.uk

EME Conference

by Trevor Brown

The 15th International EME Conference was held in Cambridge and is the first time the UK hosted this prestigious event, which was organised by the UK Microwave Group, who asked the BATC to video the lectures and make them available via www.batc.tv.

The organisers were not too keen on live streaming of the lectures, so we decided in advance to go for NVOD (Near Video On Demand) which meant the individual lectures would be recorded and then uploaded to the streamer film archive. In the past when streaming in non live mode, we recorded onto the clubs portable hard drive as motion Jpeg files, using the black magic capture card that is installed in the PC which is part of the clubs mobile studio. Off site I converted the files to AVI for compatibility with editing software, edited them adding slides etc, rendered them back to AVI and then re rendered them in RIVA to .FLV format. I then finally transferred them to the streamer via ftp. This process took days and delayed the files from being viewed in the streamer library. This time we decided to do things slightly differently.

The venue was Churchill College Cambridge. As you will see from the above, it was a large Lecture theatre, but a little low on light so not an Ideal TV venue. However for EME we wanted to raise our game and do better, so several changes to the usual streaming formula were required. The first one was to add a camera to the clubs kit. Previously we have used old ex broadcast cameras that belong to several of the clubs members and whilst these had worked in the past there have been problems. The first problem was that they may have been broadcast kit once, but they have long since been retired, so aren't in their first flush of youth and require higher light levels than modern kit. The second problem is that owning one of these cameras does not turn you into a professional operator able to quickly get shots and so the vision mixer is often presented with no usable shots while people struggle with this type of camera.

The lecture theatre and Camera 2 (the lighting looks better than it actually was)

Graham G3VZV getting to grips with the new camera

More of the crew with Peter G3PYB sorting out problems

The clubs mini studio is a Data Video vision mixer, capture card and a rack mounted PC and we have now added a Canon XA10 camera. This small camera will record HD video onto the internal or external memory cards in AVCHD format, but also has a 625 PAL output that can be used as a source on the Data video Mixer. It has a whole host of features including facial recognition software and a pop out LCD viewfinder screen. Whilst it does not have interchangeable lenses it is a good work horse and excellent value for money. Also being a small lightweight camera it will work well with a small 75mm bowl tripod, which is a considerable cost saving on the 100mm tripods used by the larger cameras and also reduces the risk of personal injury that is associated with the larger cameras, when working at a public venue.

The new camera was set up at the rear of the lecture theatre together with the

clubs small portable studio, and from this easily accessible position, produced good mid shot pictures of the presenter on full zoom. The second camera was a member's loan camera, but again small and providing no risk to the public. It was locked off on a different view of the presenter from the front of the theatre. The Data video Mixer has four inputs which were fed with caption slides to top and tail the lectures from a picture viewer, a PAL converted feed from the power point projector and the two cameras. The Churchill AV crew provided a courtesy feed of the PA audio at standard level.

As both of the cameras used had 16 by 9, Chris did some hurried changes to the streamer to make it 16:9 capable; if any of you have uploaded a file recently you will see it has a 4 by 3 or 16 by 9 tick box.

Using the pre-made opening and closing slides, we were able to record the lectures as live and no post editing was required. The standard Adobe Media Live encoder software was used to record the lectures; this was running on a separate laptop and capture card, fed from the Data Video mixer. Once the lecture finished, the files were transferred to memory stick and carried to a remote internet point for upload to the streamer using the colleges 30 Mbit/s JANET connection. (The local guest internet connection had its ftp access closed off, as is so often the case).

Lessons learnt:

The new camera worked well and is the way forward; better pictures, works in low light, will record in camera if required, will deliver HD if required, and presents less of a danger to the public, but most of all it was possible to get the shots required without delay, making a 2 camera shoot work.

Capturing the complete production direct to FTP worked well and transferring files to memory stick and taking them to a working internet connection solves a common on site problem. The lectures were in the Library within minutes of being delivered on the floor.

From our perspective, the quality was somewhat lower than we would have liked and this was partly due to not having the latest Adobe software, a simple fix for our next major event AMSAT 2012.

Yours truly Trevor G8CJS getting to grips with the Data Video Mixer

Noel G8GTZ and Peter G3PYB sorting out the recordings

Just because there is a lectern on the stage don't assume that when positioning a locked off camera, which may not be accessible once the general public have filed in, that the person delivering the lecture will stand there.

Power point video feeds are helpful but if you have lecturers with red laser pointers, these will be lost unless you frame a camera up on the projection screen.

Power points often are created with too much detail for Television, but selecting part of the screen with a camera is fine and will even show the laser pointer.

The Club's new Video camera (the tripod was a member's Loan)

If the power point goes to black when you are using one camera to show it and the other has an empty lectern in shot, you are in trouble!

Conclusions:

Its good that BATC were trusted with producing the on line video for such a high profile event with such high quality speakers. The feedback from the conference was good and we did receive a round of applause from the floor - the results have been viewed around the world by a large number of people who all thought the quality and content was excellent.

At the time of writing it is 4 weeks to the AMSAT streaming and as yet it has not been decided if that will be live or NVOD. If it is NVOD, can we improve picture quality? - the answer is yes. Adobe now have 3.2 software (we had 3.1 at the EME streaming) and this will allow live streaming or recording of high resolution files right up to 1920 by 1080. However, this would produce files well beyond the streamer upload limit of 200mb when used to record 30min lectures.

My thanks to the crew Peter G3PYB, Noel G8GTZ, Graham G3VZV and myself (Trevor G8CJS).

A Tribute

by Tony Ault G3KTU

SILENT KEY
JOHN CARPENTER BALES
(G0HAT)
1937 – 2012

It was a severe shock to hear John had died in the Royal Bournemouth Hospital. This came just a few days after my visit. He told me he had not been feeling well for some time and had been admitted to hospital for tests. He looked tired but we chatted for a while and he said the tests had, so far, not shown the reason for his weakness. I suspected he had been overdoing things and knowing his heart was not strong thought the hospital rest would put things right.

I first met John at school: In 1953 or thereabouts we were both members of the Radio Club. He was two years ahead of me but in spite of this we became good friends and remained so. After leaving school John went to the BBC where the experience gained encouraged him to open Studio Republic, a recording studio, which he ran successfully until his retirement to Sandbanks in 2002.

For many years John was a member of the Home Counties ATV Club where he acted as Publicity Officer. So successfully did he promote ATV that I joined and remained a member until recently.

John joined the Bournemouth Radio Society early in 2003 and, in October of that year, he was voted on to the Committee. John's publicity experience was useful to BRS; he prepared advertising material publicizing various events. During the visit of the Princess Royal in 2005 to open the extension to Kinson, John was our protocol liaison with the Palace.

Since joining BRS John has fulfilled many roles. He gave numerous talks to the Members, on a wide range of subjects. He organised Club outings: BBC Southampton, RNLI Poole and Bletchley Park are visits we all remember with pleasure. He was a strong supporter and was seldom absent from the 2 metre net; he was one of the team which installed the VHF antennae adjacent to room 5 at Kinson. He also hosted the "Mystery Objects" evenings for a time. John was very keen to go out and about and frequently reported on other clubs and their events. He was a prolific contributor to the Newsletter with colourful stories and photographs.

John's wife, Wendy, took on the job of Club Treasurer in July 2004 and the Club and its Members are tremendously grateful to her for this. 2005 saw John and Wendy undertaking the BRS Sale with great success and they continued organising this event until 2011. They have also arranged many enjoyable BRS Annual Dinners in recent years.

John has made a great contribution to the local radio community and we appreciate his commitment. John was a founder member of the Bournemouth Amateur Television Group (BATG) and, until his recent spell in hospital, could usually be seen on the repeater on Sunday evenings. He was also a keen member of the Solent Club for Amateur Radio and Television (SCART) and would usually join the Club net on Monday evenings.

I have tried to keep this to one page which means a good deal has been left out. However, the above is a tribute to John and his dedication to his hobby and the many friends who will miss him.

Our sympathy and condolences go to Wendy, her daughters and their families.

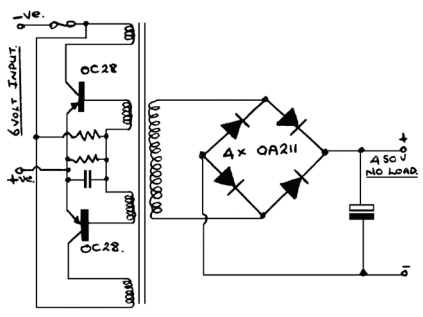
Turning back the pages

A dip into the archives of CQ-TV, looking at the issue of 48 years ago.

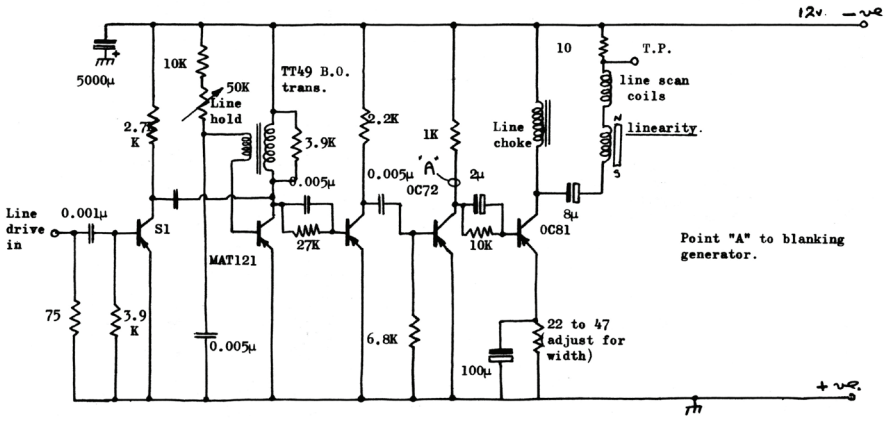
by Peter Delaney

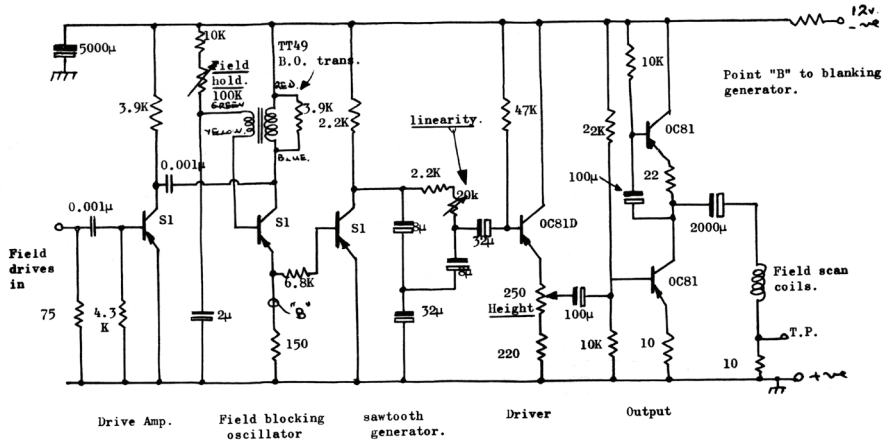
CQ-TV 53

The major articles in this issue of the Club magazine were concerned with television cameras. In amateur use, these were still not common. Those members who had a camera (many used flying spot scanners or monoscopes) would almost certainly have built it themselves, most likely around a vidicon tube. *(For the benefit of 'younger readers', a vidicon was an imaging device, based on valve technology, and typically 1" in diameter and 6" long - a 2/3" diameter version became available later).* Being valve based, a high voltage supply was needed at relatively low current. Grant Dixon therefore wrote that 'as the interest in transistorised equipment is growing there will arise a demand for a fully portable vidicon camera which will work off batteries. Such a camera would be useful for Field Days where mains are not available. The circuit, which came from the Mullard Educational Department (who published many helpful articles at the time) was an oscillator using two under run power transistors (removing the need for heatsinks) of either type OC35 or OC28. The transformer was wound on a Ferroxcube core as used in a tv line output transformer. The output was taken across the electrolytic capacitor - a 1 or 2mA divider chain with a ground connection part way up, to give +300V for the tube anode and -100V for the grid supply. *(A note in the following issue added that the upper resistor was 1k5, the lower resistor 20R, the oscillator capacitor was 1 microfarad, and the output capacitor 2 microfarads).*

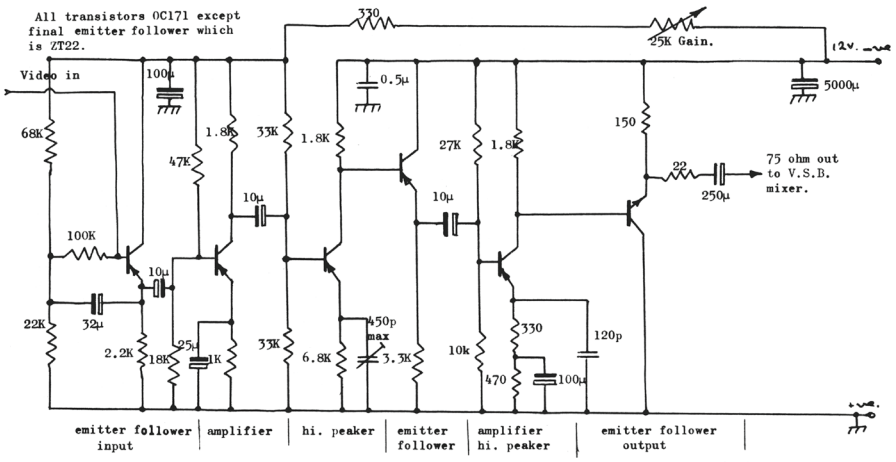


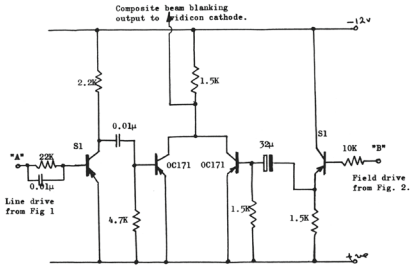
Vidicon HT Supply





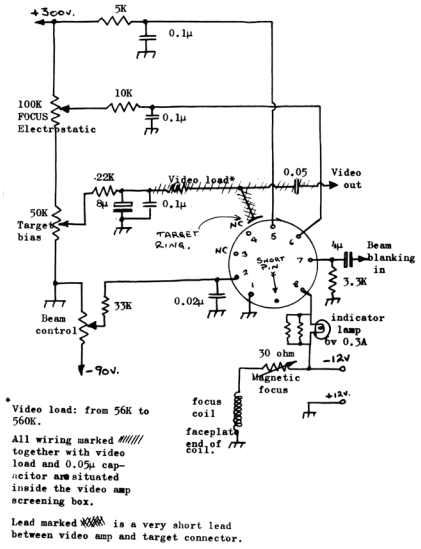
Deryck Aldridge described his experimental transistorised vidicon camera. This was designed to run off a 10V nickel iron battery, with 90V HT batteries (then commonly available!), rather than a circuit such as Grant Dixon had described. The scan and focus coils were made as described in CQTV 33 (and in CQTV 219 in this series), except that the focus coil is two lots each of 400 turns of 30 swg wire, set to draw 100mA via a 30 ohm variable resistor from the 10V supply. The field and line scan generators were driven by line and field drive signals from a pulse





generator, which in each case locked a blocking oscillator. In the normal way, the line output stage put a large voltage pulse during line flyback, and (due to the inductance of the coils) this then causes a sawtooth current to flow in the line scan coils during the active part of the line. The field generator oscillator drove an integrator to generate a sawtooth voltage, which was then amplified to drive the scan coils. A signal from each set of scan circuits was mixed in the blanking generator and fed to the vidicon cathode, to cut off the scanning beam during flyback time. By applying the signal to the cathode, rather than the grid, a much smaller size pulse is needed - helpful with a transistorised battery driven circuit. The video amplifier took the small signal from across the target load resistor (initially a value of 47k being used) and produced an output to drive a 75R load - the addition of blanking and sync pulses being carried out elsewhere. Due to the very small signals involved at the input, the entire video amplifier was housed in a screened box, as close to the target connection as possible. Fig 5 shows the connections to the camera tube - including the voltage divider mentioned in the previous paragraph.

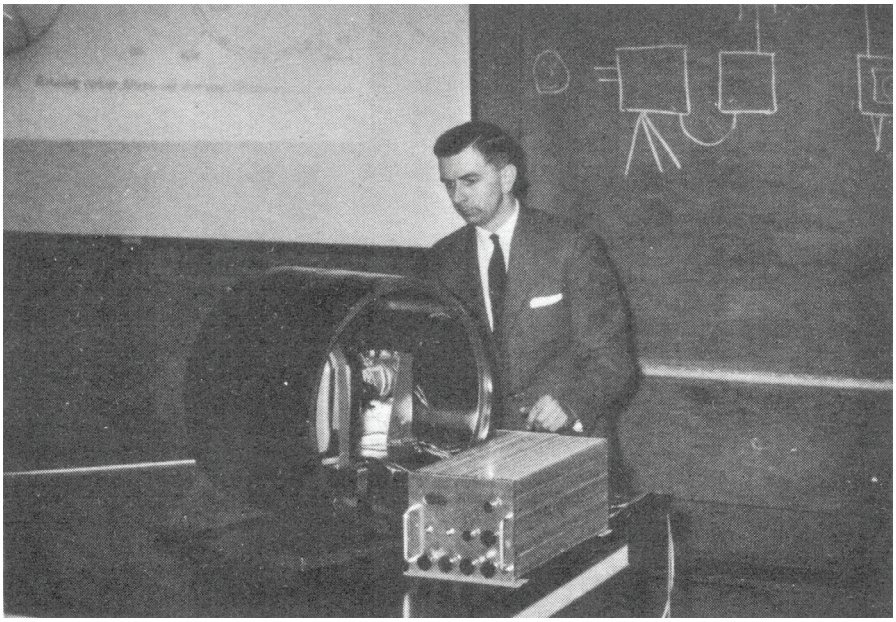
The latest technological advance at the time was described in another article by Grant Dixon - the Plumbicon. This was a photo-conductive type of camera tube, like a vidicon, but would give a greater sensitivity and better resolution than obtainable with a vidicon. Grant said that 'it appears that the physical size of the tube is different from that of the standard vidicon *(it was - the Plumbicons at that time were 30mm diameter, although 1" and 2/3" diameter versions became available later).* The principal difference in the two types was in the photosensitive layer. For a vidicon, this was commonly a thin layer of antimony trisulphide, but for the Plumbicon an n-i-p junction was formed with a layer of n type material



on the antimony dioxide signal plate, then a layer of very pure lead dioxide, and on top of that was a layer of doped lead oxide which formed the p type layer. The spectral response of the Plumbicon more closely matched that of the human eye than did the vidicon. The tube also had a very low dark current - enabling a good black level to be maintained. *(Such tubes were the standard fitment for most of the early broadcast colour cameras, but in amateur use vidicons remained the norm, although a number of broadcast cameras were later acquired by amateurs).*

There was also a 'Black and White Generator, by Mike Cox, to provide a test signal in the way described two issues previously (see 'Turning Back the Pages' in CQTV 237).

Other news included a reminder about the Club Convention, to be held at the ITA premises in Knightsbridge on 12th September, and an 'Explanation of the Disappearance of the Previous Hon Secretary'. John Tanner had taken over from Don Reid after 6 years in the post - 'overseas members can rest assured that there haven't been any disagreements, and that BATC policy remains exactly the same - to promote the cause of amateur television throughout the world'. The reason was simple - Don had gone to work for the TV station in Freetown, Sierra Leone. That 'policy statement' was reflected in the 'What the Other Chap is Doing' notes - as there were reports of activity in Holland, France, Belgium, Eire, the Falkland Islands (where VP8BG/T's amateur station would be the first television station of any kind on the islands) and the USA, as well as across the United Kingdom. The latter included John Tanner, who had given an over-the-air lecture on atv to the Radio Society of Harrow, which included telecine of the Panorama programme about amateur television, whilst in north Wales, John Lawrence had given a lecture at the university using a 14" frame sequential colour montor, and this was featured on the front cover of the magazine.



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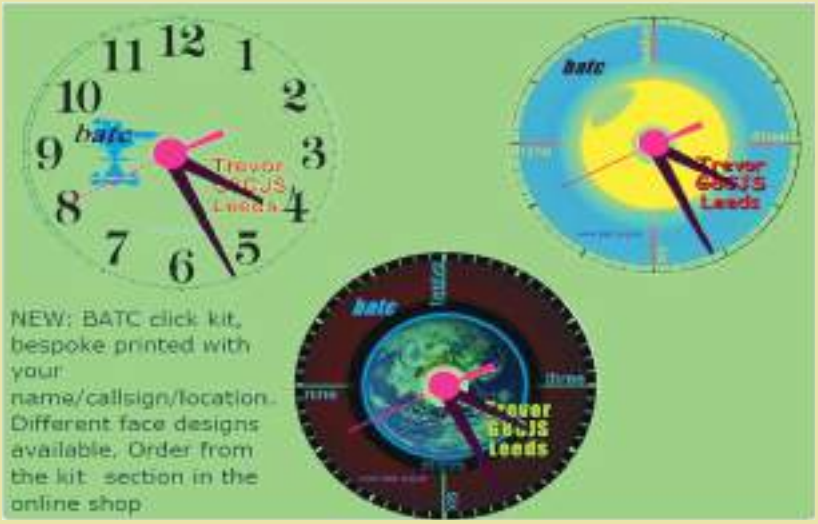

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