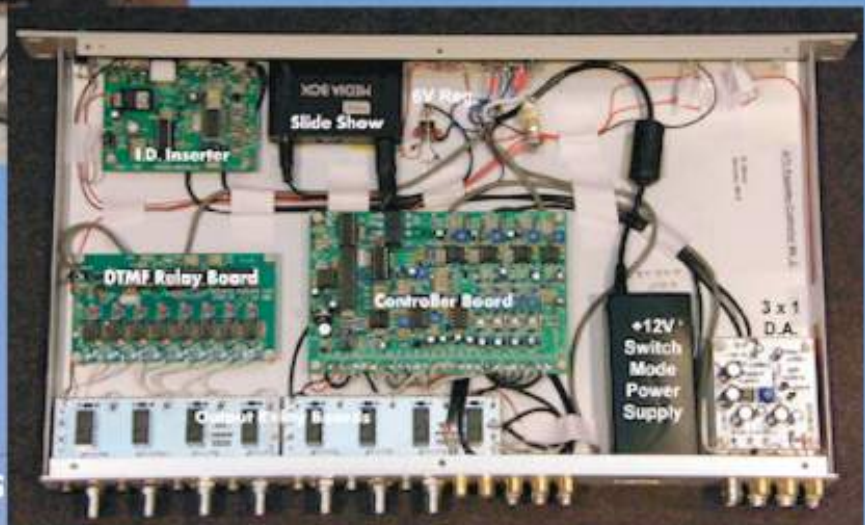


CQ-TV

Issue 237 June 2012



Irish Satellite
BiAGM Update
Sony's 3D Camcorder
G8BYI DigiLite Controller
ATV Repeater Controller
New ATV Repeater for Dublin
23 CMS Propagation Experiences



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Caption Contest

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

No I am not losing my hair I had the grey removed, it's just not a good look.
 Trevor G8CJS

“Before I start the talk has anyone found a pair of spectacles?”
 Mike G6HMG

“Vee haf vays off making you join ze BATC!”
 Jeffrey Barinsky



“So, as you can see from the demo., we’ve perfected the The Wonkavision Teleport camera for hair and glasses.

Would you like to take advantage of the entry-level package now, Sir?”
 Terry G4GHU

...and the winner is Mike, G6HMG Congratulations, a caption generator will be on its way shortly.

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



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The preferred method of contacting a committee member is via email, all email addresses are printed above.

You can 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.

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

CQ-TV is published quarterly in February, May, August and November each year. The deadlines for each issue are as follows: -

February	-	please submit by	December	31st
May	-	please submit by	March	31st
August	-	please submit by	June	30th
November	-	please submit by	September	30th

Please send your contributions in as soon as you can prior to this date. Don't wait for the deadline if you have something to publish as the longer we have your article, the easier it is for us to prepare the page layouts. 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. Please note the implications of submitting an article which are detailed on the contents page.

Editors Preamble

Did you know that you can watch the batc.tv streamer on your iPhone and iPad? Due to the disagreement between Adobe and Apple, the Safari web browser on “i” devices did not support Flash and, as batc.tv uses Flash technology, the streamer was not accessible on these portable devices.

There is however an alternative web browser called Puffin that can be downloaded from the App Store and installed on the iPhone, iPad & iPod Touch, this browser has Flash support built in and enables batc.tv to be viewed on the Apple devices.

I also “tweaked” the code for the chat a while ago, that ensures the chat facility now also works on the cut down version on Javascript that some portable browsers utilise. So you should now have full access to batc.tv from your portable devices.

For the future, I am looking at HTML5 and an alternative server for the streamer, the most promising so far is the Wowza

media server (www.wowza.com) which can transcode an incoming stream into multiple formats and re-broadcast it in realtime.

I am doing some trials with Wowza at the moment and hope to have an update for you at this years convention in October. I look forward to seeing you all there!

A reminder that we now have a new centralised phone number on 01400 414243 which you can call to speak to committee members, it also has voicemail, so if the person you wish to speak to is not available, do leave them a message - your voicemail will be emailed to them to listen to at their convenience. You can also send text messages to this number and if you prefix your message with one of the committee keywords (shown on page 4) your text message will be delivered to them. As a member, you can also utilise this text facility and setup your own keyword by logging into the members area at:

<https://www.batc.org.uk>

I would like to introduce to you all and say a HUGE thank you to Myles Sewter, who has kindly agreed to help out as assistant editor and has saved me a great deal of time by editing several of the articles in this issue.

As usual nowadays, this issue is a bit late in coming, it was supposed to be the May issue, but has slipped to June due to lack of articles to fill the space, so a BIG thank you to all those who have contributed and to the rest of you... where are your articles? Please email me with anything you have and let me be the judge of whether it is suitable for publication! Bear in mind that if it is a constructional article you can get paid for it: you just need to mention that you would like your article to be considered for payment when you send it to me, we can then discuss it's suitability and the amount.

73's
G1FEF
Chris Smith

PS: Thanks to Trevor G8CJS for this issues front cover.



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

Planning is well underway for the BATC ATV convention and Biennial General meeting to be held in Basingstoke on the 6th and 7th of October and online registration is now open.

- 7 talks on ATV and DATV topics including Digilite
- Live demo / ATV group demonstrations
- Specialist traders selling RF and video components
- The BATC shop, with Digilite kits and 2012 convention memorabilia
- BATC members table top sales
- A “test it and fix it” area where you can bring your projects to be tested on professional test equipment
- Venue / timing

The ATV Convention will be held at the Everest Community Academy in Basingstoke

<http://www.everest.hants.sch.uk/>

on Saturday 6th (doors open at 12 noon and lectures start at 1:30pm) and Sunday 7th October (start at 10am, close at 4pm) with the BiGM taking place at 11:15 am on Sunday.

Bi-GM

The Biennial General Meeting will be on Sunday morning when your committee for the next 2 years will be elected, followed by a BATC open forum panel discussion where you can quiz the new committee on plans and thoughts for the future. Admission is free to all BATC members.

Test and fix it area

As DATV requires very different skills and test equipment from ATV, we will be dedicating a large area to a test and fix facility where we will have professional RF and video test equipment and a range of off air DATV signals. We will have experts on hand to help set up and test your digital transmitters and receivers – if you have any special requirements, please let us know ahead of time and we’ll do our best to make it happen.

Demonstrations

As well as a large area dedicated to Digilite, we have already had a number of people commit to bringing along special interest demonstrations. These include 47 & 76 GHz DATV by G3PYB, some unique aerial designs in practice by G8ADM and we are hoping to get a demo of some of the latest innovations in Nanowave communications.

Traders

We are inviting a few specialist traders including Justin G8YTZ and his SR systems units, G4DDK (pre-amp and kits), Alan Melia (specialising in tin plate boxes etc), G4HUP (DDS kits and LC meters) and CSTech (DTMF encoders and decoders) to have small stands at the convention – if you have any favourite suppliers who you think would be interested in attending please contact Noel – G8GTZ at:

bgm2012@batc.org.uk.

Lecture program

The focus of the ATV Convention will be a lecture program with talks on Saturday afternoon and Sunday. The main themes of the talks will be Digital ATV, in particular the Digilite project, and how to get going on 70cms DATV

The draft program for the weekend is below, but is still subject to change:

Register now and save money!

Online registration is now open at

<https://batc.org.uk/biagm.php>

and you will receive a discount for registering before the event. (BATC members receive an additional 10% discount for pre-registration).

Please note that attendance to BiGM only, will be free for members

Free tea and coffee will be available all weekend and sandwiches, cakes and fruit will be available for purchase at lunchtime.

Hotels / Convention dinner

A special BATC rate of £65 B&B (single) and £75 (double) has been arranged at the Apollo (4*) hotel which is within 1 mile of the convention venue

<http://www.apollohotels.com/>

Make a note of the new batc number:

01400 41 42 43

You can also send us a text message on the number
see Contact Details on page 4 for details

please ring hotel reservations directly on 01256 796700 (not available via the web site) and quote BATC to get this rate.

It is intended to hold the ATV Convention dinner on Saturday evening at the Apollo. Please indicate your interest when registering on the BATC website.

More information

For more information, visit

http://www.batc.org.uk/club_stuff/convention/

where you will be able to see updated information on the event and register your attendance.

If you have any ideas you would like to see included, if you are willing to come and tell others about your experiences in ATV, have something you want to demonstrate or just want to get involved in organising your convention please contact Noel G8GTZ at

bgm2012@batc.org.uk

Saturday			
Start	Topic	Comments	Speaker
12:00	Coffee and natter time		
13:30	Conference opens	Welcome and introductions	G8GTZ
13:40	DATV & DATV update	General update on the status of ATV in the UK and elsewhere	
14:00	T1 - Digital basics	A practical session focussing on how to get going on DATV with a focus on 70cms DATV	TBC
14:45	Coffee break		
15:15	BATC Streamer	Update on what's happening with BATC.TV and plans for the future	G1FEF
16:00	T2 - Digilite in theory	An intro to the theory of Digilite – a presentation by Brian G4EWJ and the Digilite team on technology behind the project	Digilite team
16:45	T3 - Tutioune software	DVB-S analyser software – a great opportunity to hear from F6DZP about this really useful DVB transmission analysis tool.	F6DZP & G7LWT
17:30	Close		
20:00	Dinner	Conference dinner at the Apollo hotel	

Sunday			
Start	Topic	Comments	Speaker
10:00	T4 - Digilite in practice	Tips and tricks on how to get the best from your Digilite and what's next for the project	Digilite team
10:45	Coffee break		
11:15	BATC BiAGM	BiAGM for members only followed by an open "ask the panel" session	BATC
12:15	Lunch		
13:15	T5 - Low noise pre-amps	The theory of designing very low noise pre-amps and some practical designs along with do and don'ts of using them in ATV systems. Sam will also have some of his kits available for sale on Sunday	G4DDK
14:00	Coffee break		
14:15	T6 - Radio astronomy	A fascinating insight in to the world of Radio astronomy by Brian Coleman G4NNS and his experiences of setting up a home observatory – see http://myweb.tiscali.co.uk/g4nns/ for more details	G4NNS
15:00	t7 - datv - wHAT NEXT?	A talk by G7LWT on his experiments with narrow band DVB-T modes and the potential of using MPEG4.	G7LWT
15:45	Close		

New ATV repeater for Dublin

by Daniel Cussen EI9FHB

A new TV repeater for Dublin was launched on Sunday 12th of February 2012. It is based on a hill overlooking South Dublin City and is currently broadcasting a testcard on 2390Mhz. The Audio subcarriers are 6.0Mhz (talkback) and 6.5Mhz (intercarrier sound), all analogue.

The control is DTMF on 144.700. Normally the repeater does not beacon 24/7 but rather is turned on for use. 1* Turns on testcard, 1# Turns off transmission. There is currently a ten minute time out timer. Exact control tones will be changed over time when features are added. The input frequency, yet to be commissioned, is 1249Mhz.

As part of co-operation between the Dublin and Cavan repeater systems, and line of sight, it has been possible to link the two systems, which was completed from day one. The Cavan system receives the output signal from the repeater on 2390 and can then relay on it's outputs.

The Cavan System has been operating for more than ten years. It's main output is on 1276.5Mhz but also 2370Mhz and 10.040Ghz. The 1276.5 output with 1249Mhz input was only possible by situating the transmit aerial on one site, while the receive aerial is on another site, with both sites linked on 10Ghz. The reason for not using above 1300Mhz is that the 23cm band in Ireland is only 1240 to 1300, but it has recently been

extended to 1302Mhz. This is the main reason the Dublin repeater is cross band! Filters are expensive, difficult to build and practically impossible for some combinations.

Other Irish TV repeaters such as Waterford have used 1290Mhz which is not ideal for moon-bounce 23cm operators in the area.

The first Television repeater for Ireland was built in Cork by with an output of 1295Mhz. This is still operating.

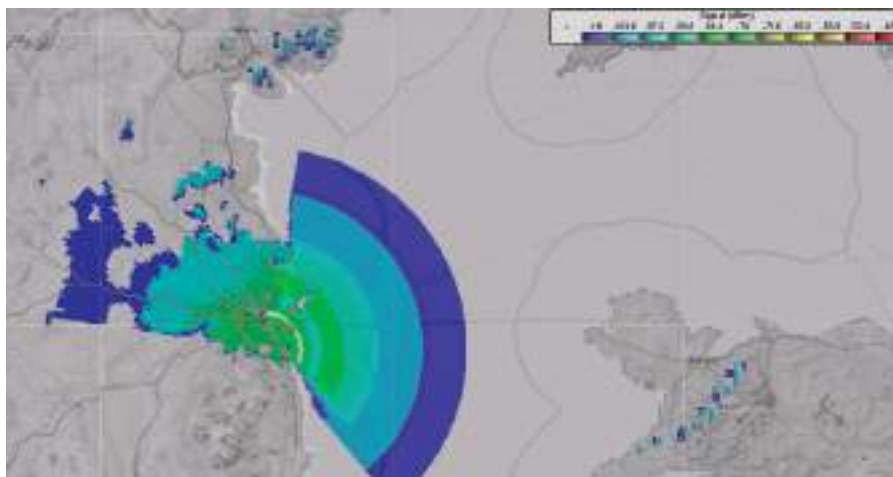
Waterford
<http://www.searg.com/repeaters.php>

Cavan (old)
<http://homepage.eircom.net/~iatc/>

Cavan (new) <http://www.iatc.ie/>

Dublin Club (no info yet)
<http://www.southdublinradioclub.ie>

Belfast (not on air) & Cork
(Scroll Down to end)
<http://www.superiorsignals.co.uk/hamatveire.htm>



The repeater will also have an output on 10.060 Ghz with input on 10.350 Ghz. Power output on 13cm is only two watts into a 2 element horizontal beam pointing north west. It may be possible to receive the signal in North West Wales, at the peak of a couple of mountains but a pre-arranged sked would be best to ensure the testcard is enabled 24/7 and the beam could be directed East.

A large variety of equipment was tested for both the repeater and for users. Low cost and "black box" operation was deemed essential for widespread take up of the new system. More information on the results will be included in future articles including photos of some of the equipment.



Circuit Notebook 109

By John Lawrence GW3JGA

Plug-top Power Supply Tester

I have accumulated a box of assorted second hand Plug-Top Power Supplies (PTPS), some of which are ideal for powering various bits of amateur television equipment. They can be found at radio rallies for around £3.00 and come in a range of voltage and current ratings. The output lead usually ends in a 2.1mm or 2.5mm plug, most having the centre pin positive.



Fig.1. Plug-Top Power Supplies. Linear on the left

All my items of equipment which are suitable for powering from a 12 Volt PTPS have been built or modified to accept a power plug with a 2.1mm centre hole with positive polarity. If there are any PTPSs with reversed polarity, then I can usually correct these inside the PTPS housing, or by chopping the lead, crossing over the connections, soldering and then insulating the joint. If the PTPS has a different size of plug, e.g. 2.5mm, then this can be replaced by a 2.1mm one. You can easily check which size it is by poking it with the shank of a 2.5mm drill.

PTPSs generally fall into two types, linear and switch-mode. Both types, each having an output of 12V at 1A, are shown in Fig.1. The linear one on the left contains a mains transformer and is physically the larger and heavier of the two. The output voltage of a working switch-mode PTPS will normally be as stated on the case and can usually be relied upon up to the maximum current rating. The linear type, which contains a mains transformer, rectifier diode(s) and a smoothing capacitor, has higher

internal impedance and although the output voltage may be correct at the stated load current, it will certainly rise if a lower current is drawn. This rise in voltage may cause problems with some equipment and can be checked with the PTPS Test Box.



Fig.2. The PTPS Tester

The Test Box, shown in Fig.2 provides an easy way of testing PTPSs by providing a suitable load current of up to 700mA in steps of 100mA. An LM317 variable regulator I.C. is used as a current dump. The current can be set independently of the voltage and is

selected by three push-buttons which connect the current-defining resistors to the circuit. Currents of 100mA, 200mA, and 400mA can be added together to produce the desired value of total load current.

The PTPS under test is plugged into the test box and a voltmeter is connected across the terminals. The output voltage is measured for no load and various currents, and the results noted. The graph in Fig.3 shows the output voltage from a switch-mode PTPS compared with a linear one for various load currents. An output lead is also provided for plugging into the piece of equipment you wish to power, so that the PTPS output can be measured under true load conditions.

The circuit of the Test Box is shown in Fig.4. As the circuit is very simple, the components are wired point-to-point.

References:
National Semiconductor
LM317 Data Sheet.



Fig.3. Graph showing output voltage v. Load

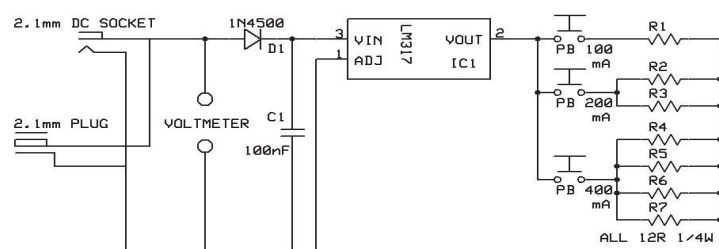


Fig.4. Circuit of the PTPS Tester

PLUG-TOP POWER SUPPLY TESTER

DATV and 70 cm

by Peter Blakeborough G3PYB

A recommendation for frequencies to use, plus hints and tips for DATV operation in the 70cm band.

70cm is a crowded band with whole range of different services; we are secondary users and some geographical transmission limitations are present on our Islands. The old days of reduced bandwidth fast scan transmission have disappeared, following the almost universal move to 23cm and FM modulation. The bit rate reduction through audio and video compression techniques, plus the coding gain of 2 from QPSK 2MS/s modulation allows a much reduced transmission bandwidth whilst retaining good image quality. Horizontal polarization is the norm.

Current accepted practice is the use of MPEG 2 coding and QPSK such that the transmission energy is close to a bandwidth of 2MHz. With the user deciding how much of the bit rate to be used for error correction. For long haul contact with obstructed path the theory says a maximum Forward Error Correction (FEC) of $\frac{1}{2}$ should be used. This takes a significant proportion of the bit rate from the video and audio services. Experience with local transmission into the Isle of Wight repeater GB3IV has shown we can use FEC of $\frac{3}{4}$ or $\frac{7}{8}$. The GB3IV repeater receiver has its FEC set to Auto enabling the user to use the best FEC to suit the path.

MPEG 4 coding will become more readily available as new satellite receivers are deployed with tuners that lock to the transmission rate down to 1MS/s. The rate of change over to DATV has been quite rapid due the availability of low cost satellite receivers. We might expect to see MPEG4 /H264 S2 receivers in regular use.

The take up DigiLite transmitter project has spurred a number of ATV groups to consider DATV only on 23cm. The same devices can produce 2MS/s

transmission on 70cm and we might expect to see MPEG4/H264 coding allowing down to 1MS/s in say 1.2MHz in the future.

What transmission frequency should we use?

We share the band with many amateur and other users. In addition there are local powerful transmissions in near by bands such as Tetra. There is no optimum frequency for all the users of the 70cm band, but after discussion with members of the RSGB Spectrum Forum we have concluded that the centre of energy should be 437MHz with energy constrained as close to 2MHz as possible or less, with minimum ERP for the task. The allocation for amateur satellite is from 435 to 438MHz with the most active segment between 435 to 436MHz

It is unlikely that any repeater outputs will be used with continuous transmissions. However north London DATV is regularly seen on 437MHz into the GB3IV repeater on the Isle of Wight some 70Miles away over a heavily obstructed path. Simplex operation between stations will be the norm, and it useful to consider what techniques and technicalities will contribute to a successful contact.

Receiver technical points.

QPSK receivers set-up to demodulate a symbol rate of 2MS/s will have other nearby transmissions appear in the pass band. IF filtering may be anything up to 8MHz wide. However the PLL demodulator characteristics will offer some selectivity to the wanted DATV signal, but large local signals such as the FM voice repeater in the 433 to 433.5 segment may be present. Users on the input of the repeater may also be present 1.6MHz higher but they will present as an intermittent transmission. Low power telemetry, particularly temporary crane collision warning device on 433.9 area can be troublesome. 10 or 25mW at 150 feet in the air can cover a large area.

A whole range of telemetry signal can be seen in the band 432 to 438 MHz and are quite strong from high sites near out big cities, fortunately they are mostly vertically polarized.

Receiver overload.

Further complications can arise from out of band or close by unwanted signal reducing the receiver sensitivity. The best advice is to ask a local station with a spectrum analyser to see what signals are appearing on your antenna. Then plan for some filters to notch out the largest unwanted signal. Remember even spectrum analysers have a limit to the signal levels they can accept before overloading.

Adding a DATV receiver to your existing repeater.

Bearing in mind the above comment this would seem to be difficult task, or near impossible if the same site has a UHF voice repeater. The SCART group had such a situation at GB3IV. The 433.225 Vertical polarized transmission was 10 feet away from the planned 8 element horizontal yagi for DATV. Some separation was gained by using the horizontal yagi, but a dual notch filter made from ex Tetra band-pass filter provided sufficient filtering to place the 433.225TX into the noise on the DATV converter.

Operating techniques.

Finding a weak remote DATV remote station in the presence of a number of the low level unwanted signals is quite a problem. Most of the DATV receivers have afc of anything up to 5MHz. The tuning pages on the receiver allow a manual mode to input the frequency, the Symbol rate, FEC, FTA (Free to air) etc and then require a scan to allow the demodulator and decode process to function. Unless you have a strong signal the chance of a full lock might be dependent on the peak of QSB. To get round this, lock on to a known local DATV station on 437Mhz or ask a

nearby station if you can visit to ensure you have the 437MHz parameters stored in you memory. The signal level and quality or bit error rate bar indicators on most receivers can greatly assist tuning problems.

Small transmission frequency errors do not cause problems, as the receiver AFC will normally track the incoming signals. Interfering signals will often show as a momentary loss of lock on the quality indicators. Good linearity

on the transmitter is essential. A good indicator is to use a single carrier to place the maximum power near to the 1db compression point (just below compression onset) then switch to QPSK, which depending on the display, should be 8 to 10db below the single carrier level.

70cm digital ATV is great fun, up to 100 miles simplex operation is easily possible with modest power ~50 W, and a slight lift in conditions. I look forward to working you on the band.

Recommendations:

- 437MHz as center of TX energy..
- 2MS/s for MPEG systems.
- FEC to suit path.
- Auto FEC on the receiver.
- Horizontal polarisation
- Ensure good linearity



GB3GV & GB3HV Press Releases

GB3GV was the first ATV repeater to go on air in the UK in 1984. The Leicestershire Repeater Group which up until now has covered the running costs of GB3GV is now suffering a falling membership with consequential lack of income, which in past years has been helped by substantial funding from the Leicester Radio Show takings. There are not many, if any, of the present membership of the Group who use the TV repeater and unfortunately it is the most expensive to run. Unlike the voice repeaters funded by the group which only transmit when opened up GB3GV is on the air continuously showing a test card and captions.

Dave Payne, G8OBP, has been the repeater keeper for more than 25 years and feels that now is the time to

relinquish the post with some reluctance. There have been many requests during his time as repeater keeper for someone to take over or at least help but these requests have received little response.

At the most recent meeting of the LRG committee it was agreed that a decision had to be made about GV's future. In the short term it was agreed that it would operate in periodic beacon mode when not in use rather than continuously as in the past.

Fortunately Nigel Swann, M1NAS, our current Engineering Manager has agreed to take over as repeater keeper for GB3GV and we are pleased that G8OBP will act in an advisory capacity to the new keeper.

The Committee and members of the Leicestershire Repeater Group would like to put on record our thanks and appreciation of Dave's efforts over the past 25 years.

In the longer term LRG Committee have taken the decision to review the future of GB3GV in a year's time. It is hoped that during this period we will see some evidence of use of the repeater as well as an increase in funding and membership of the group. Any offers of help or donations can be made by taking a look at the LRG website at

<http://leicestershirerepeatergroup.webs.com/>

Many thanks, Geoff Dover, G4AFJ,
Chairman LRG

GB3HV ATV repeater is about to reappear.

It will be installed at Woodcote 8 Miles north of reading (IO91LM). The new GB3HV will receive signals on 437MHz DATV (2Msymbols, auto FEC) plus 1248MHz FM Analogue and DATV (4Msymbols auto FEC).

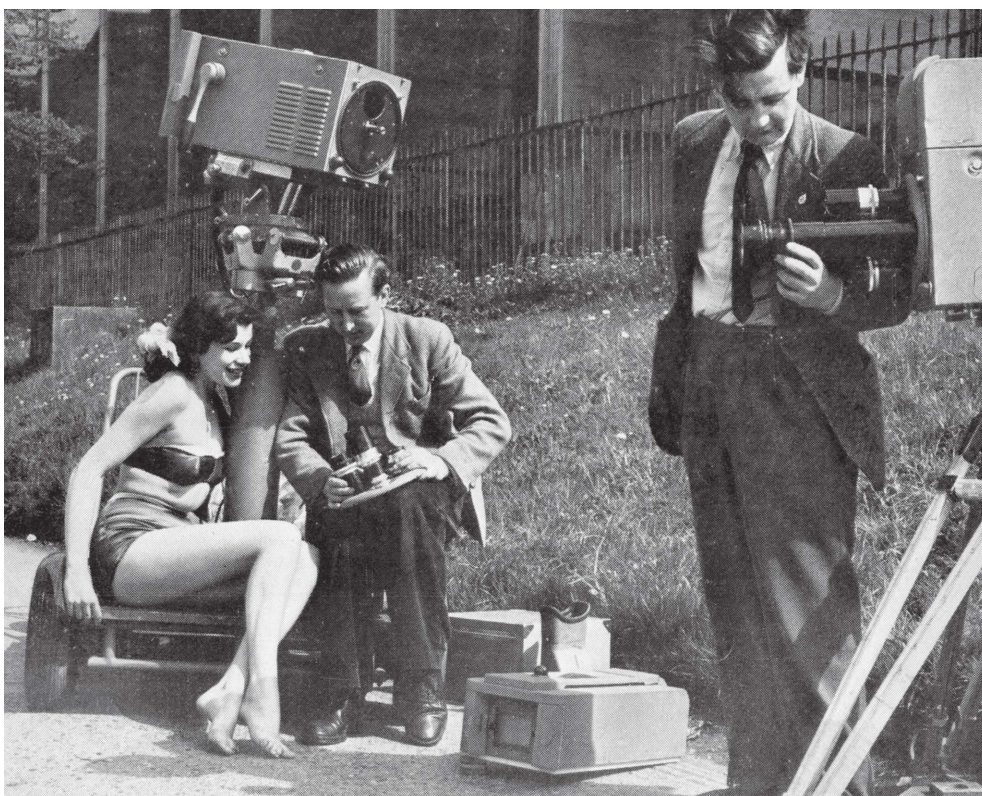
The output will be for the time being on www.batc.tv pending an application for 1308MHz





WHY DO THEY NEVER GET IT RIGHT IN PERIOD DRAMAS?

Dicky Howett writes, Anna Chancellor and an I-phone? An LCD autocue? Surely this can't be a tv studio circa 1956? Well actually it is- and isn't. Pictured on set during a break, Anna (playing journalist Lix in the BBC 2 drama series 'The Hour' (series Two this Summer)) consults the digital airways. The 'autocue' itself was placed strategically on the lens of a Marconi Mk III image orthicon camera in a 'Lime Grove' studio in order to bolster the confidence of an amnesiac actor. Unfair really, as the cast of 'The Hour' were top grade- word perfect throughout- helped in no small measure by their friends, Paul Marshall and yours truly at Golden Age Tv.



Dicky Howett writes:

As is evident from this early 1950s photograph (and as we have long suspected) nice young ladies in swimming costumes were absolutely fascinated with Marconi tv cameras, turrets and lenses. The bedazzled female is a singer called Sonya Rook, whom at 18 years of age graced the cover of a long defunct tv journal called 'Scan Television News'. The overdressed BBC engineers are billed as 'overhauling' the cameras at their base at Wembley which obviously had a facility for sunbathing. These days, cover girls would be pictured topless, but back in 1951 only the cameras were so brazen

Dicky Howett
www.golden-agetv.co.uk

All the nice girls love a... Marconi Mk II

Contest News

March Repeater Contest

Sadly, I did not receive any entries for the March Repeater Contest.

Olympics Restrictions

The Summer Fun Contest will be unaffected by the OFCOM restrictions on amateur radio during the Olympics, so please make every effort to get on air and submit an entry.

At the time of writing, it appears that 70cm and small segments of the 13cm and 9 cm bands will be unavailable in the London area and near to 2 other Olympic venues for International ATV Contest in September. Efforts are

underway to gain an exemption for the weekend. However, given that the majority of entries for this contest are usually in 23 cm, and the restriction on the use of 13 cm is not in the ATV segment of the band, there is no excuse for not getting on the air!

Contest Calendar

1200 9 June - 1200 10 June 2012 (UTC)	BATC Summer Fun Contest
1800 8 September -1200 9 September 2012 (UTC)	International ATV Contest
1200 8 December - 1200 9 December 2012 (UTC)	BATC Repeater Contest
1200 23 March - 1200 24 March 2013 (UTC)	BATC Repeater Contest

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.

Letters to the Editor

Dear Editor,

I have a hitachi portable color camera model no FP 20 /FP20S .

I would like some information where I might obtain spares and if anyone else is using this camera?

Thank you.
Regards G7NMA
g7nmeden@btinternet.com

Dear Chris

Karen Orton has designed an interesting alternative source of 405 line signals (CQTV 236 p17). However she is being a little harsh when she claims: "The aim however, is to provide a good source of signals for the obsolete 405 line standard, for which no modern consumer source exists". Aurora Design sell a range of standards converters that will take PAL or NTSC inputs and convert to almost any vintage standard

http://www.tech-retro.com/Aurora_Design/Home.html

I understand that over 500 of the SCRF single standard converters have been sold, mostly to UK enthusiasts who wish to use 405 line sets. While I believe that the Aurora is the only source of 405 line pictures currently commercially available we should not neglect others who have worked in this field. I have written on this subject for the BVWS Bulletin. The articles can also be seen in the publications section of my website: www.borinsky.co.uk

Yours sincerely
Jeffrey Borinsky

Hi All,

This announcement has just been placed on the RSGB website concerning delays in repeater licencing...it doesn't tell us much we didn't know already but if it could be given publicity around the ATV community that would be good.

<http://www.rsgb.org/news/articlelinks.php?id=0325>

Thanks,
Graham

A last ditch and probably doomed battle to save the 615 MHz amateur radio band in New Zealand:

<http://www.youtube.com/watch?v=vevvn9CWwMU>

73 Trevor M5AKA

DigiLite in Orange County by Ken Konechy W6HHC

The DigiLite Project team is to be congratulated on providing a great service to hams who want to "try Digital-ATV" without breaking their bank account. The board works and produces good DVB-S protocol signals that are capable of being received on the low cost Free-To-Air Set-Top-Boxes to provide the foundation for a low cost DATV station. I can see this project expanding the ranks of hams using DATV, especially analog-ATVers moving to digital technology. (extract from the Orange County news) See <http://www.w6ze.org/DATV/TechTalk97-DATV.pdf>

Source www.W6ZE.org

News

Rare DX

Week beginning Sunday 11th March 2012 propagation conditions were very good on VHF/UHF. This was due to a large area of high air pressure over our area of Europe. On Tuesday 13th, I worked down to the German/Austrian border on 70cm SSB.

On Wednesday the 14th March 2012 I was transmitting 70cm digital television to GB3IV. Two French stations called me on 144.750 MHz and told me that they were watching my pictures direct on 70cm. They were Rolf, F9ZG and David, F4BNF in IN99GB square, south of the IOW near the French coast, they were very strong on 2m. I turned the beam slightly to point directly at them and we had a long duplex conversation while they were watching my pictures.

F9ZG then sent pictures to me, also on 437.00 MHz, Tx power 100W. He uses a very low symbol rate, 1.024 MS/s and 1.667 MS/s. My receiver, an Alteia, locked on to this higher symbol rate but would not decode any pictures because of the very low symbol rate, so it's just a one way contact.

I believe this is a first for a 70cm digital fast scan contact between England and France. It may also be a UK distance record for 70cm digital transmission, ~180 miles, ~290 km

The following day both Peter, G5PYB and Mike G8LES also had two way contacts with the French stations.

My Details:

Callsign: G8ADM
Tx. Power: 30 W
Frequency: 437 MHz
Antenna: 24 element Tona, modified.
Symbol rate: 2 MS/sec
FEC: 3/4
Locator: IO91TO, 450 ft asl.

Well it's these rare moments that make it all seem worthwhile. Dave



Finding a safe haven for ex broadcast kit becomes more difficult every day, I know several of our members do their best and Graham Hankins was concerned about Analogue transmitters in his Practical Wireless ATV column.

These are all part of our heritage, but Video Tape machines should take precedent as they are the only way to recover the programme heritage, which is dependent on the obsolete machines being preserved and refurbished. The picture shows two 2" Quadruplex machines (AmpeX AVR 2's) which

have resided outside for 20 years and I suspect are well beyond refurbishment

There is still a considerable amount of Television programming still residing on obsolete formats particularly 2" Quadruplex which was one of the longest surviving broadcast formats from its conception in the late 50's running up until the 1980's and longer in some parts of the world

Source Dave Seig
Quadruplex List



VHF Communications Magazine back issues now on DVD

All issues for the 1970s (including 1969), 1980s and 1990s have been scanned and stored as pdf files that can be accessed using a pdf file reader, they are in image format not text format. Three DVDs are available covering 1969 to 1999, each one contains a decade of magazines and now 2000 – 2009 again this DVD contains a decade of magazines as pdf files.

Magazines from 1/2000 to 4/2001 in scanned image format, but from 1/2002 to 4/2009 the magazine was produced electronically therefore these magazines are in text and image format on A5 pages. A bumper DVD is also available that contains all magazines from 1969 to 2009. That is 164 magazine. It also contains a full index for those 41 years in pdf and Excel format so that you can search for that illusive article easily. For more information vist: www.vhfcomm.co.uk



I think the first time I saw ATV pictures from a live model Helicopter was back in the days when the BATC ran there Annual Rallies at the Post House Crick, Brian Parkins was the model maker responsible for that pioneering,

Things have progressed, more engines enabled bigger payloads and of course TV cameras get smaller and light every day. Camflyer might not be sending its pictures back by ATV but it does record some stunning pictures see the three videos at:

<http://www.youtube.com/watch?v=hTuj2PbEaTs>

<http://www.youtube.com/watch?v=hTuj2PbEaTs&feature=channel&feature=channel>

Source Der TV Amateur

Activity Nights on batc.tv

A lot of repeater groups are now holding activity nights based around activity on their BATC.TV streaming channel.

Take a look at the following activity nights and join in with the discussion on the chat window – but don't forget to enter your name / callsign when you join using the /nick function.

If you hold a regular net on BATC.TV, let us know and we will publish the details.

If anyone is regularly streaming a repeater from their members channel, get in touch and we can move it to the more prominent ATV Repeater channel.

When you view live streams, bear in mind that some stream admins restrict access to the chat facility in order to reduce spam and innappropriate postings. All batc members can login using their members username / password to gain access to these restricted chat rooms.

If you don't yet have a login and you are a member of the batc, visit <https://www.batc.org.uk/register.php> to request a login.

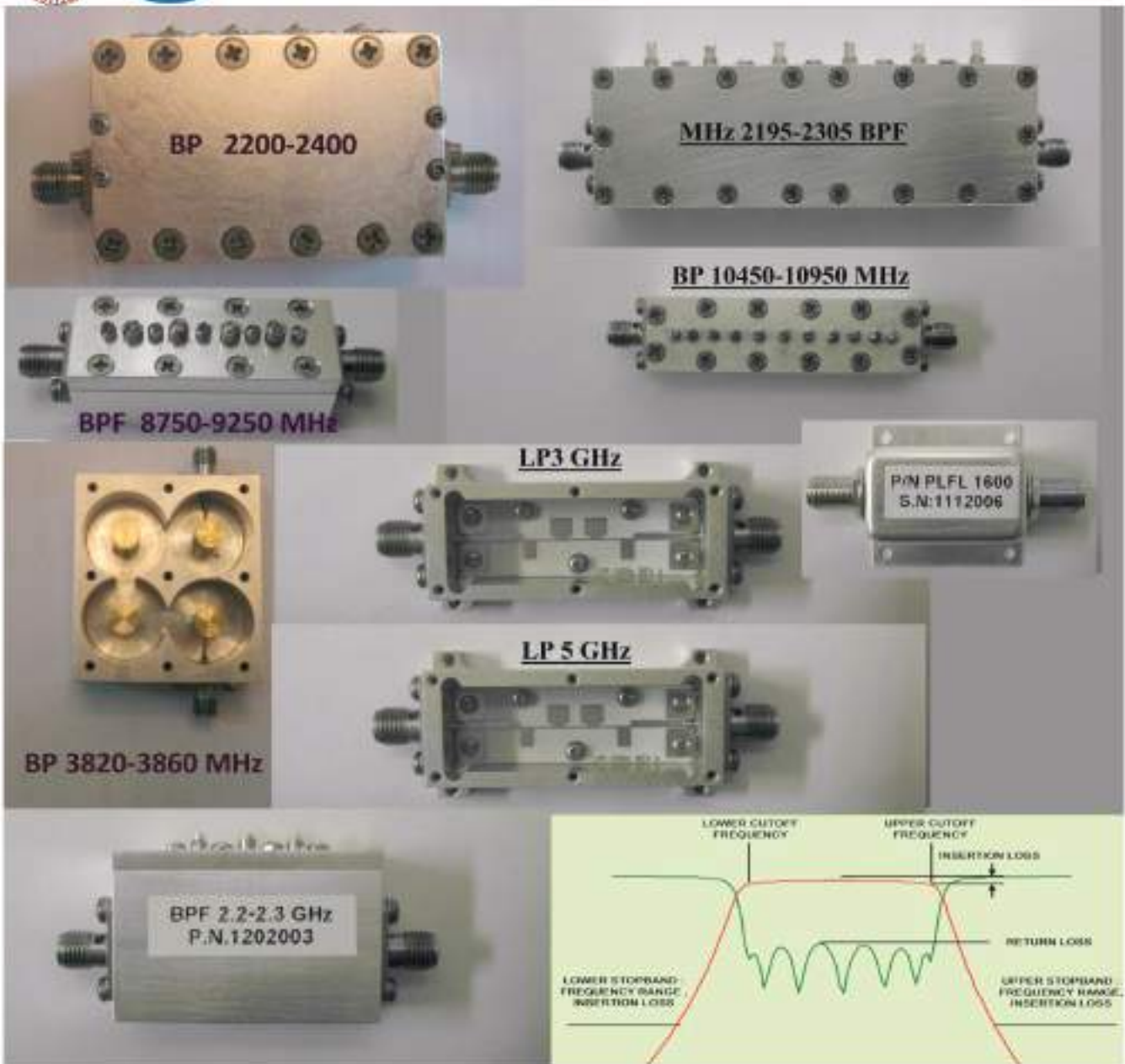
Night	Repeater/Group	Comments	Time (UK)
Sunday			
	GB3SQ tests	G8AJN member stream	8pm
Monday			
	VK2RTS - Sydney	VK2CRJ member stream	11am
	GB3IV		8pm
Tuesday			
	GB3TM		7pm
	GB3HV	Live from club meeting on 4th Tuesday of each month	8pm
Wednesday			
	VK7OTC	DATV experimenters evening / talks	10:30am
	GB3NQ		7pm
	GB3BH		8pm
	GB3SQ	G8AJN member stream	8pm
	GB3ZZ		8pm
	GBNQ		8pm
Thursday			
	GBPV		7pm
	GB3TB		8pm
	GB3UT		8pm
Friday			
	GB3GG		8pm
	GB3VL		9pm
	GB3EN		8:30pm

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

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Use the table to define the filter specification
 Delivery date and outline within 2 - 4 working days
 Typical Numbers of Resonators: 3 - 8
 Typical Relative Bandwidth (BWF0): 3 to 20%
 Typical Frequency Range 1- 18 GHz
 Minimum Quantity 3 units per filter type
 Typical Delivery is one month max
 No NRE 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

On the move?

by Ian Pawson

A few years ago, the main benefits of joining the club were the annual convention and the CQ-TV magazine, posted to you four times a year. Well, we all know what happened to conventions – a lack of interest killed them off. This leaves the magazine. I can remember the fuss that ensued when its format was changed from the miniature A5 to the current A4 size. Much easier to read, decent sized pictures and circuit diagrams.

However, technology moves on and the requirement for a paper magazine has diminished since the arrival of electronic versions for reading on a computer and also the popularity of eBook readers/tablets/smartphones. At the time of writing, only 40% of the membership pays for a paper magazine.

Up to now the club has provided all members with access to an electronic version of CQ-TV in the form of a pdf file. This is just a lower resolution copy of the file that is sent to the printers and is thus in a fixed, three column format, in portrait mode. This format is not really suitable for reading on a computer and certainly not on a mobile device, due to its fixed layout.

So in order to provide the 'cyber' members with a better experience in reading CQ-TV it was decided to create a mobile friendly version. The 'standard' system used by most publicly

available eBook sources is the ePub (from Adobe) format. This is an open source, non patent encumbered, system that consists of a series of xml files bundled up in a single container file.

In true 'standards' fashion there is more than one currently in use. The most popular eBook reader is unable to handle the most popular eBook format. The most popular eBook reader here in the UK, and no doubt in several other parts of the world, is the Kindle from Amazon. Unfortunately it is unable to read eBooks in the .ePub format. It uses a proprietary binary format that is DRM enabled. However, it will also read the mobile binary (.mobi) format that is DRM free. To cater for this device, ePub format files have been converted and made available for download as .mobi files.

For Apple users to be able to read the ePub format file on your iPad/Phone you will need to download and install the iBook app (if you don't already have it installed) and then use iTunes to transfer the ePub book to your device.

The new kid on the block

As if there were not enough eBook formats, Google has introduced the 'currents' service for Android powered devices. This seems to be mainly aimed at blogs and news feeds, however it also works nicely for magazines like CQ-TV.

At the time of writing this service is officially only available in the USA. However, a quick search on the internet will enable you to find and download the .apk file and then install it on your device.

The service is subscription based and the links on the BATC web site will lead you to the subscription page for that particular issue.

Personally I find the results when using 'currents' are better than using an ePub reader, but you may feel differently.

If you have any comments or suggestions on these mobile formats then please let me know by sending an email to mobile@batc.org.uk



Poetry corner

I thought that you might like to use these outbreaks of poetry to fill a corner in CQ-TV (they appeared on batc.tv GB3IV's Chat Line):

03/03 05:23 BALdrin :
Yesterday upon the air,
I heard a buzz that wasn't there.
It wasn't there again today,
Oh how I wish t'would go away!

03/03 15:01 JLBaird :
We flog away on that hill
to bring them pics and sound
but when we want to test it
nobody is around.

We clear the snags only to find,
that an armchair critic has a buzz on his
mind, but the buzz is only on the stream,
so should we really care?

Because it only happens when IV isn't there.

It's nice to know that John Logie is still with us in spirit !

73
Howard Chapman G3NZL

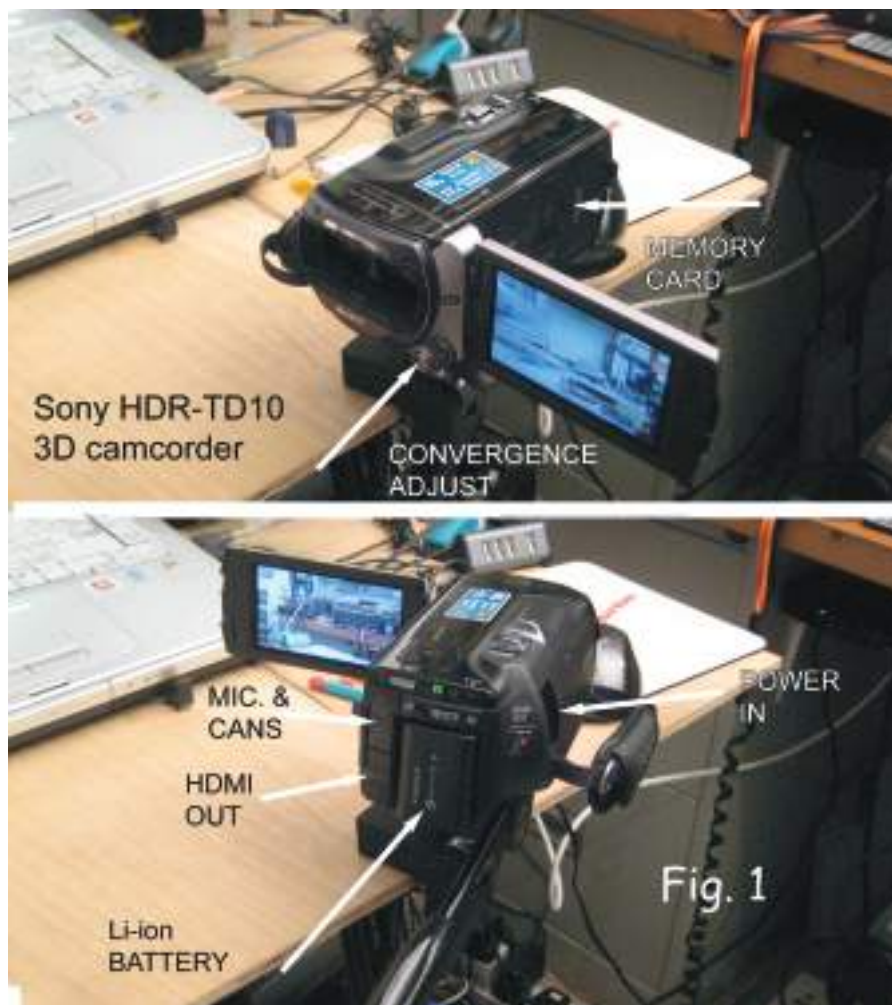
Sony's reasonably priced 3D camcorder

by Mike Cox

Sony have introduced a reasonably priced "one-box" 3D camcorder for the consumer market, the HDR-TD10E. A series of views of the camera is shown in Fig. 1.

The camera has two Exmor CMOS imaging chips with a dual 10 x 1 zoom lens [3D]. It records to an internal 64 GB memory card, and allows use of an SD card for additional [and removable memory]. It is powered by a 7.2 volt, 14 WH Li-Ion battery which claims to run for up to 2 hours. [NP-FV70] The camera measures 15cm long, 9cm long and 7 cm high, and weighs 722 g with NP-FV70 battery fitted. Fairly heavy to hold in the hand for long, but remembering the rules about whip-pans, and unrelated cuts in 3D, I am sure you will use a tripod.

However, there are two settings of image stabilisation fitted; the more powerful setting appears to introduce considerable delay in the image. The viewfinder is a 3" LCD with a parallax screen that shows the 3D images to good effect without the need for glasses. The display is a touch screen, and many of the camera functions are controlled from it. The camera records 3D images as "Side by Side", or as "Frame Packing". There is an Auto position in which the connected 3D TV tells the camcorder what to do. Output direct is via an HDMI [small] connector, and it can be plugged into a 3D display to



give a "live" 3D image. However, the LG 3D monitor [CQ-TV 236] will only accept "Side by Side" setting. (See Fig. 8). For editing, the removable memory card can be plugged into a suitably equipped computer, or the computer can download files using the USB cable supplied.

Motivation

Now some of you may wonder why I keep buying bits of 3D kit, or making them. I suppose it is the excitement of a newish technology. This started for me with 405-line TV from Alexandra Palace in 1949. Living in Ipswich, very much a fringe area in those days of only the AP transmitter, there was enormous excitement in receiving any sort of picture on a VCR 97 [6" green phosphor electrostatically deflected cathode ray tube] in an ex-radar display unit. I can even remember the first picture I saw, which was a policeman drinking a cup of tea. Cannot remember the name of the programme now. I later changed to the Electronic Engineering TRF receiver using 4 EF50 valves, except that to get any sort of decent signal, I had to add two more stages of RF at the front end. It was not all that stable!



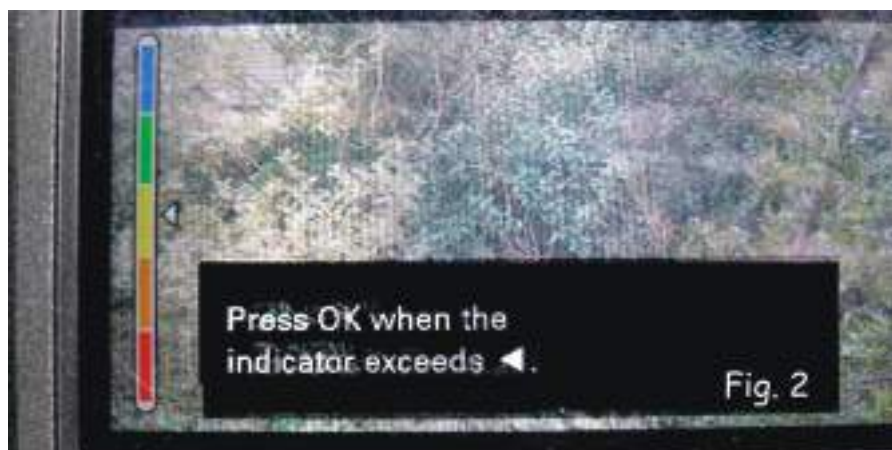
Before I joined the BATC in 1955, I had built a flying spot scanner [using a 5FP7 CRT], shown at the 1955 Convention, using the VCR97 as monitor. Acquiring a 5527 Iconoscope tube, I built a camera around it. As this tube was very insensitive, I next built a transistorised Vidicon camera, used at ABC TV, Teddington, for captions in colour demonstrations using a prototype COXBOX.

As colour was the coming technology, in 1966 I built a colour camera using 3 vidicons. [see CQ-TV 58/60]. So there is considerable attraction in learning about 3D, and there is a lot to learn, and kit to make, particularly as it may sometime be broadcast in the UK [I don't count SKY as I will never put money into Rupert Murdoch's pocket].

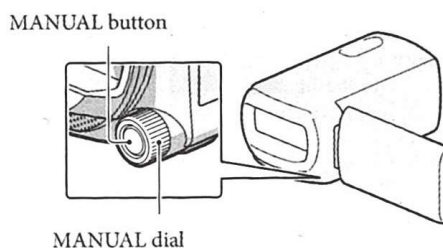
Adjustments

The camcorder can record in 2D or 3D – indeed some nice features seem only to be available in 2D mode. Stills can only be recorded in 2D. Before we do any shooting in 3D, there is an automatic lens optimisation routine. You are asked to point the camera at a suitable scene, and when the scale on the viewfinder exceeds the marker, press OK. The camera then runs through a zooming exercise, and if you are lucky, comes up with a caption saying “Complete”.

Note – before carrying out this exercise, put camera on a tripod, and don't shoot through a window. It does not seem to like this. Results are shown in the Figs. 2 - 4. The camera automatic functions such as exposure and focus seem to work well, leaving only the adjustment of the 3-dimensional appearance of the image. There is a Manual dial at the front of the camera. [Fig. 5.] Pressing the button in the centre of the dial allows depth of image to be adjusted using the dial. This dial can also be menu-assigned to other functions such as Focus, Exposure, Shutter Speed and White Balance Shift The 3D viewfinder takes some getting used to as it is an autostereoscopic display and moving your head can distort the image. As CQ-TV is not yet printed in lenticular form, you cannot see the 3D effect in the viewfinder pictures, but trust me, it is there.



Adjusting the 3-dimensional appearance of the image during recording [3D Depth Adjustment] is assigned to the MANUAL dial as the default setting. You can adjust the depth of 3D images by operating the MANUAL dial.



- ① Press MANUAL.
 - ② Rotate the MANUAL dial to adjust the depth of the image on the screen.
- If you press MANUAL for several seconds, you can assign another menu item to the MANUAL dial.

Audio

The internal microphone records 5.1-surround sound, with an interesting level indicator on screen. [Fig. 6] The camera is equipped with a 3.5 mm microphone jack for use with external devices such as Rifle microphones, or input from a Radio Microphone. There is a shoe on the top of the camera, but it is not a standard size.

Control

Unlike older Sony [and Canon] camcorders, it has no LANC jack, but it does supply an IR remote control unit, which could be mounted on the pan bar of a tripod. This controls Record start/stop and zoom. Fig. 7 shows the arrangement.

Connectivity

Fig. 7 shows the camera with all the possible connections to it. I discovered that there is no PAL output from the SD cable if an HDMI cable is connected. So bang goes the idea of using the SD out for monitoring, while using the HDMI for full 3D output. Recording should still be OK.



Power

With the NP-FV70 battery fitted, a recording time in 3D of 80 minutes is claimed, but I haven't had the camera long enough to comment on this. With a 32 GB SD card, claimed recording time is 150 minutes, i.e. 2 batteries worth. It is definitely worth getting a spare battery. As supplied, the power adaptor

will only charge a battery that is in the camera, which means making sure the spare is charged before a recording session. Sony sell a separate charger – BC-TRV, which will charge a battery independently. However, Sony charge around £70 for such a charger, whereas www.digitalmediastore.co.uk has a suitable charger for about £13.



Other Tweaks

Using the Settings menu, a box called HDMI 3D Setting can be seen. Touch it, and there are 3 choices: - Auto, Side by Side, and Frame. As I use it with LG 3D monitor, I chose Side by Side. Figure 8 shows the resulting display on a 2D monitor.

Software

With the camcorder is a disk containing a fuller version of the manual, together with a software programme called PMB. This allows viewing and simple editing of both moving and still images from the camcorder.

Conclusion

All in all, a worthy attempt at a single box 3D camcorder for the Prosumer market. At the price I paid for it at Amazon, it represents good value. I will deal with editing using Sony Vegas Movie Studio HD Platinum in a future



article, unless Trevor beats me to it..

Hope to show some results at the BGM in October. As always, when one buys a

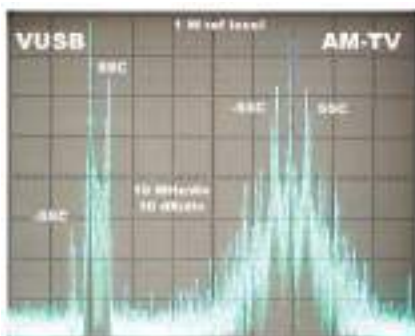
piece of kit, the manufacturer brings out a newer model almost immediately, so Sony have brought out the HDR-TD20, but it is difficult to see what has been changed.

More News...

Two new ATV transmitters

Always pleased to see new ATV products reaching the market place. This time is from KH6HTV who has launched two ATV transmitters:

The first one is unusually an AM VSB Transmitter for 70 cms. The virtue of VSB over conventional AM is shown in the Spectrum analyser display. The bandwidth is reduced by some very sharp filtering, which produces spectrum friendly gains. They also go on to explain that filtering can be obtained easily, without resorting to an inter-digital channel filter which make it almost impossible to change transmitter



frequency. The new transmitter uses modern, Synthesised VUSB TV modulators which are available at reasonable costs. They typically output 0 dBm of RF power. Using high gain, high power, linear amplifiers, they can be readily amplified up to many Watts of RF power

The second transmitter is a jump in technology to DATV using DVB-C QAM64 format. The press release goes on to say that any digital TV or tuner can copy the signal directly with nothing more than a preamp. It might be a while before we start exchanging DATV pictures over the airwaves with the States so I won't even think about



compatibility with digiLite. Enough to say the output is compatible with their digital receivers and that should get a lot of ATV's into DATV in the states.

For more details go www.kh6htv.com

ATVQ goes full colour

ATVQ have been running their printed magazine in full colour for the past year on a trial bases, and the feedback has been overwhelmingly in favour of keeping full colour. It costs 20% more to print in full colour so they have decided to bite the bullet and increase the yearly subscription to \$22 in order to maintain this feature. The new rates went into effect in February. Last time I spoke to anyone from ATVQ Magazine it was interesting to learn that cyber has not taken off to the same level as with CQ-TV: We are currently running at 60% cyber and I am not sure we could full colourise the paper version for a 20% hike in subscription.

For more details go to: www.atvquarterly.com

The G8BYI DigiLite VCO Controller

by G8AJN

This is a full-function DigiLite Controller designed by Richard Burrows G8BYI using the 16F628A 18pin SMD.

In Circuit Serial Programming (ICSP) allows you to change the software without the need to remove the chip. Header JP3 is used for this function, more details later in this article.

The 470 ohms and 10k dividers reduce the maximum voltage from the 5v PIC chip to prevent damage to the ADF4360-5 which runs on 3.3v. JP1 is the 3 pin connector that connects the PICboard to the VCO board where the original PIC chip sat. These connections should be kept to an absolute minimum length. Richard recommends using 3 feed-through capacitors to get into the VCO can if separate to the controller board, but ideally keep the BYI board and VCO in the same fully enclosed can. Screened wires may be an alternative to the rather expensive feed-through 1000pF capacitors. However you decide to connect it, keep the leads short.

The VCO requires 8v from a regulator (or the one on the DigiLite) this can feed into the 5v regulator on the board. A heatsink on the 5v regulator should not be necessary as the BYI board uses only 40mA. Because the chip is Surface Mount type it is necessary to program the software into it either before fitting or using In Circuit Serial Programming (ICSP) after it has been soldered onto the board.

Please note: R13 and C6 are not required.

Richard has now set software to display on a 2x16 or a 2x20 lcd. It uses a push button for the Mode change switch to change between 100KHz stepped tuning mode or one of 24 pre-set channels. The other two push buttons set the frequency as up/down buttons, when you hold the buttons while in Tune mode the frequency steps through faster to speed up getting to the frequency you want.

The unit remembers the last frequency used and comes back on at that frequency. The ADF4360-5 VCO chip on the Ultram board uses a 24bit latch for data entry, so the 24bit long word needs to be built up from three 8-bit words.

‘++++ Programming notes +++++

‘DWORD usage - lowbytes=1st 8bits byte1=2nd 8bits, byte2=3rd 8bits

‘++++ setfreq:

‘reg A= 0-31 max 5bit

‘reg B= 0-2096986 13bit max

‘1240MHz= N=12400 b=387 a=16 P=32

‘1320MHz= N=13200 B=412 a=16 (p=32 prescaler is in function register)

‘div=bp+a for 100khz steps this is freq as well which is convenient

‘++++ lcd display calc

‘Areg=areg+1 :If Areg >32 Then Inc Breg: Areg=0

‘n=b*p+a

‘ N=(32*Breg)+Areg :’shows freq. on lcd

‘Initial Freq as defined for 100khz steps

‘+++Other adf4360-5 chip Parameters that are set+++

‘ PFD Freq 100Khz

‘ Ref Freq 10MHz

‘ RF Prescaler 32/33

‘ Internal /2 not selected

‘ Output /2 not selected

‘ CP Gain=0Current setting 2.5mA

‘ RF PD Polarity Positive

‘ Charge pump active

‘ Counter Reset Disabled

‘ Lock detect Precision=3

‘ Band Select Clock Divider Value=8

‘ O/P power -6dbm

‘ Muxout = digital lock detect

‘ Core Power 10mA

‘ Mute till lock enabled

There are three main latches in this device, called R ,Control and N latches. There are many other parameters that can be set by the user, but here we are using preset values supplied by Analog Devices in software they supply on their website. Please refer there for further technical information. The latches must be addressed in the correct order, R then Control then N.

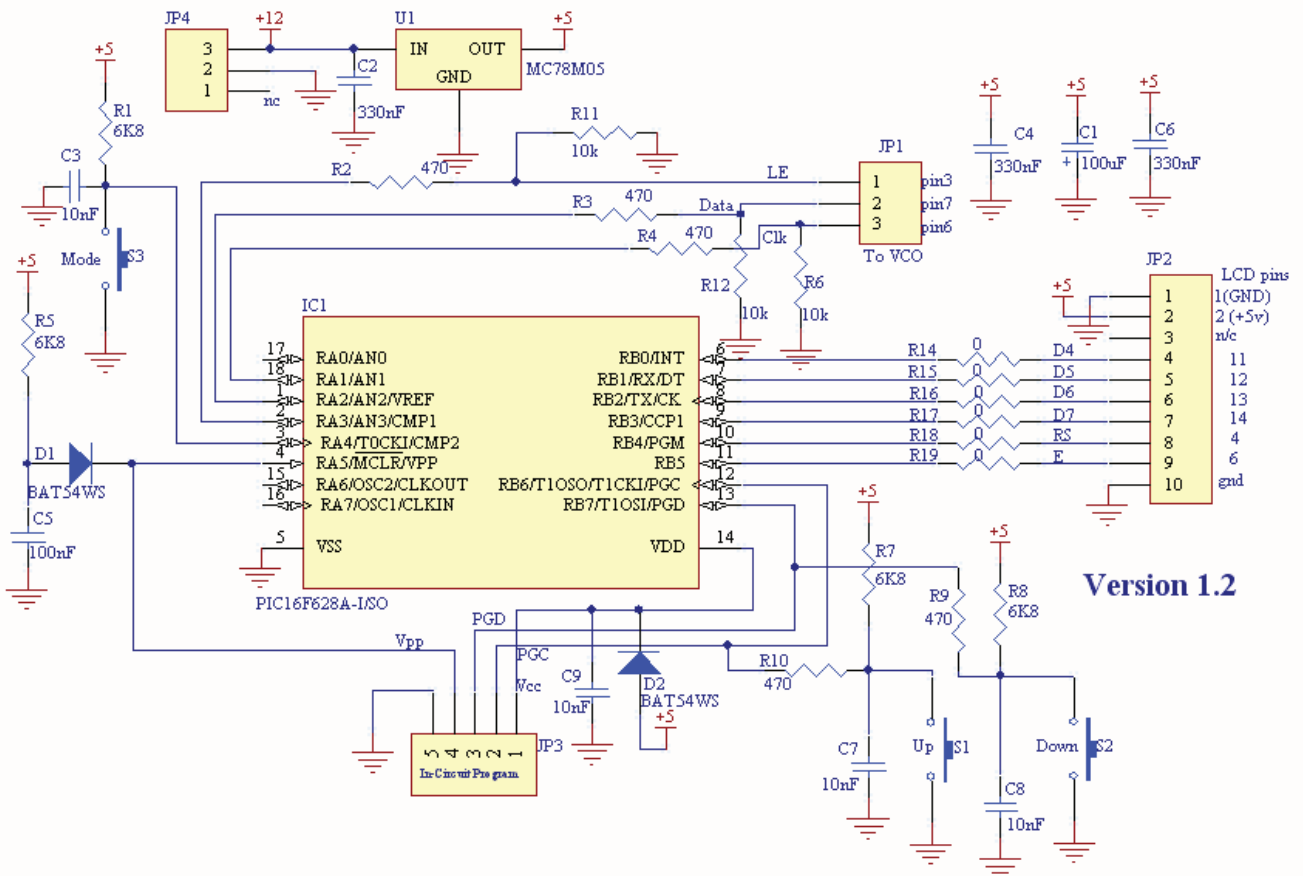
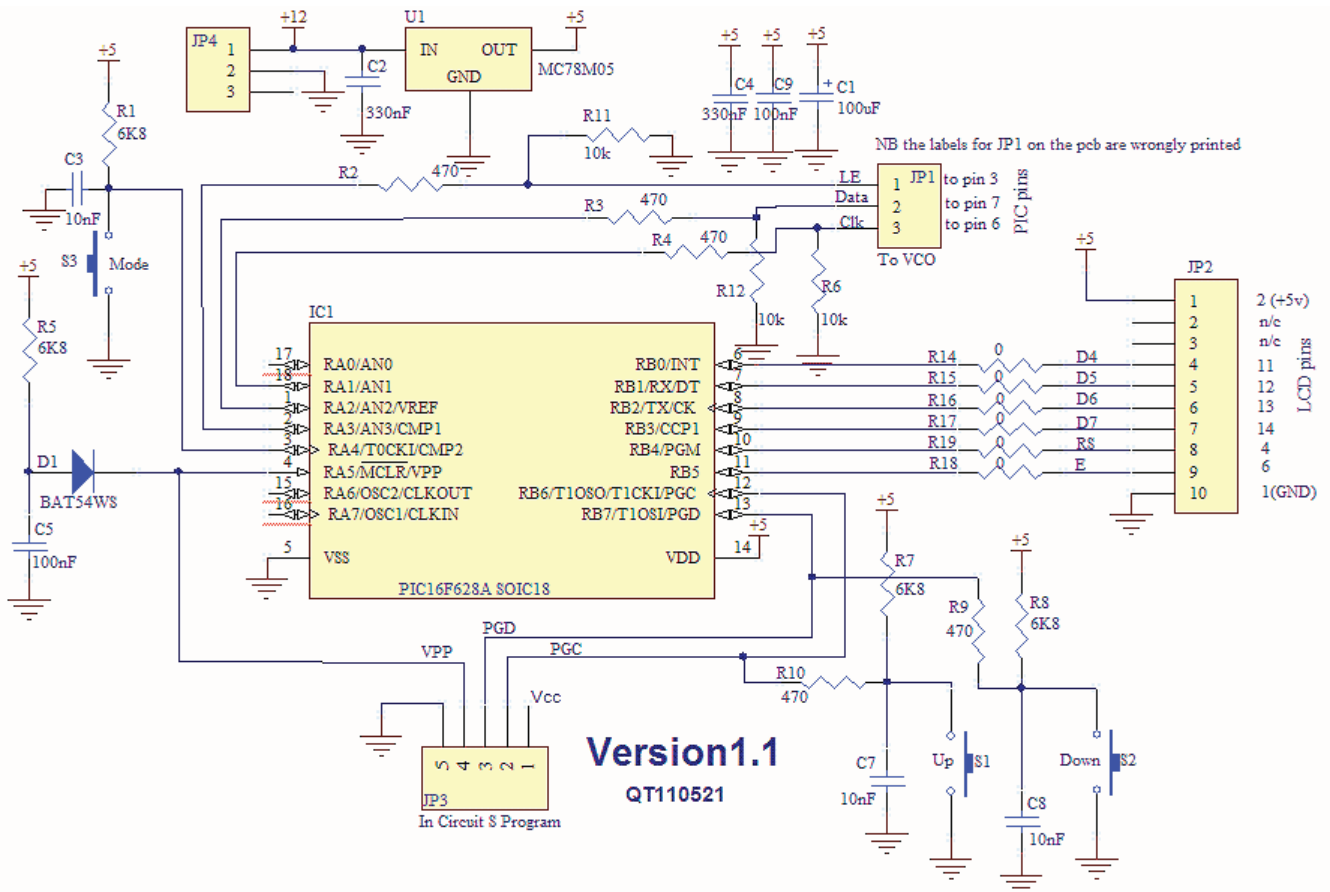
The G8BYI Proton+ Basic Code can be downloaded from the batc website. (The Hex file is also available for download).

Please respect Richards copyright on this software and only use it for your own build, do not re-publish it anywhere modified or without the copyright message.

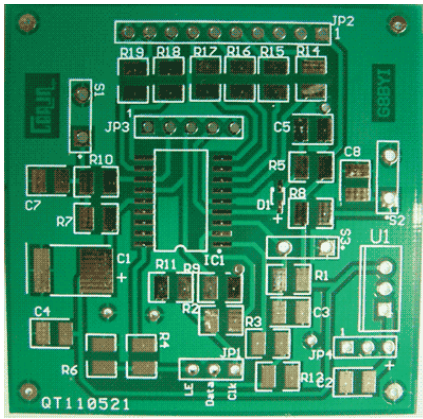
The printed circuit board.

Shown enlarged here, the actual size is 49mm x 49mm. Double sided but with only two links on the underside track, the rest is earth plane. R14 to R19 are links (0 ohm 1206) unless you are using the 5 LEDs of the Simple version (see DigiLite website) where they are the voltage droppers for the LEDs themselves.

A pre-programmed smd chip and an inexpensive commercially manufactured pcb is now available from the BATC shop. The homebrew pcb is shown here. If making it yourself you can just etch the top side and leave the lower side as earth plane and use wires for the link required underneath. The commercially made boards are ready drilled for connectors and using SMD components including the PIC chip.

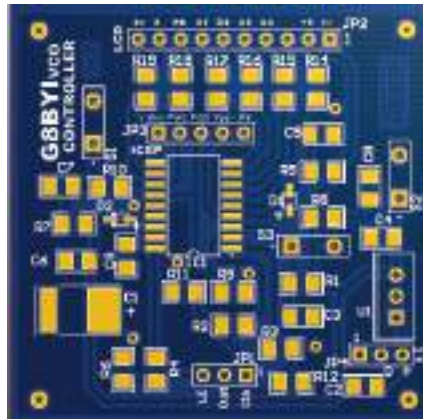


Version 1.1 circuit and PCB



header JP3 and select ICSP(or ICP) in the programmer software. Do not apply any separate volts to the board, only that which the programmer generates. Of course remove the wire and resolder the capacitor when finished.

Version 1.2 circuit and PCB



A modified board has now been produced, unremarkably named version 1.2, which has an isolated supply line via added diode D2 and C9 to allow reprogramming of the PIC without requiring the link to be inserted and

NB:JP1 Clk and LE labels are transposed, see circuit

the capacitor removed. In an attempt to make life as difficult as possible the connections on JP2 have changed and the regulator U1 has turned 180 degrees and the labels on JP3 are misprinted!

Download software and see corrections and updates on the DigiLite website in the Hardware section.

Thanks to Richard G8BYI for allowing full details of the software to be published for the benefit of all.

DigiLite website:
www.g8ajn.tv/dlindex.html

Timeline

by Trevor Brown

CQ-TV 235 had download links for free small non linear edit packages, as a result one or two of you have emailed me with questions so in this issue I thought it would be interesting to share some of the ways to make Non Linear Editing work, and by going a little deeper, answer some of the questions.

First the history and the answer to the most asked question, it's called Non Linear Editing and it's a reference to time being non linear, before that there was linear editing, where material is selectively copied from a source VTR machine to another VTR machine, in real time.

With professional tape decks, limited linear editing can be performed from the machines control panels, but an edit controller talking to the machines usually via an RS 422 interface gives better control.

My first linear edit suite used three C format machines and an edit controller, three machines enabled mixes to be performed, everything was RS 422 controlled including the vision mixer GVG 110 (not shown) and audio mixer. C format machines being PAL



did cause picture degradation and I later updated to component machines and a component vision mixer, the results were much improved, but the component decks were M2, and had a bad habit of eating tapes. When DVD's came along things started to change, the standalone DVD recording machines were not around so the edited tape had to be digitised into a computer via a capture card, compressed to Mpeg 2 and authored onto a DVD.

If you had to digitise the master into a PC via a capture card why not digitise the clips instead and use a software package to edit, them together. The vision and audio mixer would then be in software rather than hardware, and the same for DVE, our (ADO 100) was on its last legs.

This did and did not work, the capture card was an expensive item but it captured in component, which looked much better than 3rd generation PAL, we were filming on Beta SP by now, so again this made sense preserving the components path all the way to the DVD. During this time I tried several edit packages, they do take time to master, but if I liked the package I used it until a better one came along. But then the rules changed and DV cam and



Three Sony C format VTR Machines, edit control rack, Beta SP deck distribution and monitoring



mini DV came along, also wide screen was here so it meant throwing some money at new kit, the Betacam SP deck and component capture card, still got an occasional outing, but 4 by 3 pictures were on the way out, pity. For those of you not familiar with Beta cam SP it has two picture tracks on the tape, one for the Luminance channel and one for U and V which are time domain multiplexed onto a single chroma track. This was one of the first analogue component recorders originally developed by Sony for Electronic News Gathering; it first appeared as Betacam and soon got an upgrade to Betacam SP. It used a Betamax cassette, but with chrome tape and, much higher tape speeds, it was capable of some very pleasing pictures.

DV Cam was clever but made more compromises to get the pictures down onto a smaller tape and had effectively half the chroma resolution, of Betacam SP, but it was here to stay love it or hate it.

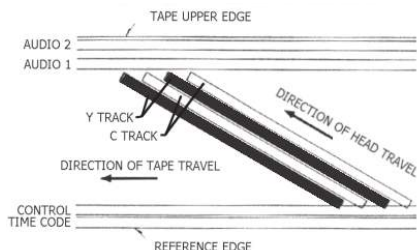
The clever part about DV cam was it did not need a capture card, all the decks and camcorders were equipped with a firewire connection so the clips could be digitised from the camcorder directly onto the hard drive, this did have a few teething problems, but settled down until Windows 7 came along, Windows 7 installed its own firewire driver which partially stopped a lot of the firewire ports from working fortunately it was not too difficult to roll the diver back to the legacy version and all became well again.

NLE editing as some of you who have downloaded Light works have discovered, really needs computing power, best provided by a dedicated computer. I always have a disc running the application software and what it calls a scratch disc for the editing material. This is usually two discs in a raid 0 to help speed things up, you need a good CPU, at the moment my CPU has 4 cores and 4 GB of RAM, the scratch discs are 1Tb each.

So if you are creaking along with an old PC as most of you found out, Light works or any other NLE for that matter will not work. Another thing is you don't want antivirus software running, when you have had a bad day and your fast PC is behaving like a 286 or worse, and then you are confronted with a popup announcing "Background scan complete", you scream and realise where all your computing power went!

If you don't want a separate PC and your desktop machine has the requisite power, then add a second hard disc with its own operating system, no internet or virus scans. You can select in BIOS if you want to boot the edit hard drive or the general PC disc for other tasks such as the internet, where virus protection can be used. Once you have it working, think about adding, a scratch disc or better still a scratch raid, and you will then stand a chance of evaluating Light works, which is not the best edit package in the world but it's free

For those of you not familiar with raids, raid 0 is a minimum of two discs but effectively performing as one disc, the first byte is stored on one disc and the second on the other, if either disc dies the material is lost, but we gain a speed improvement over a single disc and is ideal for a scratch disc., two 1Tb discs will give you 2TB's of space. The next raid configuration is Raid 1 here we have two discs mirroring each other, if one dies the material is safe on the other, useful but for two 1Tb discs you only have 1Tb of storage. Raid 1 is useful, but more for longer term storage of completed projects than for scratch



The layout of the Sony Beta-cam tape showing the Y and C tracks plus two audio tracks all in 1/2 wide tape

Apple Final Cut Pro X control panel on a Mac Book Pro



The next change was Camera's that record internally onto memory cards, the first one was called P2, but so many more have now come along. They started to appear round about the time we went HD and are becoming something we love and hate. The love part comes from losing the digitise function, the cards plug into the computer and become an extension of the memory map, but the contents are usually copied to hard drive to free up the card.

The hard part is the different formats. Card memory is expensive so the pictures are, in-camera compressed. New compression formats are appearing every day. I covered AVCHD in the last issue, the new Panasonic and Sony joint venture. Editing compressed formats reduces the requirements for hard drive speed, but passes the burden along to the CPU which has to work very hard when presented with compressed files, hence my 4 cores which I would love to replace with 8 cores. More RAM also helps but windows 32 seems to have a limit at 4GB, windows 64 will solve this ...maybe, we have yet to see.

The other problem with these new formats is, will the current software work with them? The word is codec's and if the software does not have the appropriate codec built into the current version then at best you will have to wait for the update to become available and it may cost you when it does. You were protected from all this when you used a capture card which accepted video and coded it into a house format. My first non house format problem came not from commercial work but from the AMSAT lectures. The first series of lectures we recorded by loaning out my DV recorder, so a simple firewire capture ingested all the material, admitted in real time.

By the second year I had put together the clubs mobile studio which recorded onto hard drive using a black magic

capture card, it was good value for money but captured in m-Jpeg, the one format my then editing software would not work with, so all the files had to be rendered to a different format, hence the delay in getting the material out to be viewed. I have now updated my software and m-jpeg is in my armoury, but the next problem will not be too far away.

It's worth mentioning at this point the word rendering, which is a slow transcode of format, where each pixel is examined and recalculated into a value to suit the new format; it's not lossless and should be avoided when possible. The current editor software is capable of accepting numerous formats and displaying them on the time line, as you trim and fit them together is makes an instruction list of what you have done, called an EDL, never think you have a complete video on your computer unless you have been through the render process, all you will have is an Edit Decision List, which will tell the render software what to do to the video clips in order to render a video file.

So to sum up, if you have a PC that is suitable for NLE editing, then have a look for NLE software on the internet, I doubt you will find a free editor other than Light Works, but there will be time limited demos and lots of supporting tutorials on you tube. They often appear as pro versions and then have cut down version often called studio, have a look at <http://www.sonycreativesoftware.com/download/trials/moviestudiohd> which is a cut down version of Sony Vegas.

Sony had a reputation for producing some of the best linear edit controllers, but seemed to miss out on the NLE market and caught up by purchasing Vegas from Sound Forge, if you like Sony cameras then Vegas might be for you, it supports all the Sony codec's and variants and there are tutorials on you tube such as <http://www.youtube.com/watch?v=W6LpQ0ZyqI>

Grass Valley the TV hardware people are another contender on the NLE scene and their software (Edius) is gaining popularity. You can again download a 30 day demo from http://www.grassvalley.com/products/edius_6 tutorials are again provided on You Tube the one I like is <http://www.youtube.com/watch?v=KE-DZA9zQsk> which shows off the multi Cam editing, they use time code to sync up the takes, never having had the luxury of cameras all running the same time code, (I use either a hand clap or flash gun to identify the same point on each tape).

Another point I want to make is NLE editing is not confined to the PC, Apple are also big players in this market with a application called Final Cut, and Final Cut Express for the cut down version. This software will only run on apple machines, but has a very strong following. The latest version Final Cut 10 did raise a few concerns as some of the better functions of earlier version were not at first implemented when Final cut 10 was launched, but the problems now seem to be solved:

<http://www.apple.com/uk/finalcutpro/?cid=mc-mac-uk-g-fcp-finalcutprox&sisr=1>

If you have an apple that will run Final Cut, the latest version requires the latest operating system (well it is Apple) the software is very modestly priced at £199

I hope this short article has explained in a little more detail NLE editing, it origins and problems, and that the free software has opened a door into a fascinating world that is allowing TV programmes to be put together on a desk top PC. There is a lot of information available both in the traditional press and on the internet that will help you delve deeper into NLE editing.

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<https://www.batc.org.uk/shop/cyber-sub>

BATC Accounts 2012

Statement of accounts at 31/12/2011

Income	2010	2011
Subscriptions	7,589.00	6,645.75
Postage, airmail	84.00	115.50
New shop surplus	0.00	1,631.39
Publications surplus	55.49	170.47
Donations received	40.00	90.00
Interest received	195.77	290.96
Miscellaneous items	3.00	77.00
Members services & CQ-TV sales	0.00	-399.54
	=====	=====
	£7,967.26	£8,621.53

Expenditure	2010	2011
CQ-TV printing	4,262.75	3,062.55
CQ-TV postage	1,646.01	1,654.12
CQ-TV authors fees	0.00	2450.00
Web & internet (to BATC Ltd.)	833.94	500.00
BGM & convention	745.00	0.00
Benefits & projects	14.94	74.15
Office expenses	143.98	186.36
Bank & PayPal fees	454.81	717.30
RSGB affiliation fee	48.00	51.00
Refunds	29.50	0.00
	=====	=====
	£8,178.93	£6,6495.48

Assets	2010	2011
Equipment purchases	865.81	0.00
Less depreciation	-865.81	0.00
Stock, members services & CQ-TV	339.54	0.00
Stock, publications	30.00	30.00
Stock, new shop	0.00	500.00
Building societies	56,305.80	46,745.11
Current account HBOS	5,052.44	12,814.68
Current account Santander	1,426.35	1,470.85
Current account HSBC	0.00	1,887.34
PayPal account	457.50	1,962.45

Current liabilities (less)		
Subscriptions in advance	-7,035.29	-6,848.04
	=====	=====
	£56,636.34	£58,5762.39

Accumulated fund		
Balance brought forward	56,848.01	56,636.34
Surplus	-211.67	1,926.05
	=====	=====
Balance brought forward	£56,636.34	£58,562.39

Treasurers Report for 2011

The club has made a good surplus, offsetting last years small loss. This surplus is due in large part to the performance of the New Shop. The club remains in a financially strong position.

The New Shop, Publications & Members Services

The success of the new shop has generated a remarkable surplus for club funds of £1,631 on a turnover of some £7221. The DVDs is updated after each publication of CQ-TV and is available from the new online shop and in 2011 it produced a surplus of £170. The now unused Members Services is discontinued and the remaining stock has been written off. The Value of the Paper back issues of CQ-TV has also been written off, but certain back issues are still available.

PayPal

The BATC PayPal payment system continues to work well and is one of the payment options for the new shop. This payment system is available to all, you do not need a PayPal account to use it, and it works with credit/debit cards just fine. If you are in the UK a cheque in the post is very acceptable and avoids the commission charges levied by PayPal. Payment can also be made by telephone banking and internet banking transfers. Credit Card payments over the telephone and by letter have been discontinued, the use of this service had fallen to the point were it was no longer economically viable. This will save the club £240 PA. in fees. There are a number of other possible payment methods, and if you have problems please contact me.

Brian Summers Hon. Treasurer
April 2012.

Irish Satellite

by Daniel Cussen EI9FHB

New Satellite Service Direct to Home on 20 Gigahertz

A new satellite television service that sends the signal to earth on the twenty gigahertz (KA band) rather than the old 10.7 -12.8Ghz (KU) band. This is a first for Europe. The higher frequency used has some useful and different effects: Firstly the dish needs to be solid as normal perforated dishes will let the higher frequency pass through; Next the dish appears much more directional as for the same size the increase in frequency causes the gain to be increased but the beamwidth to narrow. Rain has a much greater effect at 20 gigahertz meaning a much higher signal to noise ratio is needed in good weather to cope with bad rain fading.

The first Satellite in Europe to do this is at 9 Degrees East, which is about 20 degrees more south than common Freesat/Sky dishes.

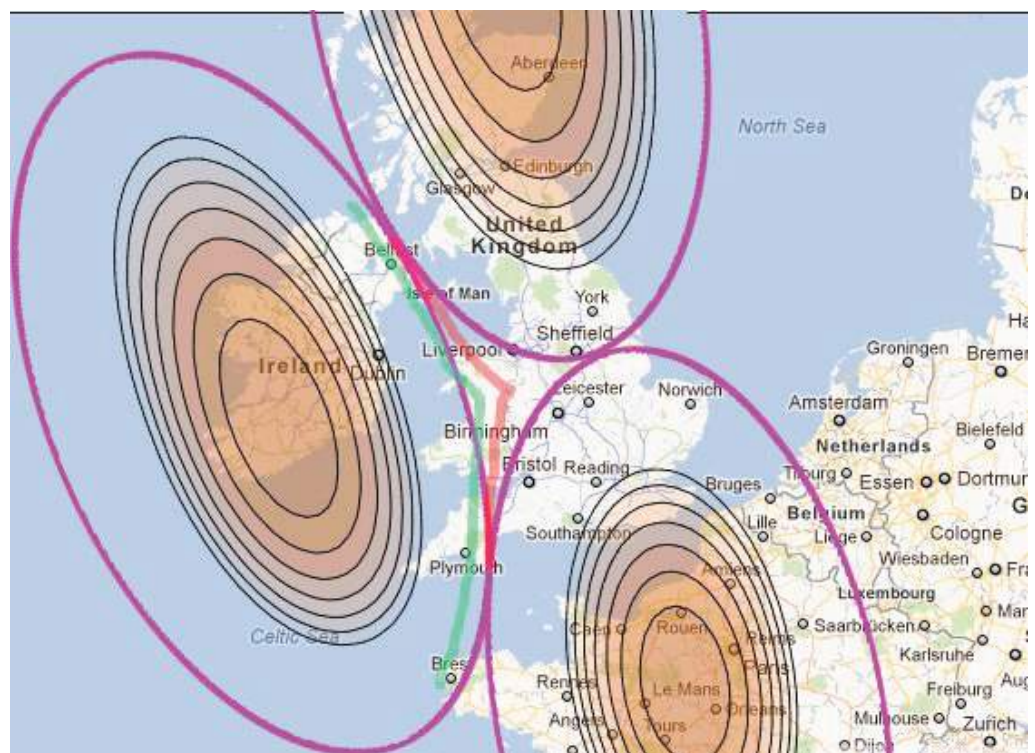
Due to the ability to create a narrower beam at 20Ghz the spots covered by the satellite can also become much smaller. Indeed this new TV service is intended to cover the Republic of Ireland and Northern Ireland and NOT cover England and Scotland. As shown in the estimated coverage map the beam is much narrower than typical. The estimated coverage is inside the green line. Also in the past once outside of the main beam all that was needed was larger and larger dishes. However due to the frequency re-use design it is probably impossible to receive the Irish beam in say London. The exact same frequency and polarisation is re-used over and over again across Europe (82 individual spots). Thus, as can be seen on the map, someone

based in Sheffield will receive an equal measure of the East Scottish, French and Irish spot, thus they may get neither. The larger the dish used the greater the wanted signal, but equally the greater the interfering signal as they all come from the same point in space.

The initial plan for this “KA” satellite was to be for two-way internet. By making the spots as small as possible the number of people sharing the one spot for internet is reduced, thus increasing bandwidth per user and overall total capacity of the satellite. A side effect is also the dish used for uplink can be smaller. The latest two-way modulation systems allow the ground station (user) to automatically vary the transmit power depending on rain fade and also for both ends to change bit rates depending on the link quality. Thus rather than the link breaking in heavy snow etc, the link will continue to work, but at a slower rate. The latest equipment even includes an alignment beeper built into the tria (LNB) intended for self-install by users. Indeed the required equipment is being sold on eBay (search for tooway broadband) , less the two year contract.

So how do I pick up this new TV station you ask? Well firstly you need to be living in the coverage of the Irish spot (This is the ONLY spot with TV at the moment). Secondly you need a special 20Ghz KA LNB (available from eBay-seach for Saorsat KA) Luckily these have the standard 25/40mm collar and can be attached to a standard solid dish. The further from the centre of the Irish spot the larger the dish required, but once inside another spot on the same frequency it may be impossible. For most of Ireland an 80cm dish is recommended with a 1 metre dish in some parts. A 1 metre plus dish may be needed in West Wales and West of Plymouth, but be warned these will be extremely difficult to align. One technique that may help alignment is to use an ordinary LNB and align it to 10.7 -12.8Ghz TV signals at 9 East, then swap to the KA LNB. Secondly the receiver must be high definition (with a HDMI connector) as the signal is broadcast in DVB-S2 MPEG4. A non HD satellite receiver will not see the carrier.

Ideally the box needs to be configured with a custom LNB setting with a



local oscillator of 21.2 Ghz and then a transponder of 20.185 Symbol rate 25000. The polarisation can be set to Vertical even though the transmission is actually left hand circular polarisation. The LNB accepts the vertical (13V) signal and can switch from left hand to right hand polarisations. As an aside circular polarisation is used to reduce rain fading. It also has a side effect that the skew of the LNB (how much the LNB needs to be rotated to get maximum signal) has no effect, unlike with Freesat etc.

For receivers without the option to set a custom LNB with such a high frequency, no need to worry, simply select a universal LNB and set the "fake" transponder of 10.765. This works as the LNB converts from 20Ghz down to 950-2150Mhz (The carrier will appear at $21.2 - 20.185 = 1.015$ Mhz) and the displayed frequency on the receiver does not matter as long as 13V is sent to the LNB and 1.015Mhz intermediate frequency is tuned.

Currently the system has live feeds of the main Irish Stations RTE1 & RTE2. The testcard shown was used during the testing phase. The service is called SaorSat. This comes from FreeSat, but Saor means Free in Irish Gaelic. Thousands of Irish homes without good terrestrial coverage are expected to use this system, along with a second offset LNB for 28.2 freesat. The two LNBs will be switched using a DiSEqC switch. Over time it is expected more and more new TV stations will go to super narrow beams, meaning Satellite DX may have it's days numbered.

In addition to the left hand circular 20.185 signal the same satellite has spots with right hand circular polarisation and a lower frequency band: Blue 19.7GHz RHCP, Orange 19.99GHz

RHCP, Purple 20.1GHz LHCP, Green 19.85625 LHCP. The colours are short names for the settings used when setting up the two-way internet boxes. The same LNB can cover all these variations. It also allows many beams to overlap, meaning at least one beam covers every location, but each beam can carry different signals.

See:
<http://finder.tooway-instal.com>
for recommended "colour" for your location. It is possible to receive other spots beside the recommended one.

It would be great if these LNBs could be modified for use on the 24Ghz band, but even better the 3 Watt transmitters used for ATV!

<http://www.saorview.ie/about-saorview/saorsat/>
RTENL's information about Saorsat including FAQ

<http://en.wikipedia.org/wiki/Saorsat>
General information

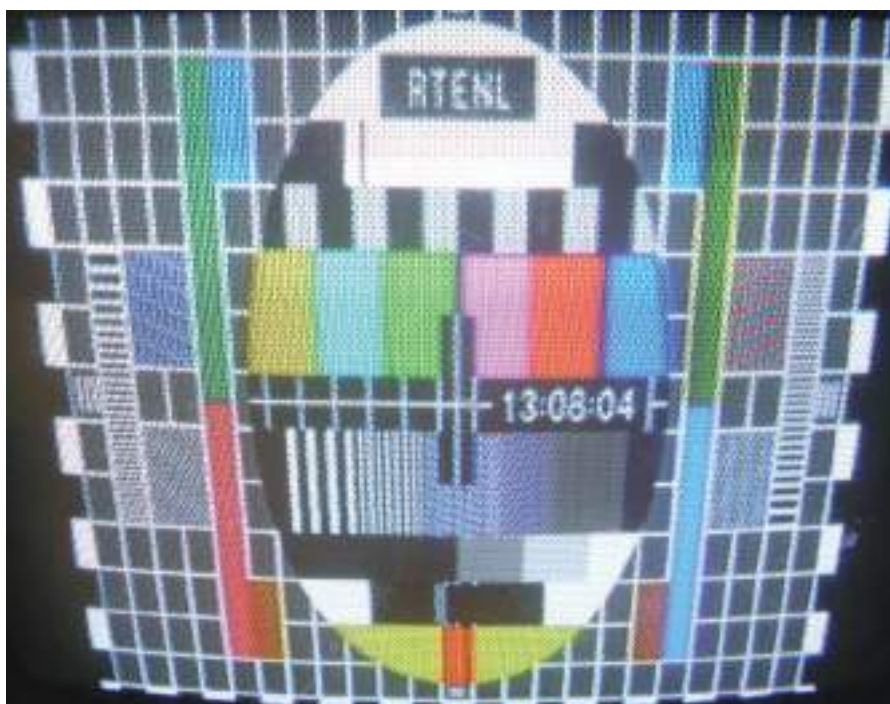
<http://www.lyngsat.com/eka.html>
Channel Lineup
<http://www.boards.ie/vbulletin/showthread.php?t=2055968485&page=132>
150+ pages of discussion on Saorsat

Irish beam (24):
<http://www.satbeams.com/footprints?beam=6714>

Zoom in to UK to show more detail. This shows a lot smaller coverage than the reality.

Scottish beam (45):
<http://www.satbeams.com/footprints?beam=6735>

French beam (22):
<http://www.satbeams.com/footprints?beam=6712>



For Sale:

1.3GHz ATV repeater in excellent condition including inbuilt duplex filters, and ancillary 4 screen splitter fully wired for same.

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aedanomeara@gmail.com

TV Repeater Controller

By Dave Mann, G8ADM

When applying for an ATV Repeater Licence there is no guarantee that this will be granted. Therefore there is not much point in building the repeater until the licence is granted. Now, if the licence is granted then one of the conditions will be that the repeater must be operational within a few months. This is not much time to design program

Description

The controller is built into an aluminium 1U rack frame. Fig 2 shows the controller block diagram. Three of the four audio and video inputs are brought out to the rear panel. The fourth input is fed from an 8 x 1 DTMF controlled matrix. A Mini Media Box is used as a slide show generator and I.D. Caption generator. This feeds input 8 of the matrix and the

input. There is a single A/V output and a control/PTT line to control the transmitter.

The first three inputs are normally connected to three receivers so that the repeater can receive inputs on different bands. The fourth input is fed from the 8 x 1 matrix. The repeater will be activated if a valid TV signal is fed to any of the inputs.

The DTMF input normally comes from a separate audio receiver tuned to a frequency in another band, e.g. 432.550 MHz. etc. The repeater may then be remotely controlled using a regular FM amateur transceiver. This control may be used by the repeater keeper to programme the controller or by the users to enable/disable the inputs. Many other facilities are available such as taking video and audio from different inputs. In my view these extra facilities are unnecessary and are too complicated for normal use. The first thing to do is to decide on a password for the controller board. A DTMF keypad has characters 0 to 9 and also ABCD * #.

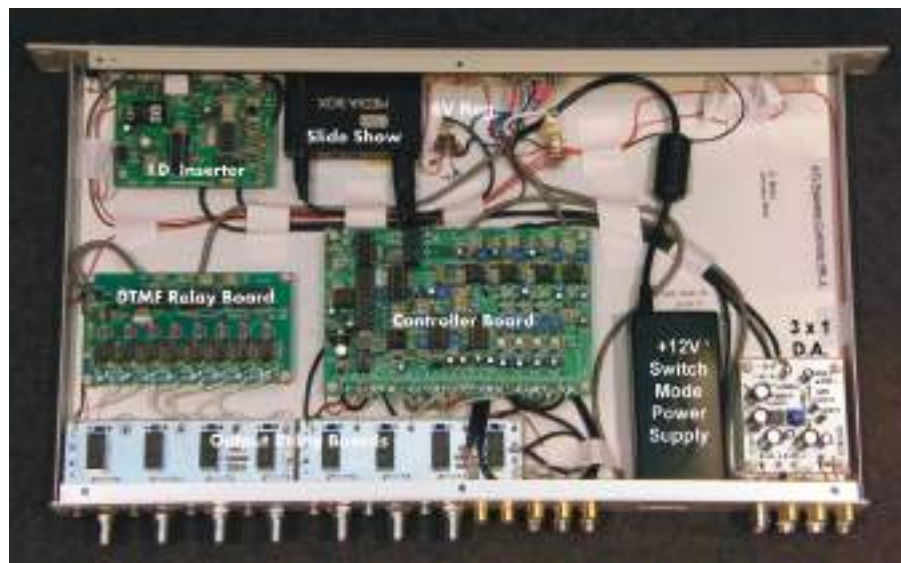


Fig 1. Top view with cover removed.

and build the transmitters, controller, antennas and other equipment. To be able to buy a ready made controller board saves a great deal of time, and this article describes how to incorporate the Intuitive Circuits controller board type ATVC-4 Plus into a usable repeater controller in a 1U rack, see Fig. 1. This controller is currently used on the GB3BH and the new GB3HV repeaters.

The basic controller board provides four video and audio inputs, prioritised in 1,2,3,4 order. A valid video signal on any inputs switches on the repeater. A repeater callsign in Morse code is added to the signal every 10 min. If the repeater is not being used then the callsign and identifying caption is transmitted for several seconds every 10 min. Everything can be programmed and changed using password protected DTMF commands including disabling each input and closing down the repeater if required.

I.D. Input to the controller board. The PTT output line that controls the transmitter(s) is also wired to a rear panel connector, which provides a ground for transmit. The video output of the controller board is connected to loop through BNC sockets so that a Time Base Corrector / Video Processor may be inserted into the video path or bypassed with a BNC cable if a Time Base Corrector is not used.

Next in the video path is a callsign inserter that permanently displays the station callsign in the corner of the screen. This avoids interrupting the video every 15 min. to display the callsign. Finally a video distribution amplifier provides three outputs for feeding several transmitters or monitors.

Controller Board

This has four prioritised A/V inputs, a caption/I.D. input and a DTMF control

For ease of use I like to have a password using identical characters, like CCC etc. Assuming CCC for the password, then the controller board must be programmed as follows. This needs to be done once only. See the board manual for more information including the Morse code characters. Turn off the A.C. power input to the unit and switch off the DTMF feed to the relay matrix board using the front panel switch. Turn on the power and quickly while the D3 yellow LED on the controller board is blinking, send the DTMF character #, D3 should then stay on.

Send 20 This is the hang time.
Send 20 This is the Morse speed
Send 16 11 03 17 31 99 callsign.
Send 3 No. of password digits.
Send CCC The actual password.

Automatically exits programming mode.

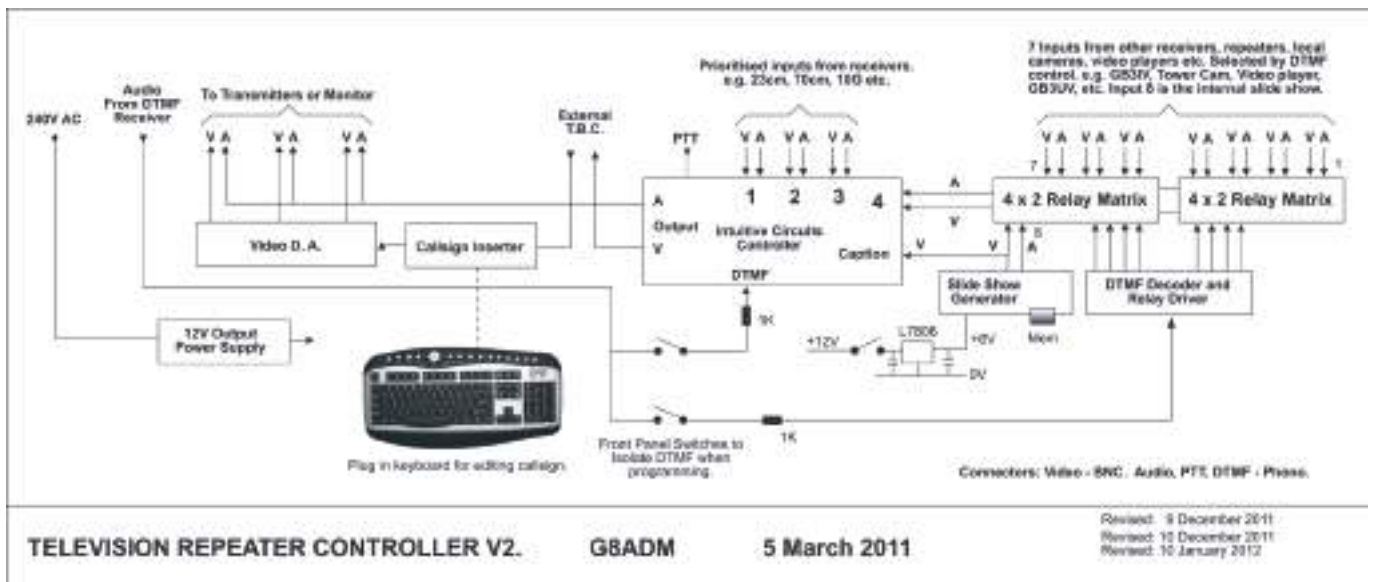


Fig 2. Block diagram.

The callsign above is GB3HV as an example.

Next to test that all is well send CCCB4, the repeater should reply with its callsign in Morse code on the audio output channel.

Set-up the operation as follows:

Send: CCCB* beacon mode on.
 Send: CCC01* input 1 on
 Send: CCC02* input 2 on
 Send: CCC03* input 3 on
 Send: CCC04* input 4 on

On means auto detect, the inputs may be switched off by replacing the * with a # if required.

To close down the repeater send the above 5 commands with the * replaced with a #.

The first time that the board is used the Phase Locked Loop (PLL) IC's that detect a valid input video must be adjusted. Each PLL IC has a frequency and level adjustment potentiometer. With a video signal connected to each input in turn, adjust the frequency control for good lock as the level control is reduced. Finally set the level control at about half way or as required. See the manual for more details.

DTMF Relay Board

The Intuitive Circuits type DTMF-8 is used to remotely control input 4 of the controller. A valid TV signal fed to input

4 is fed to the repeater output if there are no valid signals on inputs 1, 2 or 3.

Unfortunately the DTMF-8 output relays have only one changeover contact. In order to be able to control sound and vision the relays drive another relay on the Output Relay boards that use two changeover contacts for sound and vision.

A simple way of closing down the repeater is to have no input on one of the 8 inputs. If this input is selected then the repeater sends its callsign and closes down.

To program the DTMF Relay Board, first choose a password, this must be different to the password used for the controller board. Say BBB for example. Next switch off the AC power to the unit and switch off the front panel DTMF Controller switch. This prevents programming information being sent to the controller. Next to enter programming mode switch on the AC power and quickly while the LED D10 is blinking send DTMF code #. The LED should then stay on. Next enter codes as follows:

Send 4 for mode 4
 Send 1 for default power up selection.
 Send 3 for the length of the password.
 Send BBB to enter the password.
 The LED, D10 should then go off.

1 above can be any number from 1 to 8 as required. If 1 is chosen then input 1 would normally be terminated, i.e. no input.

Suggested inputs:

- 1 – Terminate, no input.
 - 2 – Receiver for a nearby repeater.
 - 3 – Mast camera N.
 - 4 – Mast camera S.
 - 5 – Mast camera E.
 - 6 – Mast camera W.
 - 7 – Local video player.
 - 8 – connected to the slide show.
- Finally switch the front panel DTMF switches back on.

Now by sending DTMF BBB6 for example, the repeater sends pictures from the West Mast camera, etc.

Output Relay Boards

These very simple boards are produced in house and made by Express PCB. They take standard PO type 2 x 1 change over relays and provide diode protection for the relay coils. These relays are fed by a 12V d.c. feed from the DTMF relay board. The board also has PCB type BNC sockets fitted for the video inputs and Phono sockets for the audio. I can provide these boards if required.

Ident. Inserter

An Intuitive Circuits type OSD-KB is used to permanently add the repeater callsign on to the video output, usually in the top right hand corner. As shown on the block diagram this is connected in series with the output of the Time Base Corrector.



Fig 3. Front panel (above), Fig 4. Rear panel (below).

To set up the callsign plug a regular PC keyboard into the front panel socket. Press the program button (connected to the programming pins on the board). Use the keyboard controls to edit the callsign and press the ESC key when finished. The keyboard may then be removed.

Slide Show

This is used to provide the slide show for input 8 of the DTMF relay board and for convenience, also the station identification input to the controller. These inputs may be in parallel as only the input in use is terminated. I use the Mini Media Box available on the internet from a variety of sources. A wide range of other media players are available but most of them are much larger. This requires an input supply of 5 to 6V. A 6V regulator is fitted on the chassis to provide 6V from the 12V supply.

The slides are generated using a PC drawing package. The file format to save the file in is .jpg and scaled to 1600 x 1200 pixel size. Copy these files to a suitable memory card such as type SD. Switch off the power to the slide show generator using the front panel switch before inserting the memory card. The slides will be played in alphabetical order. These players will also play video recordings from a variety of formats.

To setup the player see the user manual, make sure that the PAL or NTSC standard is selected as appropriate and that auto is selected for the slide show.

Output Distribution Amplifier

Three audio and video outputs are provided so that several transmitters or monitors may be used. These are in house designs and I can provide the boards if required.

The audio outputs are simply connected in parallel and fed from the controller board.

Power Supply

Reasonably high quality Switch Mode power supplies are available from a variety of sources on the internet. The one I use is rated at 12V 2.5A and costs about £7 from CPC.

The 2 pin power input socket mates with a hole in the rear panel for simplicity. The AC power plug is fitted with a 3A or 5A fuse.

Time Base Corrector

Also known as a video processor. This optional external unit corrects any non standard sync waveforms, corrects the video amplitude to 1V peak to peak, converts between SECAM and PAL etc. A variety of second hand units are available on the internet or a reasonably low cost unit can be purchased from tvOne, see references, this also operates on NTSC if required.

Digital TV

This controller can be used for digital TV. It is customary to convert digital

TV signals to analogue, PAL etc. for ease of switching and control.

For reception, digital receivers give an analogue video output even if no signal is being received. Therefore it is important to use digital receivers that have a lock detect signal available that can be used to switch off the video output using a relay or solid state switch when no signal is being received.

For transmission, digital encoders normally have an analogue input that can be fed directly from this controller output.

References

ATVC-4 plus Controller board, OSD-KB on screen display I.D. board, DTMF-8, DTMF relay board from Intuitive Circuits LLC (US) see: <http://www.icircuits.com>

The board manuals may also be downloaded from their web site.

12V 2.5A power supply, 1U aluminium rack frame from: <http://www.cpc.co.uk>

Output relay boards (2 required) 3 x 1 DA board, available from G8ADM, email: g8adm@gb3bh.com

You may also email me with any queries.

Time Base Corrector, 1T-TBC from:

<http://www.tvone.co.uk>

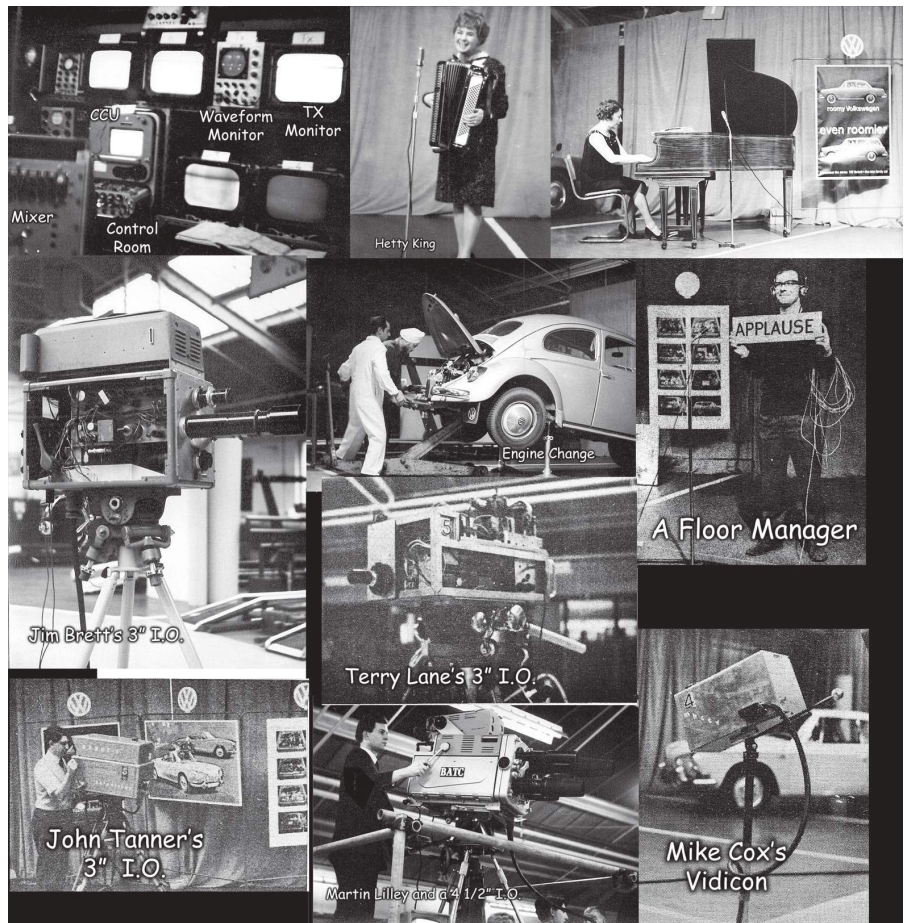
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The Brew Show

By Mike Cox

It is almost 50 years ago that a collection of BATC enthusiasts gathered together in a West London VW dealership with their cameras and associated kit. The object was to set up a temporary TV studio, with audience seating and rigged monitors, and to mount a light entertainment show around a demonstration of a rapid engine change in a VW Beetle car, and of course a party. How did this happen, you ask. Brian Brew, who ran European Cars, was a good friend of John Ware, our Chairman at the time. John was an architect and a genuine amateur enthusiast [G6RSA/T], and was later Chairman of the Royal Television Society. In CQ-TV 236, the looking-back section showed a few pictures of the cameras from CQ-TV 50, but with no explanation. I found some of the original pictures and a few more in my capacious drawers, so here is the story. Some of the pictures look as if they were shot with a 3" Image Orthicon camera, but unfortunately they were not the originals but scanned from my copy of CQ-TV 50.

Various members were persuaded to bring their cameras along for the show. John Tanner brought his 3" Image Orthicon, as did Jim Brett and Terry Lane. Martin Lilley brought his 4 1/2" I.O. camera along, and I brought my



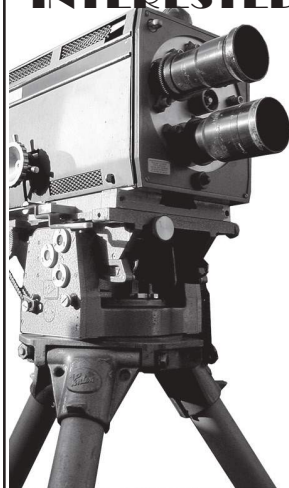
transistorised Vidicon camera along for captions. I also acted as Floor Manager.

As the event was a bit of a party, and those who remember John Ware will not be surprised, I took my wife Sheila, her sister Joan and her husband, Geoffrey Tye. He was a keen photographer and

took the pictures, as well as quite a few of the pictures illustrating the articles I wrote for CQ-TV at the time. The evening went well, the cameras worked, the engine was changed in record time, and we all enjoyed ourselves.

A bit of the Club's history!

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Turning back the pages

A dip into the archives of CQ-TV, looking at the issue of 49 years ago.

CQ-TV 51

A new editor, Martin Salter, had taken over from John Tanner for CQTV 51, as the latter had taken over as secretary from Don Reid, who had moved abroad.

The technical articles included one for a transistorised low noise RF amplifier for the 70cm band, designed by Dave Mann G3OUO/T. This was based around a

The circuit was said to be much lower noise factor than one made using an A2521 valve, although the gain was a little lower. The transistor amplifier was said to have an 'almost indefinite life' compared to the 'fairly limited life of the A2521 valve'.

CQTV was a good 'teaching medium', and often included information on the theoretical aspects of television. In this issue, DL Jones explained how to design

$$X_L = \frac{10^6}{2\pi f C}$$

(C is the load capacitance on the circuit, in pF, f is the frequency in MHz and X_L is in ohms)

and thence the length of line required:-

$$X_L = Z_0 \tan\left(\frac{2\pi l}{\lambda}\right)$$

(Z_0 is the characteristic impedance, l is the length of the line and λ is the wavelength)

as well as the diameter of the copper discs used to tune the line:-

$$C = \frac{0.226\pi r^2}{l}$$

(C is the capacitance in pF and r and d are the plate radius and spacing in inches)

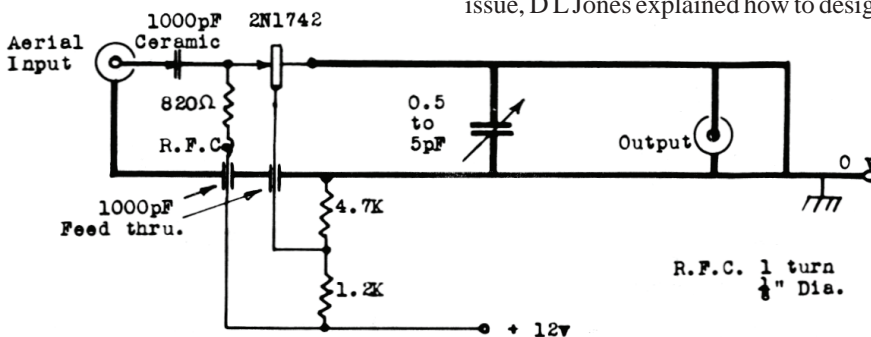
The wavelength l had to be in inches, which is found from

$$l = \frac{11.790}{f} \text{ inches}$$

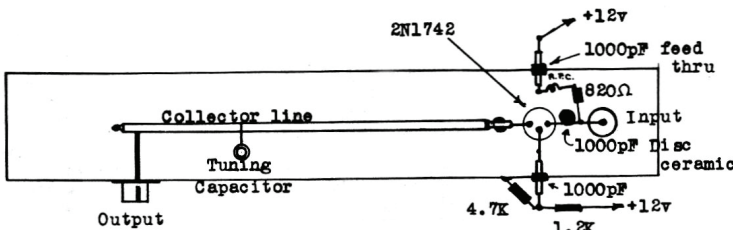
(when f is in MHz)

The article included a 'worked example', and also the formulae to calculate Z_0 for various types of line, such as single or a balanced pair above a ground plane, coaxial line and lines in square or rectangular enclosures. Another 'theory' article looked at the encoding process for NTSC colour signals - the basic process of matrixing the colour difference signals and adding them in quadrature onto a sub carrier would also apply to the PAL system, of course.

A subject that is not often mentioned formed the subject of an article by M Lilley. He pointed out that when television equipment or systems are being tested, there will be a specific waveform that is best to determine a particular characteristic. He went on to explain the various types of signals that might be used. A 'black and white generator' would produce sync pulses and either a black level or a white level and a 'bump generator' could be added to it to vary the output between the black

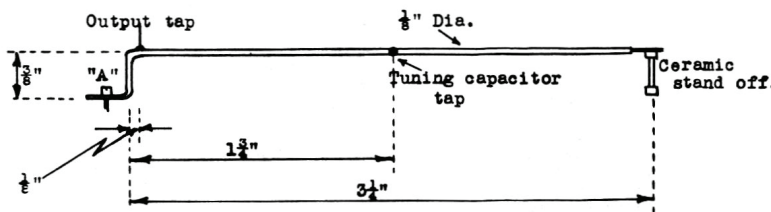


COMPONENT LAYOUT



The case of the transistor should be earthed, and is mounted in a close fitting hole in the chassis.

COLLECTOR LINE DETAILS

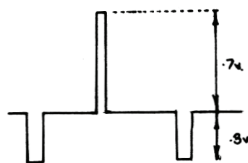


The line is fitted to the chassis at point "A" with a 8BA bolt. Dimensions are not critical.

2N1742 in grounded base mode. The input was fed directly to the emitter, but the collector had a quarter wave tuned line as its load, with the output taken from a tapping close to one end. The circuit was built on a copper chassis, 1" square and 6" long. Details of the tuned line are shown in the diagrams.

resonators for UHF work. Readers were warned that "whilst the circular line in a square box, popularly known as the troughline, is easy to construct, the formula for its characteristic impedance defies imagination". He showed how to calculate the inductive reactance for a line:-

and white levels in a pre-determined way. A 'cruciform generator' would display a black cross on a white background - useful for checking the low frequency response of the circuit. The 'spike generator' produced a line

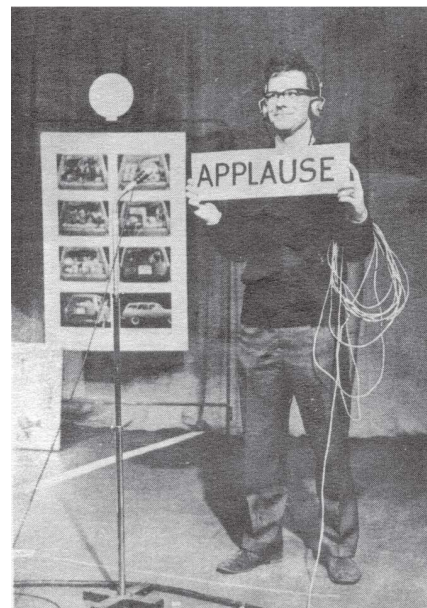


spike pulse of a few microseconds in the middle of each line, as a way to assess the overshoot in an amplifier, whilst a 'sawtooth generator' would allow the linearity of the circuit to be checked. Lastly, the 'sine squared pulse and bar generator' was intended to produce a test signal that was more representative of the transient nature

of a video waveform. By examining the signal after passing through an amplifier, the latter's amplitude, or phase distortion could be detected, and the high frequency response relative to the low frequency one could be worked out from the relative heights of the pulse and the bar parts of the waveform.



Regular readers of this column may be surprised that there was no technical article by Mike Cox - but he was not missing from the magazine - as the front cover had a photograph of him acting as floor manager at the atv demonstrations earlier in the year!



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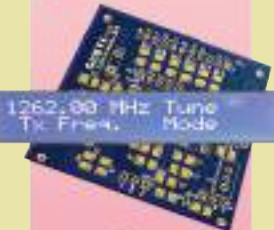
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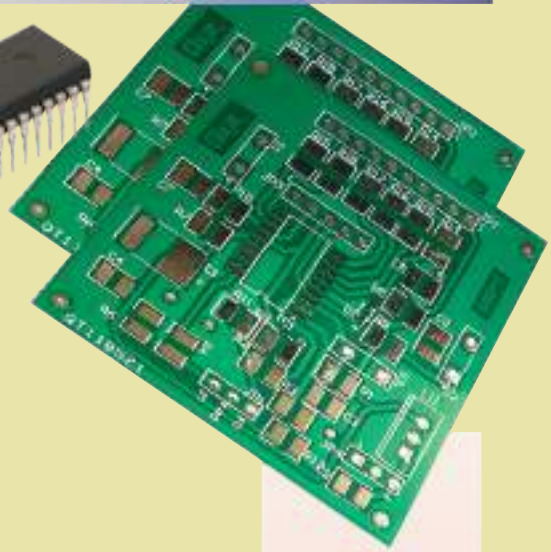
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