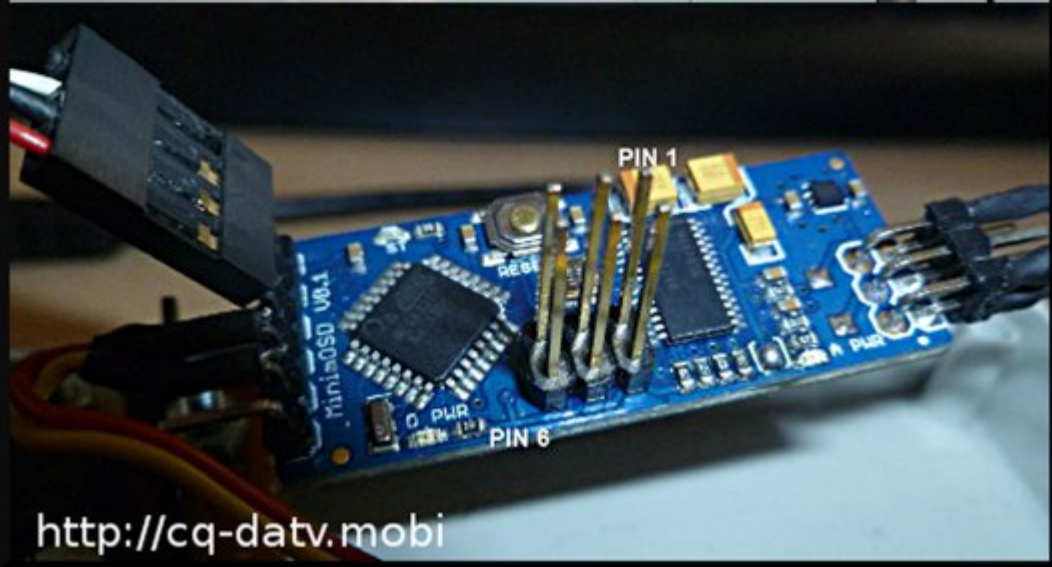


CQ-DATV

dotMOBI



Issue 16- October 2014



<http://cq-datv.mobi>

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- Richard Carden - VK4XRL
- John Hudson - G3RFL
- Ken Konechy - W6HHC
- Klaus Kramer - DL4KCK
- Mike Stevens - G7GTN

Amateur radio on a smartphone - using free wifi

Ian, G3ZHI writes:

Many places today offer free wifi, banks, supermarkets food outlets, public libraries, trains and buses etc. You do not even have to be a customer to pick up their wifi signal on your smartphone using wifi scan. You can usually access the signal in the street so the wifi provider does not have to be open if its on 24x7.

Here is a sample of useful amateur radio programs that are free from the smartphone play store, there are many more you might like to try, just search for them.

repeater book - this shows a list of local repeaters with the nearest at the top. Also shows frequencies, ctcss and if irlp/echolink enabled.

- *echolink - talk to fellow hams around the world*
- *echolink finder - finds your local echolink gateway*
- *irlp finder - finds your local irlp gateway*
- *aprs viewer - maps stations positions that are sending out beacons*
- *qrz - lookup the address of a ham*
- *skype - send live video to someone you maybe talking to on the radio*

IARU R1 to discuss possible loss of 23 cm

A paper to be discussed at the IARU Region 1 Conference in Varna-Albena, Bulgaria, September 21-27, 2014 highlights the threat to continued amateur radio usage of our 23 cm allocation which is now being used by the Galileo GPS system. The amateur 23 cm allocation includes a key Amateur Satellite Service uplink band at 1260-1270 MHz.

Michael Kastelic OE1MCU, Chair of the IARU R1 VHF/UHF/Microwave Committee has written the paper VA14_C5_36 which says:

"After the last reports and slides received by the author, it seems that radio amateurs will lose the 23 cm band in the near future. That is the reason for this late proposal.

We can be optimistic, but more than a small piece of spectrum for near band communication will not survive. Also the enthusiastic testing with ATV on 70 cm is not a replacement for 23 cm, because this will cause disturbance to our amateur satellites and all cars will stay locked if the ISM band is used.

Proposal:

Radio amateurs need a new allocation (like 1300-1310 MHz) for the agenda of the World Radio Conference 2018 (WRC2018) so that amateurs get back spectrum near the existing 23 cm band.

Further it is proposed to engage the EC after WRC-2015 to bring this theme to the agenda for WRC-2018 with high priority."

Read the paper at <http://tinyurl.com/IARU-VA14-C5-36>

Potential Interference To Galileo From 23 cm Band Operations

<http://www.southgatearc.org/articles/galileo.htm>

IARU R1 VHF/UHF/Microwaves discussion forum

<http://www.thersgb.org/forums/index.php?forums/vhfmicrowave/>

(www.southgatearc.org)

HV-200E 100~2500MHz DVB-T Transmitter

<http://www.oe7forum.at/viewtopic.php?f=7&t=410&p=1386#p1391>



Features:

- *High Performance Wide Frequency Range Support*
- *Direct digital conversion to 100..2500 MHz for excellent signal quality*
- *Professional grade modulation error rate (MER)*
- *Flexible Bandwidth Option*
- *In DVB-T mode, 1MHz~8MHz Bandwidth options are supported.*
- *Low Cost HD Video Distribution*
- *Compliant to existing HD TV sets, no extra adapter required, and no restriction on the number of receivers.*
- *All the peripherals like splitter, amplifier, connector etc are the same as those for regular TV.*
- *Versatile video inputs and formats.*
- *Support HDMI/DVI and composite (CVBS) video input.*
- *Besides H.264/MPEG2 HD, MPEG2 SD format is also supported and complaint*

Easy to Configure: Channel number can be configured with the built-in keypad switch easily.

More advanced configurations can be set from an external host like PC/NB or Tablet/Pad thru USB interface.

TV Standard: DVB-T EN-300 744 , ISDB-T ARIB STD-B31 , ISDB-Tb ABNT NBR 15601

RF connector: F-type connector, but it is 50ohm technology !!

Bandwidth DVB-T 1/2/3/4/5/6/7/8 MHz , ISDB-T 6MHz

FFT: 2K, 4K, 8K

Code rate: 1/2, 2/3, 3/4, 5/6, 7/8

Guard interval: 1/4, 1/8, 1/16 or 1/32

Frequency range: 100 .. 2500MHz, tuning step 1KHz

RF Output Level:

-3 ~ -5 dBm (103-105 dBuV) @100-470 MHz much more, look below my test

-5 ~ -8 dBm (100-103 dBuV) @470-950 MHz

-14 dBm (94 dBuV) @950-1900MHz tested: -15dBm ~ +5dBm

-18 dBm (90 dBuV) @1900-2500MHz tested: -20dBm ~ +3dBm

Digital Gain/Attenuator for Fine Tuning Range: +0/-25dB ,
Step size 1dB

MER Typically, @-5 dB attenuation by ADRF6755

>35dB@V-band

>35dB@470-950 MHz

>33dB@950-1900MHz

>30dB@1900-2500MHz

Spectrum Shoulder (Adjacent channel) 45dB

Phase noise <-92dBc @ 10kHz

Carrier Suppression >42dB

Remote Management:

Web Server for remote access

Transmission Configurations

Status Monitor

Video Streaming Output:

RTSP streaming input DVBT/ISDBT TV RF output

Video: H.264 or MPEG2

Audio: AAC or MPEG

Support RTSP TS or PES Payload



As with the predecessor versions, Ch00 is freely programmable with software AVSenderUARTGUI.

33rd ARRL and TAPR Digital Communications Conference September 5-7, 2014

Abstracts:

http://www.tapr.org/pub_dcc33.html

SDR-based DATV-Express Exciter for Digital-ATV

by Ken Konechy, W6HHC

Abstract: The DATV-Express project was formed to create low-cost solution for Digital-ATV transmission. The open-source project was first announced and described at the TAPR Digital Communications Conference (DCC) in 2011.

The project's hardware board design has the capability to go well beyond just DVB-S transmission. The design should be able to transmit any waveform of up to 8 MHz bandwidth using SDR techniques; including DVB-T, DVB-S2, ATSC and SSB. The current product utilizes Ubuntu OS running on a PC. The presentation also describes work being done to use the design on GNU Radio. Future plans include making the exciter

more portable by using an ARM-based ODROID U3 Single-Board-Computer. The current product is in production.

Digital-ATV - Digital Video Broadcasting-T for Ham Radio

by Mel Whitten

Abstract: This is an introductory presentation on DVB-T including topics on analog to digital data compression (MPEG), Forward Error Correction (FEC), and modulation. Reasons for using DVB-T over analog and other DATV modes are given. New and relatively low cost transmitting and receiving DVB-T consumer equipment from HiDes developed for ham radio is shown. ADTV stations utilizing HiDes equipment including the author.s home station is described. A list of resources is provided to help the get started in ADTV.

A short report on the recent ARISS school contact to Siegburg (near Cologne):

30 radio amateurs from DARC led by DL3YAT and DJ5KX had prepared over several months the direct 145 MHz radio contact to ESA astronaut Alex Gerst, KF5ONO, in the Columbus module on the ISS.

Monday September 1st, 2014 at 13.12 UTC Gerst as DP0ISS answered the call of the school station DN6KW, and 20 students in a row asked their questions as usual. After 17 students the radio contact vanished already, but a big applause by nearly 600 listeners in the auditorium thanked for this event.

DLR and DARC had armed the students, aged between 11

and 16 years, for their questions at this fourth ARISS contact from Germany. Some 12 reporters were present, also the regional TV station WDR.



Originally a first HamTV contact was planned too, and therefore the french ARISS and "Tutioune" specialist F6DZP had come to Siegburg.

Sorrily the ISS schedule was changed at short notice and no HamVideo signal was distributed on the BATC video server ISS channel, where several german OM waited in vain for the premiere. A video report with interviews before the event and some live contact atmosphere in the auditorium was shown later on the Cologne DATV repeater DB0KO.

Klaus, DL4KCK www.agaf.de

Please Note:

The power meter article has been held over to the next issue.

Based on a vote at the BATC CAT14 over the weekend of September 6 & 7, we will not be merging CQ-DATV with CQ-TV. The plan to merge and produce 12 electronic issues of CQ-TV and CQ-DATV combined was rejected, so we will continue CQ-DATV in its present form.

The CQ-DATV publication grew out of CQ-TV and, in our view, the need to produce a different sort of publication. We need to be aware of our strengths and weaknesses. There are news groups, forums and social media sites out there, delivering ATV news daily. To produce a publication that only appears a few times a year was yesterday's solution to yesterday's problems, where news travelled so much slower. There is little demand for stale news and ideas that have been superseded already. Also we need to stimulate enthusiasm for our hobby. We cannot do this with a publication that appears only a few times a year, there are 82,000 amateur radio licenses in the UK alone, (yes some people hold more than one), but we are not even scratching the surface with ATV, we need to lift the bar on our activity, but alas we will be doing this alone.

We need to accept that ATV is something that covers the world not just the UK and solutions in other countries need to be part of the story, no more re-inventing the wheel in different locations. To do this we need input, we need a fully focused team that can find, write and compile ATV copy into a single coherent publication.

Yes there is more to keeping ATV alive than just a magazine as we are so often told. The problem then is that background tasks are born out of this approach and background tasks have a way of becoming elevated to foreground tasks, often at the expense of the main task people were chosen to do.

The only way our hobby will survive is to grow our numbers and to do that we need modern joined up thinking, there is safety in numbers. It is also important that we remember we have a television history that predates amateur radio and these non-amateurs want a professional home too, let's not let our hobby become narrowed to amateur radio with pictures only.

Our current formula of providing a publication only, removes all the administration and background tasks and focuses the whole team effort into producing our publication.

It's still tough producing a monthly publication and your input is always welcome, from technical articles, to interesting articles on what is happening in your part of the world.

Free also works. When people charge for something they often base the cost on what is reasonable in the country of origin and we should pause and think what people earn in other parts of the world. Sometimes the cost of the publication they want to read is so much higher in real terms.

BATC Cyber membership is around 70% of the club's membership and the £4 subscription went some way to addressing that world balance. CQ-DATV is free so it must go all the way to addressing that balance.

We are on a different track with a different approach, let's see if we can continue to make this work, by keeping costs down and productivity up and feeding our readers with a quality publication 12 times a year.

We are working in the same direction as CQ-TV, just our approach is different.



I only attended the BATC CAT 14 on the Sunday. My speaking opportunity was after the EGM on the constitution, so we produced a flyer on why the constitution should not be changed. The committees main plank was a clause in the old constitution

5.2 All monies of the Club will be paid into a current and/or deposit account of a UK bank or building society held in the name of the Club.

This clause was to stop any money being sent off to Iceland (the Bank not the shop). They interpreted it as making the use of PayPal illegal. I personally see PayPal as a system for collecting funds and in some cases paying for shop Items, in

effect it is a transport stream for funds, not a bank account, so its Luxembourg status is not a problem. But the 50 or so people assembled representing the 950 BATC members voted for the replacement long and complex constitution with all its problem clauses documented in our flyer.

CQ-DATV.mobi/archive/Flyer4.pdf

What can I say, nobody raised any of our points and it was like "Turkeys Voting for an early Christmas", so BATC now has a new constriction.

We sat through the Chairman's report and the Treasurers report and it was clear they are both avid readers of CQ-DATV. I presented our motion of no confidence and the rescue plan to fix the non appearance of CQ-TV four times a year. I was interrupted a lot so I never got to the end of the PowerPoint presentation. I had asked for 45 minutes for the presentation and rehearsed it three times as a 20min item, without interruptions. I was asked by a committee member "what is an eBook"? It's what BATC paid £450 for new software to produce and then failed to produce, but I was more polite on the day.

Again the 52 members speaking for the 950 saw no problem with the April BATC meeting that was convened without the required number of club officers present as per the constitution, removing me from the chair without an opportunity to defend myself and replacing me with Noel. Not the BATC I grew up in, but we have to accept that the 52 people there speak for the 950 members of the club.

Long gone are the days of the Post House at Crick where people queued down the M1 to get in, or the events of Bletchley, Harlaxton, Sky Blue, and other memorable venues. The attendance was poor. If we have had an increase in membership, then it is not reflected in the attendance. Will we ever get back to events of the past? I suspect not for

BATC, but for CQ-DATV readers we are in our early days and with the larger number of readers everything is possible.



Marconi MkVII with the Marconi MKIII in the background famous for its beer pump focus handle, which was very popular with TV camera men, perhaps for the wrong reason it was dropped and only used on the MKIII

There are some new policies in place at BATC, with the top one being to reduce the £50k in the bank to £25k, with various give away schemes. Get your thinking caps on it might be a Dragons Den, but looking for loss making ideas. If you can guarantee to lose money you will be in good company with the present committee. But strangely enough they asked for permission to increase the membership fees, obviously flushed with enthusiasm for their loss making

ideas. I came home defeated, it was long drive. But I would like to thank everyone who contacted me by email and telephone the next day, perhaps the 52 don't actually speak for the BATC.

Trevor

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Zeitschrift für Bild- und Schrift-Übertragungsverfahren

Aus dem Inhalt: Abschließende Konfiguration des HamVideo-DATV-Systems • Antennen-Probleme mit DVB-Signalen erläutert • 70-cm-Band-Yagi-Antenne optimiert • Kondensator als Auslöser von Bränden • Große Aufregung um DB ØBC (70-cm-DVB-T-Test)

TV Amateur is a German language magazine. It is published 4 times a year. If you would like to subscribe, go to <http://www.agaf.de/>

BATC 2014 GRANT DIXON Award

Presented to the DATV-Express project team



BATC President, Peter G3PYB, presents Charles G4GUO (R) with Award on behalf of entire DATV-Express Project Team (courtesy of Frank MØAEU)

Every two years the British Amateur TV Club (BATC) presents an award for the most innovative and significant contribution to ham radio ATV. The GRANT DIXON AWARD is named after G8CGK who was the first Chairman of the BATC organisation, was involved in the earliest days of commercial television engineering, and was an avid experimenter and builder in ATV. The award was presented at the CAT14 convention that was held Sept 6 and 7 in Basingstoke, England.

At the CAT14 convention, the BATC presented the GRANT DIXON AWARD to the DATV-Express Project Team that had designed and are now selling low-cost the DATV-Express exciter transmitter for Digital ATV.

Members of the project Team are:

- *Charles Brain G4GUO – Ferring, England - Software design and mathematics*
- *Art Towslee WA8RMC – Columbus, OH - Electronics design*
- *Tom Gould WB6P – Portland OR - Schematic-capture and PCB layout*
- *Ken Konechy W6HHC – Orange, CA - Project manager and Publications*



As Ken W6HHC likes to point out, none of the project team members have ever met another team member "in person". All project discussions and efforts are conducted by simple e-mail or SKYPE sessions.....the Internet is amazing!

BATC CAT 14 Experience, We entered the lion's den

Mike Stevens G7GTN, Sue Hale - Non BATC member - but not from her own choice

BATC Convention was an odd issue for us, firstly was a slight jaunt to get there, really any location that side of England would always be bad, and guess this would hold true for many people.

One issue we did find was that very helpfully the BATC had closed down the shop joining membership option. We tried to join a new member early 7am on Sunday before departing but all options were listed as out of stock, since the system is not driven by human intervention, was odd at best. I now query how many other members might have been lost during the phase of closing the system down to presumably control matters more easily. What is interesting to note is that from 9am Monday when the old committee took over again with a vote of 50 or so members present on the day, the system is now working perfectly.

Brian Summers gave us some really great comical & theatrical moments in equal measure on his rendition and delivery of the clubs accounts. He probably should delve more into this area of performance as he seemed a natural at working the crowd for best effect. Shame that a spare table was not made available for him to be able to roll out his bundled previous years accounts on. I felt sorry for him, but he worked that to pure perfection, with the sympathy vote. He is a natural in comedy, with the best timing I have personally ever seen. All in all an expected theatrical performance, so thank-you Brian.

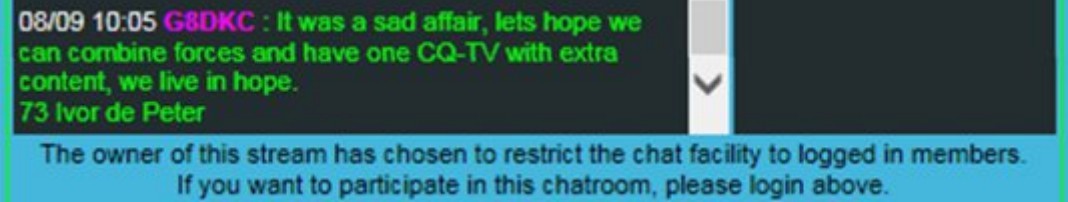
Whilst everyone is so say happy now, then why are people still crowing "Peter from Leicester"? You now want one

combined joint magazine to be called CQ-TV with extra content? You need to approach BATC committee over this issue and get them to do what you want.

How about you actually spend a couple of evenings & write some articles yourself. That would be the content problem solved quickly from the point of view of CQ-TV. Holding up a name badge and voting will never help the lack of articles being written & fed for publication. If you were not even at convention then screaming from the side-lines seldom ever creates achievement and content.

I would agree with comments that we have to try & find a method to work together, but from the start that has not been the stance with people trying to claim copyright over material and even going to the very extreme lengths of making complaints to have all internet content taken down. To me at least, this does not show a stance of ever wishing to work together. It was at least nice to hear Noel Mathews even acknowledge the existence of a Sister Magazine in public. This could be a very small step moving in the right direction.

Having a larger CQ-TV magazine would imply a larger printing cost, so back to some of the issues raised with printed copy. Now with the club wishing to just give the funds away, before then increasing the membership fee. Options might also be dwindling. If you want a bigger paper magazine, make sure you let them know very soon before too late.



08/09 10:05 G8DKC : It was a sad affair, lets hope we can combine forces and have one CQ-TV with extra content, we live in hope.
73 Ivor de Peter

The owner of this stream has chosen to restrict the chat facility to logged in members.
If you want to participate in this chatroom, please login above.

BATC are just a cog in the wheel, with a large account funded over many years from the membership. The slimming down of this fund will be the next quite interesting chapter in this whole sorry saga. Personally, I'm not aware that CQ-DATV as a monthly publication has any lack of available content problem.

For us, it was nice to finally meet Trevor and Pauline, we all know the Callsign G8CJS but it was nice to hear from his XYL and learn about her involvement alongside him. Thank-you Trevor and Pauline for the hard work that you have both jointly put in to the BATC over many years. I would really have liked to have seen at least some recognition & appreciation of this fact being shown at CAT14 to them both, just the wrong audience I guess. We certainly appreciate the work that you have both given, certainly the bigger membership will also agree. You set a very high standard to try and match. I'm happy to not continue membership of this organisation any further as I do not feel that they represent my interests, even less to consider my views at all in this hobby. Fuelled with new strange agendas for less than a few percent of the total membership vote. RIP BATC.

Mike G7GTN

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ATV Audio Processor & Controller

DVB-T testing for DATV


Holland HDD QAM-64 demodulator for DATV




ATVQ

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Full size color covered
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WR8ATV G2: MKV QAM-64 DATV Transmitter



70 CM LDMOS POWER AMPLIFIER PALET



WB6LGA

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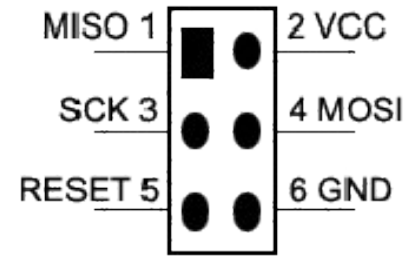
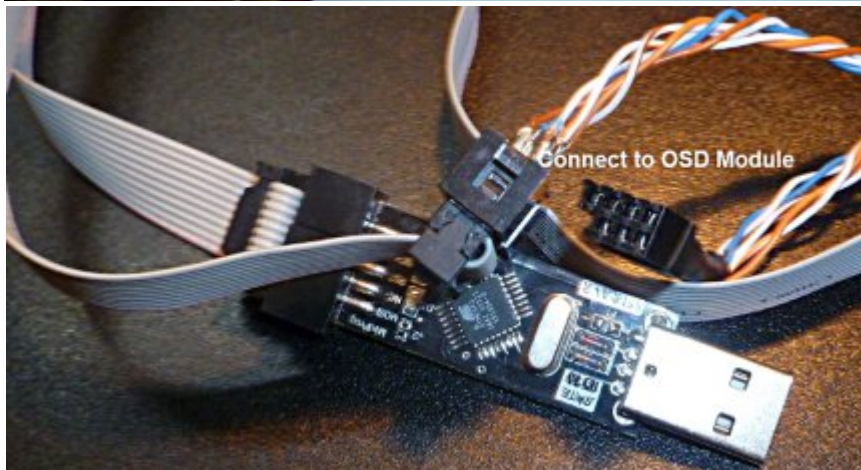
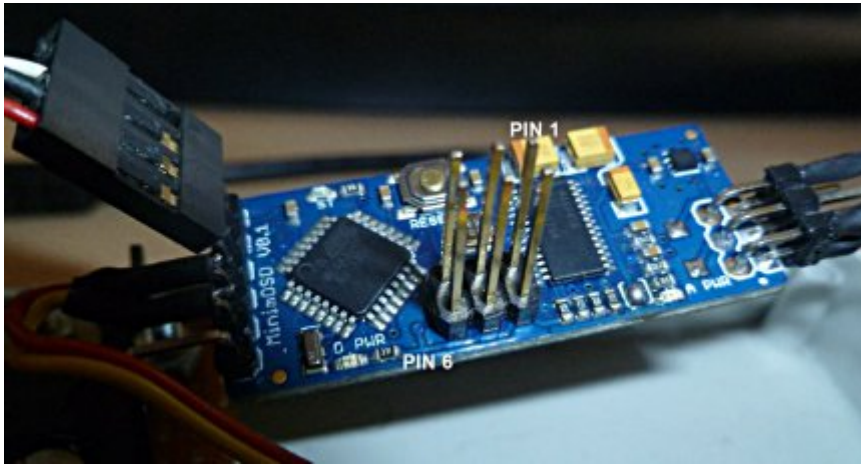
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MAX7456 OSD Modules - Fixing a Broken Bootloader

Mike G7GTN

Our OSD Modules are as we know supplied with an Arduino Boot loader already installed on the ATMEGA328P micro controller. If somehow we should manage to mess this up when developing software or more likely have other slightly odd PC issues that cause the processor to go mad we have a very easy fix for this situation using an external AVR in circuit programmer. The one I used is called the USBASP.



Now start the Arduino IDE and look under the Tools option and select board type then make sure Arduino Pro Mini 16MHz with ATMEGA328 is selected. Also within the tools option select Programmer type as USBASP, then finally Burn Bootloader. The Bootloader will now be restored on the OSD Module.

This should never be a required step but out of over 28 boards we have used it happened just Four times on a development PC that to be fair was much more likely to be the cause of these quite strange issues. But we certainly totally lost the Bootloader from the AVR Processor. Since we re flashed the controller have just carried on with no further issues of any type to report. I also often use this method to flash code working on to the board to escape the 5 or so second delay imposed by having the Bootloader available. Use the Arduino Upload using programmer option for this. If you are keen you can also use AVRDUDE directly to programme the Bootloader with the following settings:

```
avrdude -c usbasp -p m328p -U lfuse:w:0xFF:m  
avrdude -c usbasp -p m328p -U hfuse:w:0xDA:m  
avrdude -c usbasp -p m328p -U efuse:w:0x05:m  
avrdude -c usbasp -p m328p -U flash:w:ATmegaBOOT_168_atmega328.hex
```

DATV-Express Project - August update report

August was a month full of conflicting efforts for members of the project team. Charles G4GUO still plans to move forward on preparing a Debian package to install the latest code for DATV-Express, including an installation for ARM that has been tested on ODROID-U3. But, Charles has also been busy preparing for his presentation at the upcoming BATC CAT14 gathering on Sept 7. Charles believes that after CAT14, he will be able to turn full attentions back to preparing a draft debian release of v2.03 (including ODROID U3 ARM) for Ken W6HHC to begin alpha testing. The testing release is expected to be available in second-half of September for Ken.

During August a problem was discovered trying to send DATV-Express DVB-T transmissions to the HiDes HV110 receiver. The HV110 receiver expects the PIDS for SDT and PAT to contain the same values, while the DATV-Express software just automatically set the SDT and PAT PID to the different default values. HV110 rejects these PIDs values and declares "NO SERVICE" . Other HiDes receiver models do not exhibit this restriction and work just fine with DATV-Express using DVB-T. Charles plans to make changes to DATV-Express code in v2.03 to allow setting SDT and PAT PIDs to the same values.

Art WA8RMC has completed preparations for an up and coming article in the next QST magazine (October issue) from ARRL.

Charles plans to provide a DATV-Express presentation at BATC General Meeting on Sept 07. Charles is also giving a simpler talk and a demonstration to the Worthing Club on the Sept 17. Ken plans to provide a DATV-Express presentation at TAPR Digital Communications Conference (DCC) on September 05 and a second presentation on "Recent

Advances in Digital-ATV" at an ARRL Convention on Sept 13, in San Diego. Finally, Charles and Ken plan to begin alpha testing of the ODROID-U3 debian for release.

"moderate speed ahead"...de Ken W6HHC

DATV News Update

Es'hail 2

Some more news is now available on the proposed Es'hail 2 geostationary amateur satellite that is to be equipped with linear transponders and will deliver DATV capability.

As reported in CQ-DATV 15. See <http://amsat-uk.org/2014/09/21/eshail-2-ham-radio-transponders/>

Some initial concerns about circular polarisation, have been resolved.

Before we all start looking through our junk for Squarials from the defunct BSB system, close examination of the document shows RHCP for the uplinks only on the 2400.175 MHz and 2404.5 MHz so panic over.

The downlink on 10489.675 MHz is LVP and again the downlink 10495 MHz is LHP.

Please note: articles in this magazine are provided with absolutely no warranty whatsoever; neither the contributors nor CQ-DATV accept any responsibility or liability for loss or damage resulting from readers choosing to apply this content to theirs or others computers and equipment.

Simple ATV Lookthrough Filter

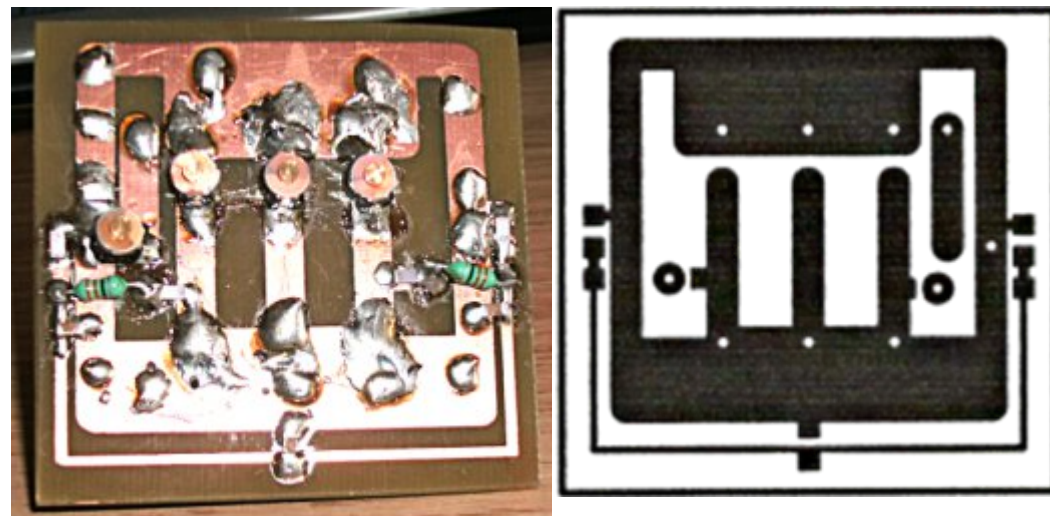
By John Hudson G3RFL & Dave G3ZGZ

While starting to view GB3FY from home and getting a good signal, we both had a problem when we went to TX into the Repeater all sorts of patterning and the like was noticed plus buzzing on the sound. We also had this problem with the Repeater itself at first.

The simple cure was we looked at the LNB IF output and the TX signal was very strong which in turn overloaded the RX unit.

On the Repeater we set up a BRASS 5 pole filter but required something simpler for home use and it really needs to be small.

The requirements of the Filter were that it had to pass the DC feed to the LNB from the RX input "F" socket and have a passband at the RX FREQ.



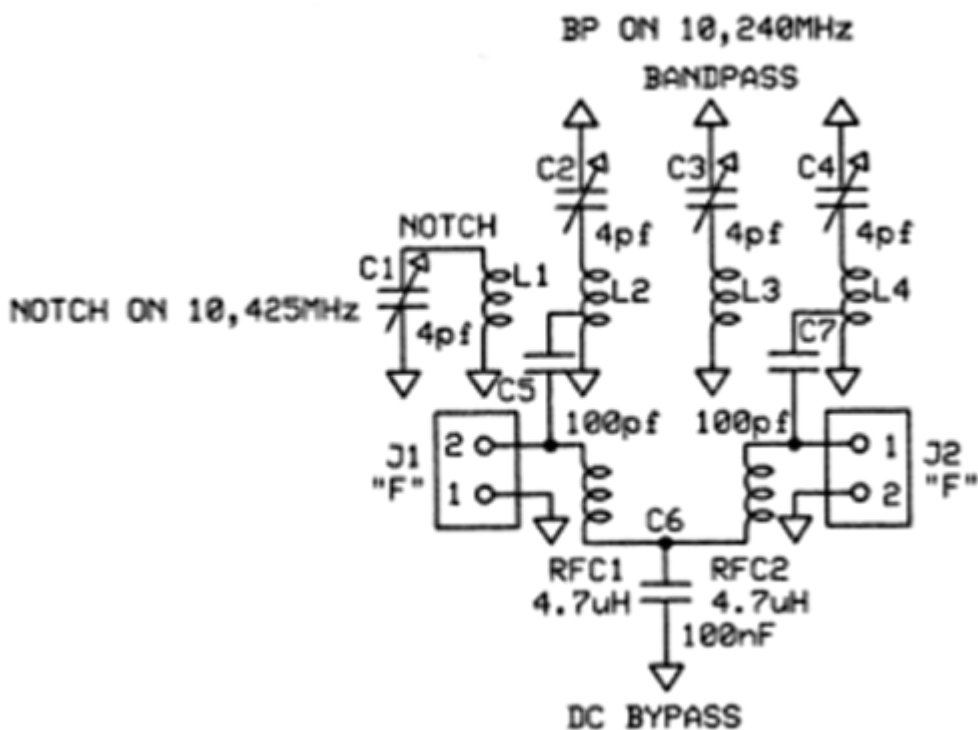
We used "F" sockets and a simple PCB. The PCB was on standard FR4 and DS (double-sided) and is 56.8 x 57 mm in size. Use plenty of links through to the other side.

We chose a 3 pole filter plus, and this was down to DAVE G3ZGZ, we added a notch line to it. The results were perfect, it put our TX freq into the noise. We lost a few dB through the filter but the LNB does give out rather a lot and it can be afforded.

The Notch is on the OUTPUT side of the filter.

TIP of the Month

If you have a wooden shed with tools that will rust over winter, then just get a small glass jar and put some foam in it. Add some Paraffin to it and leave somewhere where it's the warmest. This tip came from a disabled watch repairer. It works for old Grand Father Clocks...WHY, the fumes/vapour oil everything perfectly.



THE PARTY INVITATION

The fourth annual worldwide ATV QSO Party was held over the last weekend of August, Friday night and Saturday afternoon.

Friday night Melbourne time was for local stations to get on air, with Saturday afternoon for local and international stations linked up.

MAN WITH A PLAN

Planning for the ATV QSO Party by Mick, VK3CH started two months prior, with a new work location to use.

At home Mick can either send ATV video from the shack, or from the back yard, via cabling running from the shack to the rear yard.

All this was still in place from last year, so not much to do, other than prove that it was all still good, nothing eaten by the wildlife...

Work however was a new blank canvas.

Compared to our previous work location, we were now situated in a prime VHF-UHF area.

With line of sight to the commercial TV towers at Mount Dandenong, needing only a basic TV antenna to get both commercials and VK3RTV, the expectation that getting a reliable signal into VK3RTV was high.

Google Earth gave a plot of the distance from work QTH to VK3RTV site as 34.3 km and reports our work as 110 meters above sea level.

Add the building height of 8 meters and 2 meters of mast, the ATV antennae are 120 meters above sea level.

At 137 metres above sea level, Mt Cooper in Bundoora Park is the highest point in the metropolitan area.

With a clear view to Mount Dandenong, working out the TX beam direction was no issue, knowing where VK3RTV is located.

With a full voice station at work, on MF-HF-VHF-UHF already established, ATV was the last mode to add to the work "shack".

ADD ANOTHER ANTENNA TO THE COLLECTION... BETTER MAKE THAT TWO...

ATV receive had already been in place in March, with a perfect picture seen on VK3RTV, regardless of weather conditions.

Late June the roof work of running coax to the roof and down the inside wall cavity to the office "shack" was done. A spare 33 element loop yagi was erected with 20 meters of 9913 coax via the roof down to the office ATV transmitter. Initial tests into VK3RTV were excellent with only Level 3 power required to hold either VK3RTV1 or VK3RTV2 perfectly. A power level up to 15 is available with the SR Systems units.

Given that the beam for VK3RTV2 is beaming for input towards the Yarra Valley area, this is a great result. On VK3RTV2, on just 1.45 watts, a perfect locked on picture was obtained, the transmitter drawing only 2.2 amps total current.

VSWR on the beam on either 1255MHz (VK3RTV1) or 1276MHz (VK3RTV2) was 1 : 1.1 for both, only about 1% loss, not bad.

Also when talking on 2 meters at 50 watts, close to the ATV beam, had no adverse QRM, nothing happened to picture when talking.



ATV 23cm TX Loop beam pointing to VK3RTV, near Mount Dandenong, in the distance

Once the ATV transmitter proven OK, it was time to decide what sort of material to TX on the day. The office is not that interesting for ATV video, so video and audio cable was run from the office to downstairs near the roller door.

As voice amateur station is connected for remote internet access via Remote Rig, a cross-over CAT5 cable was also run to downstairs, so that the IC-7100 radio control head could be used downstairs where the camera was situated, to allow voice liaison during the ATV linkup. This saves having Remote Rig tie up the internet modem when just being used within the building.

To power the radio via Remote Rig when downstairs, a DC cable was also run from the office so 13.8 volts was available, this saves mucking about with a separate 12 volt plug pack power supply downstairs. To also be able to watch other stations and to check our transmitted content 'live' a 75Ω TV coaxial lead was also run downstairs.

At home a twin cable is also used to enable the ATV transmitter or power it down, without the need to run up and down the stairs. This facility was also wanted at work so a twin cable for this function was also run as well. All the cabling was put in ducts and then ran conduit down the warehouse wall to near the front roller door.

Of course video can be done from the office if the camera is used there, if it was required.



Spare ATV 23cm TX & 70cm RX antennae and masts hanging from the roof

Compared to the park, we now had mains power, shelter, all our tools, spare cables, etc, all at our disposal. Just turn up, open the door, site the camera, plug it in, go upstairs and switch it all on, too easy... makes future years easy...



Just a small domestic TV antenna required for VK3RTV since the site VK3RTV antenna improvements

The weather can do what it likes; just move the camera further inside if it gets nasty... But on good days BBQ can go outside.

The fridge, hot / cold water, microwave oven, kettle, landline telephone, work furniture and tables also add to the comfort factor.

I wonder if justified calling ATV from work a "portable" station (hi).

ACMA ATV SHARED 70cm SPECTRUM NEWS

The Australian Communications and Media Authority, as part of the re-planning activities for the 400 MHz band, has made 442.5 - 444 MHz and 446.5 - 448 MHz temporarily available to the Land Mobile Service.

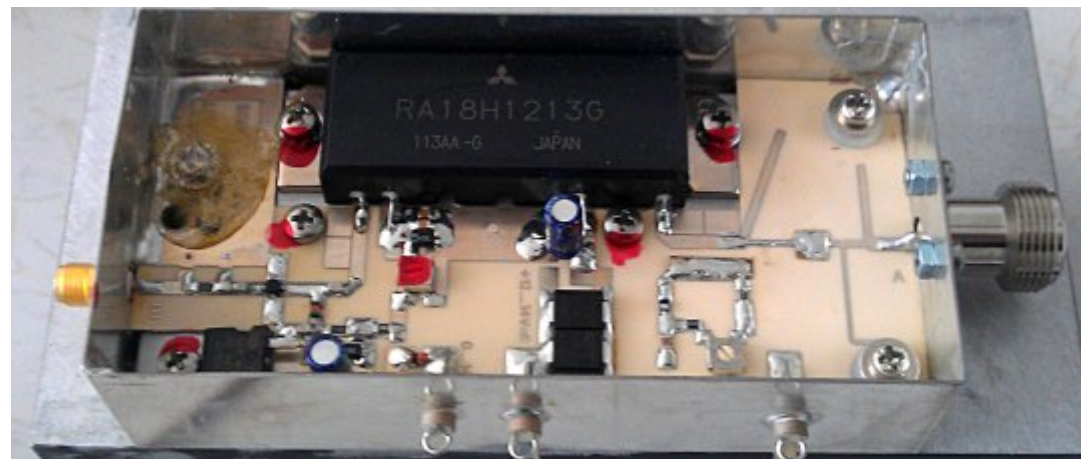
To enable an orderly re-planning of that spectrum, it is anticipated that temporary spectrum allocations will be needed until the end of 2015. Any Land Mobile Service allocation will be on a secondary basis, and equal to the Amateur Service which is also secondary on that band. The ACMA wants frequency coordination to occur before any new user on a frequency.

All in all no one really knows what effect this may have on ATV Repeater outputs. Given that there are only active

installations in Hobart, Port Pirie, Brisbane and Melbourne there may be a work around with sensible frequency planning.

Bringing the home ATV TX unit to work meant messing up the shack. So it was time to make up a dedicated work ATV TX.

A portable ATV unit was already used for the park, but required 24 volts. So it was converted to 12 volts. This was done by removing the exiting 24 volt PA and replacing it with a 12 volt PA. All this work was done in July. This removed the need to use an inverter, only to feed a 24 volt switch mode supply, too much loss converting voltages. Now everything is powered off 12 volts, just what you need for portable work.



Replacement 12 volt 23cm 20 watt PA, made by DGOVE from Germany, mounted on a heatsink

It was good not being under pressure to have it finished in time, as the mains ATV unit could always be brought from home to use.

So in future when portable, all can be off the battery without the additional current losses and QRM (on 40 meters) from an inverter.

But changing the PA was only part of it.

While doing that all, the extra features of the home unit were added. Such as adding a VU meter and driving amp unit for it.

Adding the relay enabling circuitry - to be remotely powered on or off from a distance was done.

Being a portable DC unit, reverse polarity relay protection was also added for safety. A digital current meter was also put in.

Seeing current draw is as good as having a PA power watt meter, as you can readily estimate the RF watts going to the antenna.



Just 1.45 Watts into VK3RTV2 for a steady picture, QRP ATV, with low VSWR, at work QTH

Note the range switch on 2W, thus 2 watts full scale deflection, VK3RTV1 (from work) can be held with just 100 milliwatt

'MURPHY' DECIDED I'M HAVING TOO MUCH FUN

An old camera gathering dust was found, a Canon MV530i that uses tape to record, purchased back in 2003. To save swapping cameras between home and work, it was put into service for the home shack. It used to power off after 10 minutes. It is just used to capture video, not record it to tape. Removing the tape allows the camera to remain on without shutdown.

While testing this one day, no video was seen on VK3RTV. Nothing could bring up video or sound. The unit was taken to work, where it was confirmed, just a few weeks before the ATV Party, the final PA had died. This was one of the units that is notorious for copping final transistor failure. So it was swapped over from 24 volt to a 12 volt PA, like the portable 'work' transmitter that was upgraded with the Mitsubishi RA18H1213G 18 Watt RF MosFET amplifier module. This required the inbuilt 24 volt switch-mode supply to be replaced with a 12 volt version. After the "surgery" the transmitter was alive again. However the PA is designed for 8 mW drive, but the SR-System exciter outputs 2mW at full power. Currently the final maximum output power from the final PA was only 2.2 watts.

Just in case more power was needed in future a small current RF driver amplifier was added.

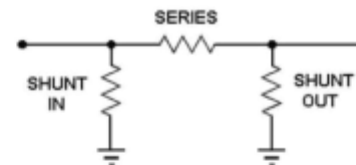
MINIKITS 'PHA1' DRIVER

Minikits came to the rescue with a PHA1 which has a very high Third Order Intercept Point. This means that is a lot more linear and capable of higher output power before distortion. Just what is required for Digital Amateur Television. Not wanting to solder SMD parts so close to the ATV Party deadline, for a few dollars more a complete made up board was ordered, arrived in two days, very good service

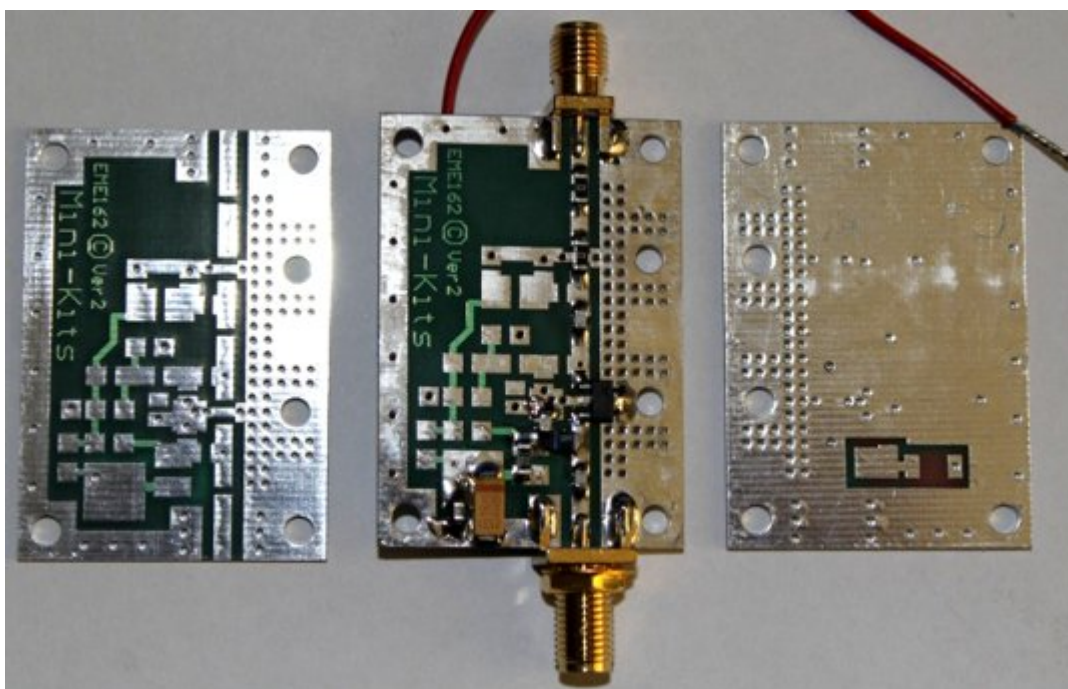
from Mark at Minikits in Adelaide. Check out <http://www.minikits.com.au/> it's updated a lot.

Once the PHA1 was installed an additional 3dB was added to obtain the correct drive levels to the final PA. Peter Cossins, VK3BFG, kindly offered to put it through his spectrum analyser and with current not exceeding 5 amps, the signal was clean and within spec.

After the PHA1 was added, 3dB of 'cut' was required, Peter Cossins took out a chart and suggested a shunt of two 300Ω and an 18Ω.



Input Impedance:	50 Ohms	Ideal Shunt In resistor:	292.402 Ohms
Output Impedance:	50 Ohms	Ideal Shunt Out resistor:	292.402 Ohms
Required Attenuation:	3 dB	Ideal Series resistor:	17.615 Ohms
		Minimum possible attenuation to achieve impedance match:	0 dB



Minikits PHA1 driver board in centre with spare general purpose boards, which are used as attenuators by placing resistors in a "T" pad circuit

Shunt In resistor:	300 Ohms	Forward Attenuation:	2.99 dB	Reverse Attenuation:	2.99 dB
Shunt Out resistor:	300 Ohms	Input Impedance:	50.594 Ohms	Output Impedance:	50.594 Ohms
Series resistor:	18 Ohms	Input VSWR:	1.012	Output VSWR:	1.012
		Input Reflection Coefficient:	0.006	Output Reflection Coefficient:	0.006
		Input Return Loss:	44.578 dB	Output Return Loss:	44.578 dB

Attenuating about 8 milliwatt of power, no damage with bad VSWR likely, shunt calculator on web confirmed the values

ON SCREEN DISPLAY TEXT

The home unit has a dedicated On Screen Display (OSD) unit that is programmed for text. This needs a PC to alter the text each time.

The EMDRC have an OSD unit that has pre-programmed choices of text that can be selected on the fly. Also Morse sending for VK3RTV diagnostics and signal quality reports is also inbuilt, programmed with the VK3RTV touch tones.

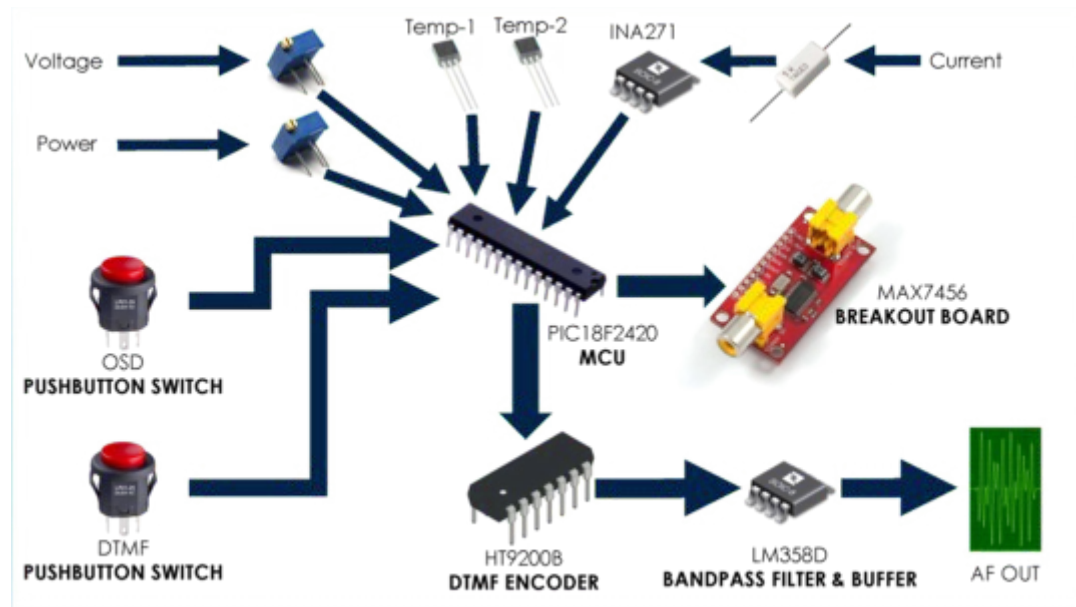
One of these units was also included and built into the portable unit at work. Many Melbourne ATV hams are using these now.

It can output DTMF tones to control VK3RTV, display text, both static or timed in a loop, display temperature and power levels.

Mini attenuators were also found, on Minikits website, so the 3dB attenuation board was removed and a 2dB pad inserted instead.

Now the transmitter, at full power, on 1255MHz draws 4.5 Amps and on 1276MHz, draws 5.4 Amps, which is now considered safe.

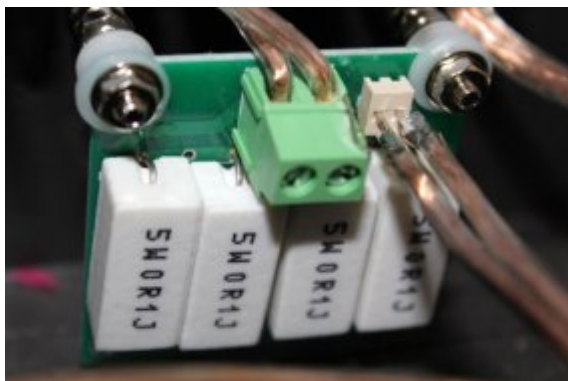
The house ATV transmitter was now "seniors' moment" proof...!



On Screen Display Unit



On Screen Display Board, An EMDRC project by Ralph VK3LL and Damian VK3KQ



Left - Current sense board



Temperature sensor device in the glue



Mini 2 dB attenuator pad

OSD CAPABILITIES

- ▶ Current monitoring (0-10A or 0-15A)
- ▶ Voltage monitoring (0-28V)
- ▶ RF-Out Power monitoring (0-50W)
- ▶ PA Temperature & Driver Temperature (°C)
- ▶ DTMF Tone Generation for VK3RTV Menus
- ▶ CW ID Mode (with 2min timer)
- ▶ 9 Standard displays plus one Status display
- ▶ Dual video outputs (one for DATV Tx and one for preview)

What the OSD unit can do

FINISHING TOUCHES

An IC-5100 Dstar / FM radio was put into service as well, so both the ATV liaison frequency and another could be monitored.

Another VHF/UHF vertical was installed and coax run all the way downstairs and the IC-5100 mounted high up on the wall, with cables run down to a shelf for the microphone and controller front panel. Initial results were bad, with QRM and radio stations breaking through on both receive and under my transmitted audio. Moving the control head (but more importantly) the unshielded cables to it, away from other mains cables near the ducting on the wall, sorted out all the problems completely.

Now, with having the IC-7100 head taken downstairs as required and plugged into the CAT7 network cable, then both radios can be used, not just during the ATV QSO, but on HF with IC-7100 and "watching" two spots on either VHF and /or UHF in real time.

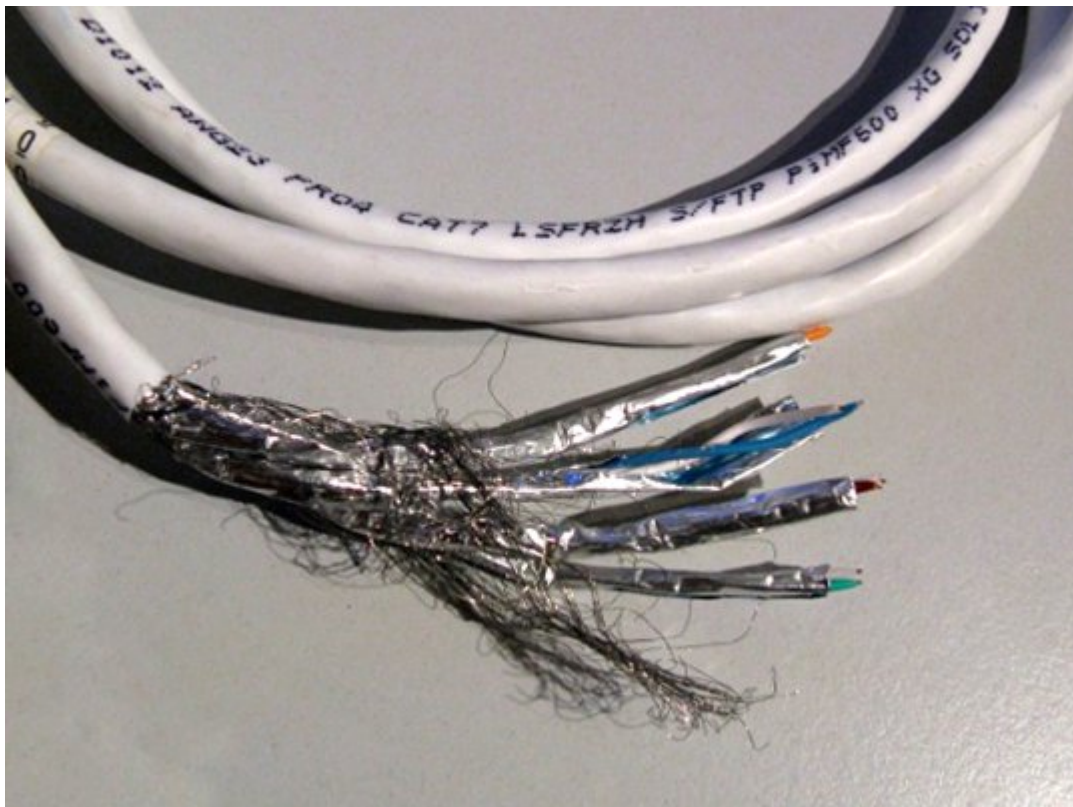
Perfect for cross-banding QSO's as well...

CATEGORY 7 NETWORKING CABLE ~ THE ULTIMATE IN SHIELDING ~ QRM KILLER

CAT7 network cable has each pair shielded then the four pairs all shielded. This cable is for 10 Gigabit networking. Using CAT7 stops the ticking with the IC-7100 or IC-5100 in its tracks.

Saves having to use the overkill solution of Remote Rig over 10 meters of coax, but a spare crossover cable was run anyway.

The specs on CAT7 cable say; Category 7 cable are backward compatible with Class D / Category 5e and Class E / Category 6.



Cat 7 cable showing each shielded pair

Class F features even stricter specifications for crosstalk and system noise than Class E. To achieve this, shielding has been added for individual wire pairs and the cable as a whole. Besides the shield, the twisting of the pairs and number of turns per unit

length increases RF shielding and protects from crosstalk. The Category 7 cable standard has been created to allow 10 Gigabit Ethernet over 100 m of copper cabling. The cable contains four twisted copper wire pairs, just like the earlier standards. Category 7 cable can be terminated either with 8P8C compatible GG45 electrical connectors which incorporate the 8P8C standard or with TERA connectors. When combined with GG45 or TERA connectors, Category 7 cable is rated for transmission frequencies of up to 600 MHz

LAST MINUTE JOBS

The last jobs were getting the BBQ gear ready, filling LPG gas bottles and tidying up.

The rear yard was looking a bit rough, as all can be seen on ATV, it was time to get it ready, not just for ATV, but summer as well.

**New wood chips delivered
Job nearly done
Yard tidy and ready**

THE ATV WEEKEND SHOW ~ FRIDAY EVENING

One of the main objectives is for local and overseas amateurs to broadcast live video segments about their station setups and what they are currently working on. The ATV QSO party is broadcast via the Melbourne-Geelong VK3RTV digital ATV repeater, and can also be viewed on the British Amateur Television Club web site live video streamer at www.batc.tv and also www.vk3rtv.com

On Friday night, only VK stations broadcast, this year there were internet links to the new digital TV repeater VK5RDC at Port Pirie, and VK4RKC in Brisbane. ATV hams not within repeater range or a repeater were able to linkup using Skype via the internet to master controller Peter VK3BFG. Skype is used for Interstate and International connections. However Skype is currently grandfathering out older versions and the new version does not support import video from USB Dongles such as EzCap. These are used to take the output video as received from the ATV Repeater and send it to the remote anchor station. Fortunately Peter VK3BFG found a temporary work around, but it depended on the administrators of Skype and their timetable.

Pictures of the Friday evening stations that logged in, just photographed in front of the TV screen



Peter Cossins, VK3BFG, with the opening address for the Friday night ATV Party QSO



Mick VK3CH, in the backyard, in front of the BBQ's and behind the camera

Mick's Friday night live telecast dinner, was smoked BBQ marinated honey/garlic/soy lamb ribs, washed down with Coopers Ale...

Friday night was a 'round robin' show and tell, like previous years.

The topics and projects were incredibly diverse, with most undertaking either vast improvements or major new projects underway.

EMDRC have a whole ATV studio and fantastic tower with all the beams on it.

John VK3DQ has a huge tower under construction.

Peter VK3BFG showed a 200 watt PA being built.

Jack VK3WWW had a very amusing pre-produced video with his persona visiting him live on air, brilliant video indeed...

The usual BBQ teasing between Mick VK3CH and John VK3DQ was upheld, Micks dinner looked better than what John displayed. The main self criticism of the VK3CH setup is of course lighting. Better 'white' lighting will need to be installed for next year.

The rear yard was not a big job, as the cables and radios were all installed in previous years, just switch it all on and away you go...

The switching, both local and remote, works well. The biggest challenge is finding relevant content to show. Those that pre-recorded video of their projects were well produced professional productions.

It certainly shows that amateur radio does not have to mean 'amateurish', certainly not on VK3RTV.

The stations spoke for four rounds and then it was time to get some sleep for the next day. Stations in the USA watched and came up after 1am their local time, keen indeed...

SATURDAY MORNING

Saturday morning commenced with local stations before the USA came on. The weather was a perfect spring day.

On the Saturday, there were four international net controllers - Peter VK3BFG, Don KE6BXT, Art WR8DMC and Noel G8GTZ.

Overseas ATV repeaters linked to VK3RTV including W6ATN and WR8ATV in the USA and GB3HV and GB3SQ and GB3KM in England, as well as other International stations via Skype and the internet.

SATURDAY AFTERNOON

The 1pm ATV session... Southern California, USA, was due to start, but Mick VK3CH, received a phone call summing him to not one, but two family medical emergencies, which cut the day short and unfortunately prevented recording the afternoon ATV sessions.

Hopefully as in previous years the recordings will be put up to youtube.

SATURDAY EVENING

Stations from England were patched in via Skype by Peter VK3BFG. Putting on three sessions of ATV shows across different modes, time zones and local, interstate and international liaison, no lazy job.

An incredible diverse range of discussions on ATV and amateur radio projects were seen, including stuff not to do with ham radio!!!

As usual Peter VK3BFG managed to put up a professional run show under demanding conditions.

Despite this the promise of further improvements is always strived for, many stations have made great improvements involving much experimentation, patience, trial and error, and of course expenditure of money...

From experimental beginnings four years ago to now, the ATV Party is now a recognised annual event watched across VK, GB, W and Europe and anywhere anyone uses the BATV site or vk3rtv.com

In closing, it's only when you get on air, no matter what preparation you undertake, on the day of transmission, it's only then you discovered either what is lacking, or improvements to be made...

For Mick VK3CH, it is, better 'white' lighting, improved audio, a separate microphone on a lead or wireless to be researched.

Pre recorded content is also another option as the time gets tight on the actual day of going live to air.

It is impressive the time and trouble stations go to both getting on air, often in new locations, finding interesting content to put to air.

It's getting to a point, how to top what you have done in previous years.

So that's always next year's project.

Many thanks to Peter Cossins, VK3BFG, for all his efforts and expertise in another excellent ATV QSO Party.

~Mick VK3CH

External links

If you have an eBook reader that does not have WiFi then you will not be able to use the hyper-links in this publication. If you have an eBook reader that has WiFi then you will be able too providing you are in a WiFi zone.

But if you have a Kindle 3G then yes, but only to Amazon, and there is not a lot of ATV material on their site.

Smart phone reading apps are ok providing that you have a 3G data connection.

Note: These links will fire up your devices browser and if you are using 3G/4G then you will incur data usages charges.

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Although a formatted article showing the layout can be sent, we prefer an unformatted text file of the script, along with annotations of where important images should be placed. All images should be identified as Fig 1 etc and sent seperately.

Images should be in PNG format if possible and the best quality available. Do not resize or compress images, we will do all the rework necessary to publish them.

If you are sending a construction project, please include the dimensions of any pcb's and make the pcb image black and white, not greyscale.

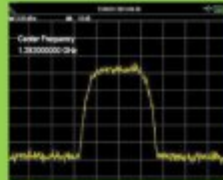
CQ-DATV reserves the right to redraw any schematics and pcb layouts to meet our standards.

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Digital Amateur TeleVision Exciter/Transmitter

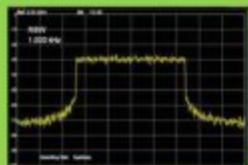
now available from



DATV-Express



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- Software Defined Radio (SDR) architecture allows many variations of IQ modulations
- “Software-Defined” allows new features to be added over the next few years, without changing the hardware board
- As extra bonus, the team has been able to get the board to transmit DVB-T 2K mode, however we cannot guarantee the performance of that protocol. Caveat Emptor!
- Requires PC running Ubuntu linux (see User Guide)
- Price is US\$300 + shipping – order using PayPal



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