

CQ-DATV

dotMOBI



Issue 6 - October 2013



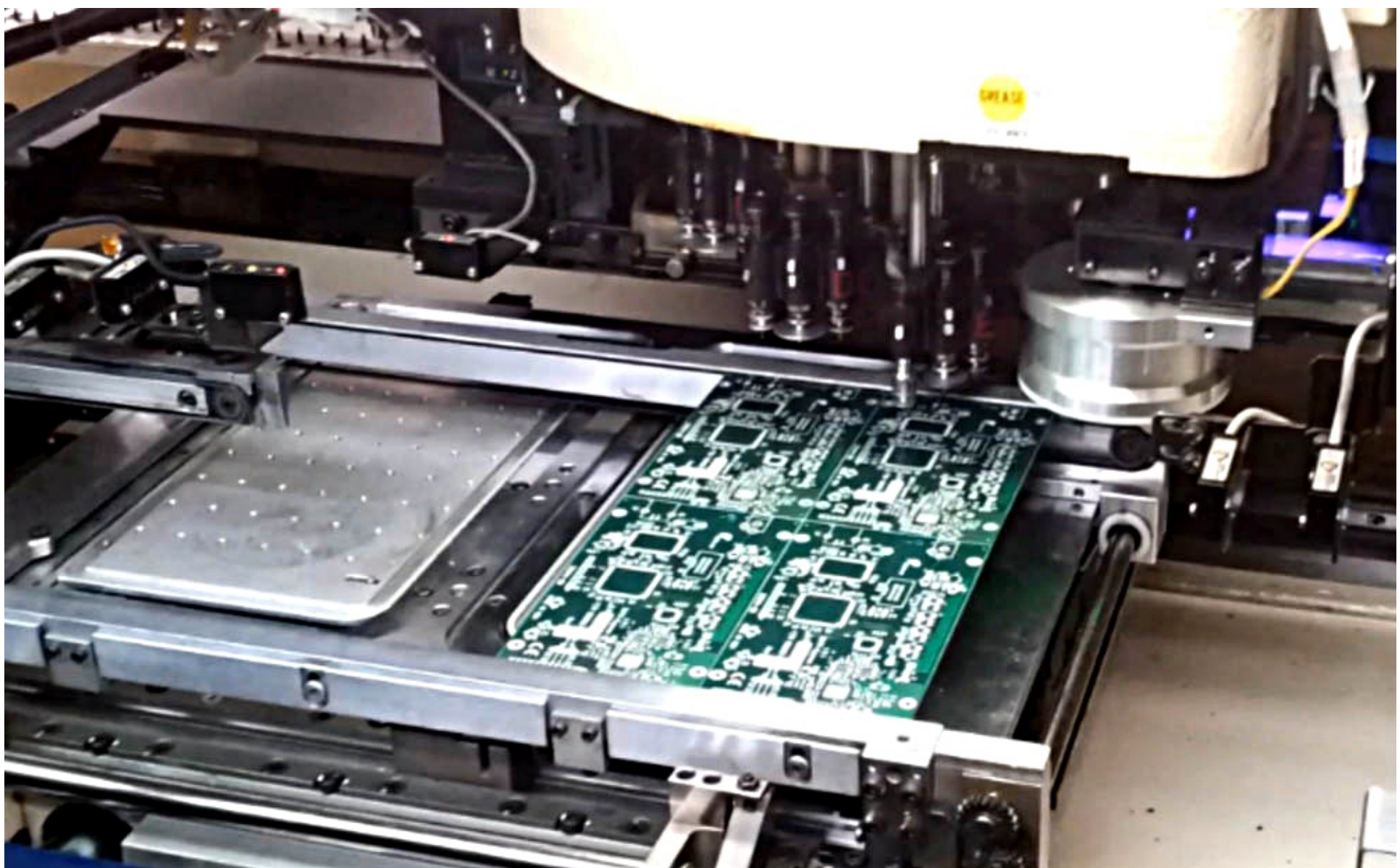
CQ-DATV6 Production Team

- *Ian Pawson - G8IQU*
 - *John Hudson - G3RFL*
 - *Mike Stevens - G7GTN*
 - *Ken Konechy - W6HHC*
 - *Alan Critchley - G3SXC*
 - *Paul Wade - W1GHZ*
 - *John Lukey - VK2ZUH*
 - *Richard Carden - VK4XRL*
 - *Trevor Brown - G8CJS*
 - *Mike Berry - G1LWX*
 - *Klaus Kramer - DL4KCK*
-

DATV News

DATV-Express Pick-and-Place Robots Successful

LATE-BREAKING-NEWS - - On October 10, Art WA8RMC of the DATV-Express project team reported that the pick-and-place robots had successfully assembled the first four pre-production boards....and they work!!



Pick-and-place robots place components down onto a panel of four boards

Art explained that four blank PCB's are arranged in a panel and the robots placed parts onto all four boards in sequence. Then the boards that are loaded with components are placed in a solder "reflow" oven. These four boards are now being held in reserve for anyone interested in helping with the software development...and will be sold at a significant discount to the purchase price. "Interested and willing" software programmers should contact Charles G4GUO.

The Gutenberg of Electronics

Around the year 1450, German goldsmith Johannes Gutenberg introduced the movable-type printing press in Europe, leading to a new era of mass production of books. Let's jump from words to circuits. Austrian engineer Paul Eisler is credited with inventing the PCB in 1936. But the truth is a bit blurry, considering the "sprayed metal" boards developed by British inventor John Sargrove the same year.



And if things weren't fuzzy enough, now we know that another engineer, American Earle L. Kent, took some decisive steps while working on his early electronic organ.

Sometimes, history does not do justice to all contributors, and to others it's quite unfair. Who actually holds the title of the "Gutenberg of Electronics" is still unclear. What's clear is that most of us wouldn't dare to replicate a project on a point-to-point basis. No way!

VK3RTV (D)ATV QSO Party

Friday 30th August and Saturday 31st August 2013 the third ATV QSO party got underway, it was streamed live on the batc streamer and also had linked in WR8ATV W6ATN and V3RTV repeaters.



This was third annual party the original was to celebrate 100 years of Ham Radio in Victoria if you missed it Don KE6BXT. has put together a short video <http://www.youtube.com/watch?v=9AMXyE2vAIY&feature=youtu.be>

Kickstarter launch for ARRL-TAPR DCC video

Gary Pearce KN4AQ has been raising funds to film 2013 ARRL/ TAPR Digital Communications Conference.

The conference took place September 20-22, 2013 in Seattle and is the showcase for the latest hardware and software advances in amateur radio.



Gary KN4AQ says "We've produced the videos four out of the past five years, two years on DVD, and the last two online. Viewership online was much higher, of course, but financially we took a bath."

Gary has recorded all this years lectures and is now editing them ready for an on-line release...watch this space.

Oops!

It is a sad fact in life that nothing is idiot proof, probably because idiots are ingenious.



National Hamfest stream 1 [streaming]
Watch >>
Select a stream from the list and click Watch
[Multi screen selector](#)

Your IP address is 2.123.129.10

Chat Messages

Online

guest569

Kam

Everything you
about sex, but

I A N

B I U

Submit Chat refresh on? ☐ Enter to Send? ☒

type /help for help, or /help help for more help!

Gates open 09:30 George Stephenson Hall Doors open 10:00 27th & 28th September



The National Hamfest

Hosted by Lincoln Short Wave Club, RSGB National Club of the Year 2012 and Sponsored by the RSGB

Are hackers ingenious or just vandals out to show they can mess your software up. This is a screen picture of

the batc streamer and the text Chat, where somebody has deliberately inserted a rude Jpeg, thanks a bundle for the contribution whoever you are. A fine contribution to the ATV party that people worked hard to make happen

DATV-Express Project – September update report

Post by KenW6HHC » Thu Sep 26, 2013 8:02 pm

The project team performed a design review on the Rev E DATV-Express PCB layout package that Tom WB6P had prepared. The new etch layout looked great...some minor documentation clean-up was implemented and the “pre-production” design files of the board were released to Art.

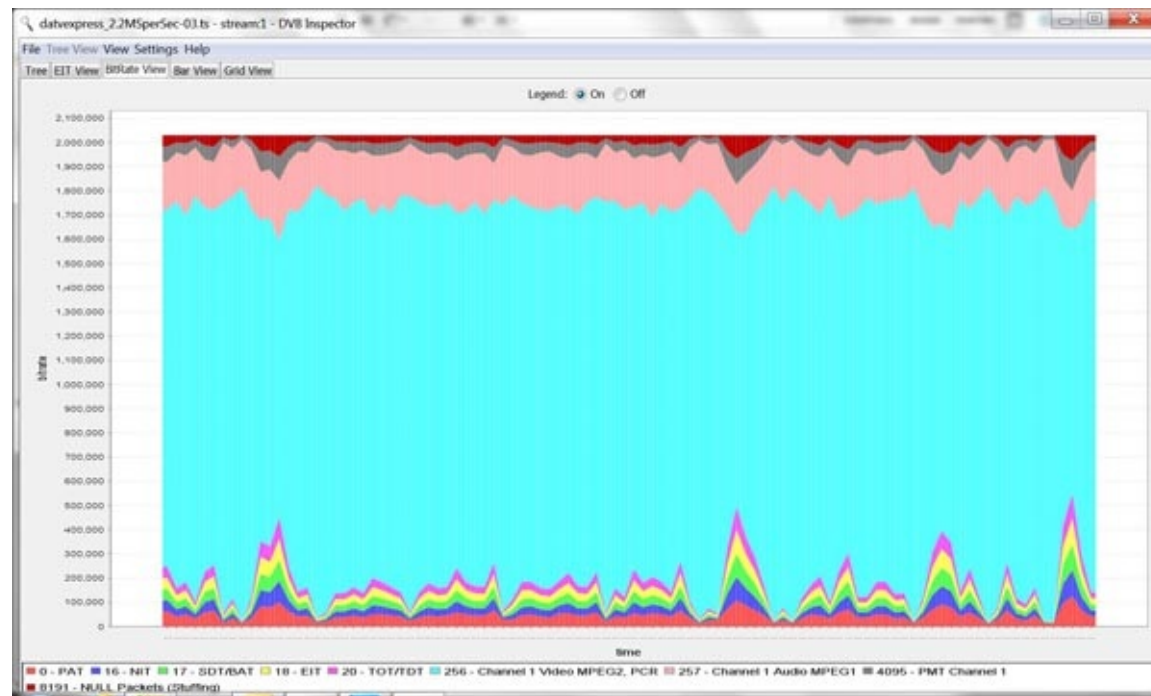
Art WA8RMC had an extremely busy month on the project. He ordered 100 blank PCB’s from Sunstone for the pre-production run of boards. Art also placed the order for the solder-paste stencil/mask. This will allow the robots to later assemble the PCBA board without hand-soldering. But Art was having extreme frustration receiving video and audio at his QTH. Now Charles G4GUO has 6 different STB/receivers that all worked perfectly. Ken W6HHC has one STB that received video perfectly. At that point, using v1.04 DATV-Express software, the best that Art could report was “full QUALITY and blank screens” on three STBs...and an occasional flash of video and “raspy audio” on the fourth STB.

Charles G4GUO tapped into the experience the DigiLite team and Brian G4EWJ explained that one short-cut taken by DATV-Express software to NOT implement the PCR (Program Clock Ref) field in the Transport Stream (TS) would cause problems. The PCR field was implemented in v1.05....but the results on Art’s STBs did not improve?!? Art has Tutioune software with a S2-1600 receiver card as developed by Jean Pierre F6DZP. Art’s screen shots of Tutioune analysis tool revealed some irregularities. Charles sent a TS file to Jean Pierre F6DZP and to Rod G6TTD/KG6TTD (TSreader for MPEG-2) to get feedback utilizing their experience. Jean Pierre explained that the audio bitrate was not correct. Charles could now see that the audio bitrate was being calculated incorrectly, fixed the audio bitrate calcs and sent a new v1.06 of the software to Art. Now Art can receive video and audio on one of the four STBs. Charles is suspicious that the PID setting may not still correct between Art’s DATV-Express board and the STBs that refuse to work correctly. (Oh the joys of testing

prototype designshi hi)

Charles G4GUO was able to compile the DATV-Express software onto Raspberry-Pi and transmit a 1 MSymb/sec DVB-S signal. Raspberry-Pi does not have a lot of computing power...so 1 MSymbol/sec is the maximum on the Raspberry-Pi until Charles ports more PC functionality into the board FPGA. Next Charles compiled DATV-Express software on a Sabre Lite board from Element14 (Freescale i.MX6 Quadcore) and could successfully transmit DVB-S signal at 4 MSymbols/sec FEC=7/8.

Ken W6HHC continued to test new software releases to make sure that nothing became broken at his testing lab. G4GUO had implemented a TS file recording switch into v1.05, so it was "cool" for Ken to be able to capture his TS stream and then play it back or send it off for someone else to view. Charles pointed the team to a useful (and free) TS analysis tool called DVBSInspector. The DVBSInspector provides lots of info about TS stream details...like measured data-bit rates, and PIDs being used, etc.



The DVBSInspector tool can display bit rates of audio packets and video packets in the Transport Stream

The blank PCB boards should arrive soon. Everything appears to be on schedule to receive and test the pre-production assembled boards in October (maybe ten or twenty boards). The team is continuing the investigation of Art's "no video displayed" problems

New repeater

We are at last building up the 10GHz ATV repeater GB3FY to be sited at FLEETWOOD

The OUTPUT FREQ is 10,240MHz and the INPUT frequency is 10,425MHz running just under 25W ERP OMNI

I have obtained two steel poles and will be welding these together and painting to blend in with the area, these are 90mm and 75mm and will support the aerials

The TX and the LOGIC unit with its own Test cards is also complete most of it has been in CQ-DATV

The Nov is for revised frequencies 10,240MHz out and 10,425MHz input so two new aerials are now under construction Using two long slotted (40) waveguides for RX and TX giving about 14dB Gain and should produce 25w ERP

We hope to have to GB3FY up and running before Christmas most of the outstanding problems are mechanical

We now have 17 members of the Group and this keeps rising

NOTE at first it will be ANALOGUE with 6MHz FM sound Positive Video

Thanks to all whom have helped in all sorts of ways this now puts Lancashire on the ATV map

John G3RFL

What is wrong with ATV today?

I think the short answer is not a lot we are progressing on the digital front with the introduction of DATV systems that will deliver better picture quality from lower transmitter powers that use less bandwidth. At the same time we have seen a growth of ATV use of the Internet for repeater monitoring and communications such as the recent ATV QSO party.

What is failing is the traditional ATV magazine and this is due to a number of reasons, the first being lack of copy, many of the people who used to write copy for ATV magazines now operate their own websites and use them to directly publish their own work. The second reason is cost, there is no getting away from it, printing and postal cost for traditional paper based magazines is at an all time high, BATC membership with printed magazine subscription for an overseas member outside the EU is £27, this was expensive when 4 magazines a year were being delivered, but now in the third quarter of 2013 and only two magazines appearing (only one printed) it means CQ-TV is becoming one of the world's most expensive magazines to produce and deliver.

Here at CQ-DATV we have tried to buck that trend by delivering an eBook magazine that is free to all ATV enthusiasts. Yes we have chosen an unusual format but one that we feel will grow.

The original format experiments were done by myself producing eBook versions of CQ-TV, but converting an existing magazine is harder than creating one in that format from scratch. BATC looked into automating the process by buying expensive new software indesign 6, but it would seem there are difficulties as the eBook versions are not being expanded. It does not help when Amazon, who has been famous for producing the non standard format of eBook file (mobi) introduced the additional format AZW3, at a time when the industry is trying to standardise on ePub.

We also had concerns about if we could support serious constructional projects on the small screen of an eBook, but having looked at the last 5 issues, all of which have had technical changes in the way they are produced, I think we can stand back and say it works, the only criticism is that we do not produce a 4th format PDF version. While this would be desirable there is no simple solution, all the three eBook files we

produce are created in a similar way to web pages, so they can flow to create the best format for various mobile screens. We use free software to produce CQ-DATV, but even if we threw money at it there is not a better solution. The PDF format is a more rigid on screen sizes and although it can be read by a modern tablet, it does not perform well on differing screen sizes.

So is the answer to ATV magazine distribution the eBook? Well it's electronic, so we can produce and distribute it free and you can read it away from your PC, this has to be a start in the right direction. I also believe electronic publication might be the door to producing what ATV needs and has never had, a monthly magazine, something that is topical and up-to-date. If it is distributed free and available on the first of every month as a download, it could have a more topical content to its news section and coming events but still retain that mainstay of any ATV magazine the constructional article.

CQ-DATV is produced by a team but that team has only one task and that is to create copy for our magazine and this is the only way we have been able to create the number of magazines we have produced this year. There are no background tasks for the team and this is important because background tasks always get elevated to foreground task, we have all seen it happen and the only solution is to minimise the tasks or better still eliminate them all together.

CQ-DATV works, our first issue had 1654 downloads, that's more than twice the number of people subscribing to CQ-TV, but then we are delivering a no cost magazine and price has always been and always will be an issue. So here at CQ-DATV we have taken the giant leap of faith in ATVer's by producing an electronic only magazine in the belief that this is the future and all ATV enthusiasts can read the format. Yes there is effort involved and at different levels, the PC only reader needs to download free reading software such as Calibre. The owner of a WI-FI less tablet has to use a PC download and USB transfer lead to load CQ-DATV on to his or her tablet, again through software like Calibre. The Wi-Fi equipped tablet can just be pointed at our site and our publication downloaded, perhaps the winner being the iPad which then opens the correct software iBooks so you can start reading.

Even easier, with no specific software required, is to use your favourite web browser with an ePub reader 'plug-in'. These are available for Firefox, Seamonkey and Chrome (I use Radium™)

One thing all these systems have In common is the HTTP link that enables articles to be written in a different way to deliver a more interesting article with links to open detail for those that require it.

What is stopping us becoming a monthly magazine well the short answer is you the reader, no magazine can survive if it has no contributions from its readers, to this end we are looking to expand our editorial team. Writing articles for CQ-DATV is not daunting, either let us have an outline and we will discuss it or go for a full head on contribution, we can polish it if required, but most of all we can fly your article to our readers and we hope by doing this to pull the ATV community together with a common purpose under a common banner sharing designs thoughts and ideas through a free ATV magazine that we hope will be read by all ATV enthusiasts, we just need a common purpose and we can grow this hobby of ours.

Ian Pawson, Editor CQ-DATV

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Ham Video transmitter on board ISS Columbus module

How a DATV transmitter on S-band is being added to the ARISS equipment on-board the International Space Station has been related in an announcement recently circulated and available at <http://www.ariss-eu.org/HamVideo.pdf>

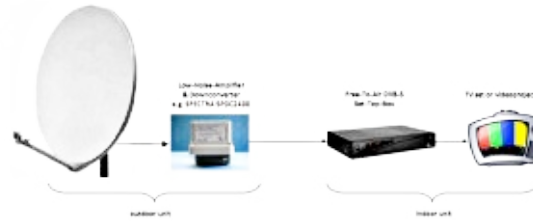


International Space Station ISS with shuttle Endeavour 2011-05-23

The ARISS Ham Video transmitter is presently on-board Columbus. The transmitter was delivered by Japanese cargo spacecraft HTV-4, which launched August 4 and docked 5 days later.

ESA astronaut Luca Parmitano KF5KDP / IR0ISS reported that the bags are stored in Columbus. There are two bags: one for the transmitter, the other for the power, camera and antenna cables.

Installation will be done by US astronaut Michael Hopkins KF5LJG who has been trained for the commissioning of the Ham Video equipment. The commissioning is planned later in the year, possibly end October when there are favourable passes over Italy. Indeed, the tests transmissions for the commissioning of the onboard equipment will be received by the ground station of the "Centro di Geodesia Spaziale" of the Italian Space Agency, located in Matera, Southern Italy.



A basic amateur radio station that should be able to receive HamTV from ISS – Image AMSAT-Italia

We will report in due time on the commissioning procedure which will involve a series of tests to be performed during 3 or 4 ISS passes.

Possibly, the Ham Video transmitter will transmit continuously between the commissioning steps offering amateur ground stations the opportunity to test and tune their receiving equipment. The transmissions will be performed in automatic mode, without requiring crew time. The camera, which runs on a battery, will not be used and the ground stations will receive a black image.

Meanwhile, commissioning is being prepared steadily. The kick-off meeting took place November 2012 at ESTEC, the European Space Research and Technology Centre, located in Noordwijk the Netherlands. Detailed procedures are examined and finalized during weekly ESA/ARISS teleconferences. A preliminary EST (Experiment Sequence Test) is planned August 28-29. The test will involve the ARISS ground station IK1SLD, located in Casale Monferrato in Northern Italy.



One of the Columbus Module 2.4 / 1.2 GHz Antennas

IK1SLD, which is an ARISS telebridge station often used for educational ARISS school contacts on VHF, has been upgraded for S-band reception. Ham Video manufacturer Kayser Italia has delivered a 1.2 meter dish, a down converter and precision tracking motors, which are part of the ESA funded equipment. For the EST, the station will receive a DATV signal from a local low power S-band test transmitter. The decoded signal will be webstreamed to the BATC server. The British Amateur Television Club offers ARISS free access to their server. ESA examiners will connect to the BATC server and evaluate the reception. Test transmissions at IK1SLD will cover the different frequencies and symbol rates available on the Ham Video transmitter.

Web streaming will take advantage of the special software developed by Jean Pierre Courjaud, F6DZP. References are available in the HamVideo.pdf.

When the Ham Video transmitter will become operational, it will be used for ARISS educational school contacts. Video will be for downlink only. Uplink will be VHF FM audio. The Ericsson transceiver onboard Columbus will be used for reception onboard. This cross band and double mode operation is called Ham TV. Ham Video is the name of the DATV transmitter.

Gaston Bertels – ON4WF, ARISS-Europe chairman

Planning a Digital-ATV Station

by Ken Konechy W6HHC and Robbie Robinson KB6CJZ

Reproduced from the Orange County Amateur Radio Club newsletter. www.W6ZE.org

[Please Note – This is the second article in a series of DATVtalk articles to introduce Digital-ATV to hams for this new area of ham radio. The article was originally written in 2009. Since, 2009, there have been changes and improvements in technology...but there is still a basic problem (most severe in US) that too few hams are using digital-ATV. This article has been now updated to reflect the most significant changes since 2009.]

In the May 2009 OCARC newsletter, the TechTalk presented an introduction to D-ATV called: “ATV – the Digital Fork in the Road”. In this article, DATVtalk03 will cover planning to create our own D-ATV station. But to a certain extent (especially in the US), Digital-ATV seems like a maze. There are plenty of decisions that need to be made to plan for a D-ATV station:

- *Some decisions could be very expensive*
- *Some decisions may lead to an obsolete design*
- *Some decisions could have major technical issues*

I am pleased to be joined by fellow OCARC club member Robbie-KB6CJZ for the creation of this month’s TechTalk article. Robbie is the club guru on analog ATV and commercial satellite receivers and ham microwave communications in general.

What Band Should I plan for D-ATV?

Robbie explained that the view of ham radio bands for ATV and D-ATV in Southern California looks like this:

- *440 MHz – very crowded - looks like a difficult band for D-ATV, but RF amps are cheaper*
- *920 MHz – presents a tight fit for D-ATV, plus lots of noise from “part 15” devices (Industrial, Medical, and Scientific).*

- *1,200 MHz – more room for simplex D-ATV, probably no room for a D-ATV repeater pair-of-frequencies. RF amplifiers get more expensive.*
- *2,400 MHz – RF amplifiers get even more expensive. Very noisy because band is shared with IEEE802.11 Wi-Fi. But, probably has room for a D-ATV repeater.*
- *3,400 MHz - RF amplifiers continue to get even more expensive. Has room for a D-ATV repeater.*

The decision we made is to plan for ham home/portable transmitters on the 1.2 GHz band as a good compromise. Later, if we can put up a D-ATV repeater...the repeater will output on 3.4 GHz

ATSC or DVB-S Modulation Protocol??

TechTalk #74 explained that a predominance of Europe/Asia/Pacific was using the DVB-S commercial standard for ham radio D-ATV, using QPSK modulation for video and MPEG-2 for audio. But, in the US (and Canada), the terrestrial commercial HDTV standard is called ATSC and uses a modulation scheme called 8-level-VSB for video and AC3 (Dolby) for audio. Because of band-plan limitations in US, we have selected 1.2 GHz band for doing the planning for D-ATV. What D-ATV modulation standard should we choose for our station?

Possible DVB-S and ATSC Transmitters

- First let's look at DVB-S

So far in the previous article, we have seen that while there are several ham designs in Europe for DVB-S D-ATV boards, especially AGAF and SR-Systems (both in Germany), D-ATV boards, especially AGAF and SR-Systems (both in Germany), and the DigiLite kit via BATC, and the DATV-Express Project, and the newly announced BATC DTX-1 exciter. Soldering a DigiLite kit together does not appeal to us...and the DATV-Express design is not for sale, yet...and the DTX-1 is too new to become our selection. The lion's share of Ham radio transmitter units appear to be made by Stefan-DG8FAC of SR-Systems (see the link/URL at the end). The block diagram in Fig 1 uses a SR-Systems MiniMod-DVB-S board and a MPEG-2 board as the heart of a D-ATV transmitter.

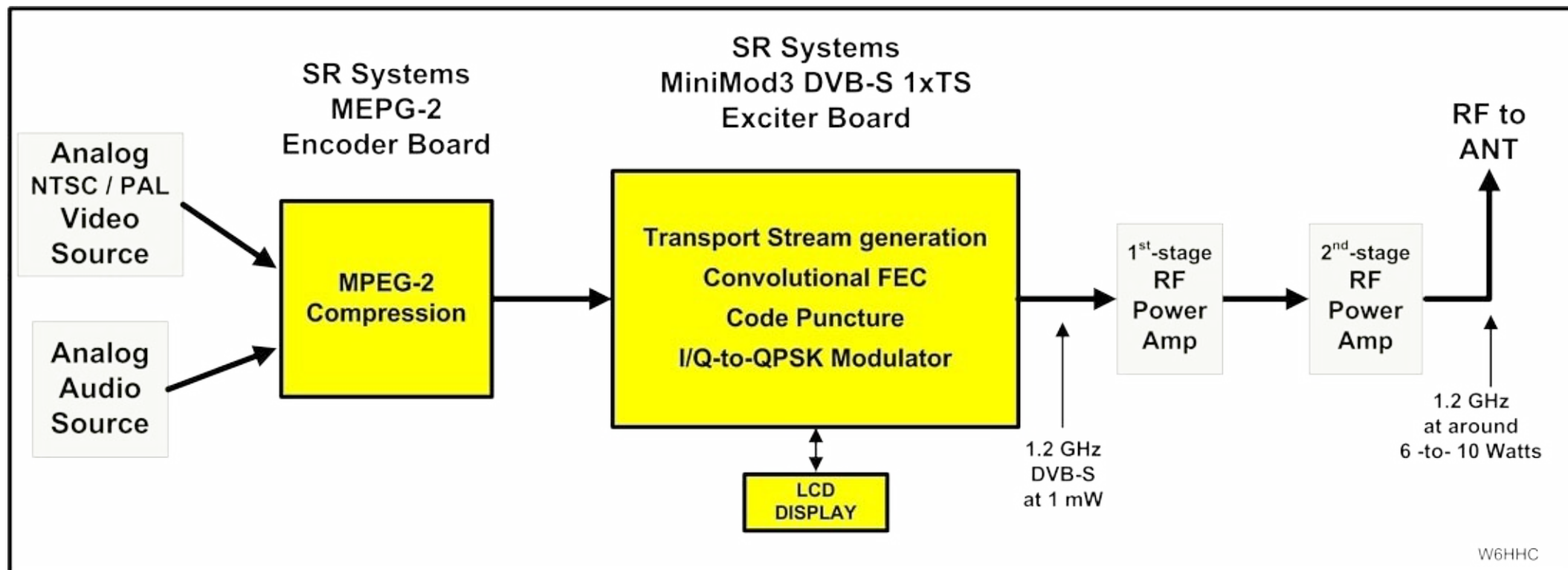


Figure 1 - Block Diagram of SR-Systems DVB-S Transmitter for D-ATV

FIG 2 shows a block diagram for DigiLite transmitter, FIG 3 shows a block diagram for DATV-Express transmitter, and FIG 4 shows a block diagram for the new BATC DTX1 transmitter.

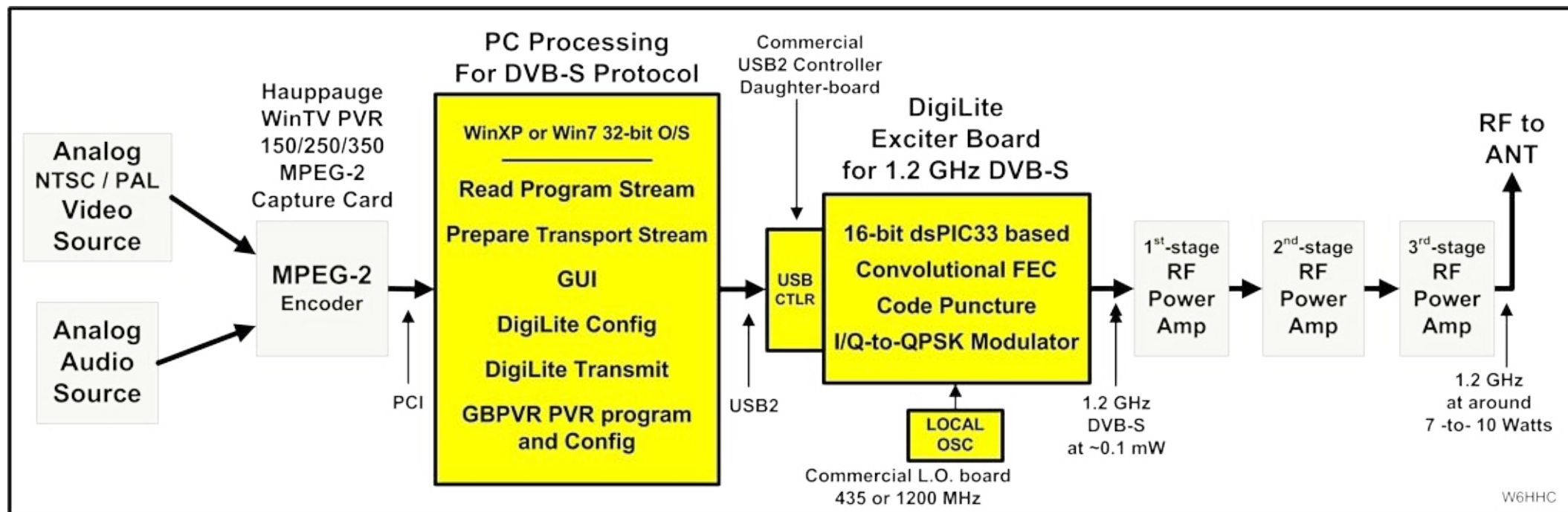


Figure 2 - Block Diagram of DigiLite DVB-S Transmitter for D-ATV

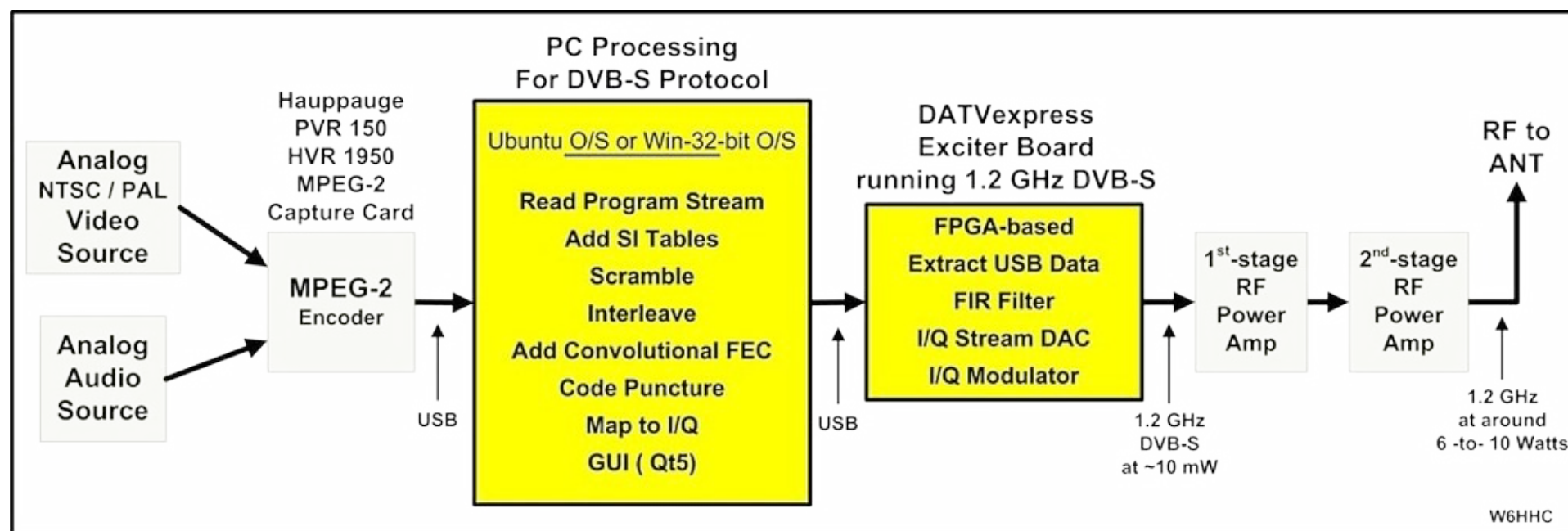


Figure 3 - Block Diagram of DATV-Express DVB-S Transmitter for D-ATV

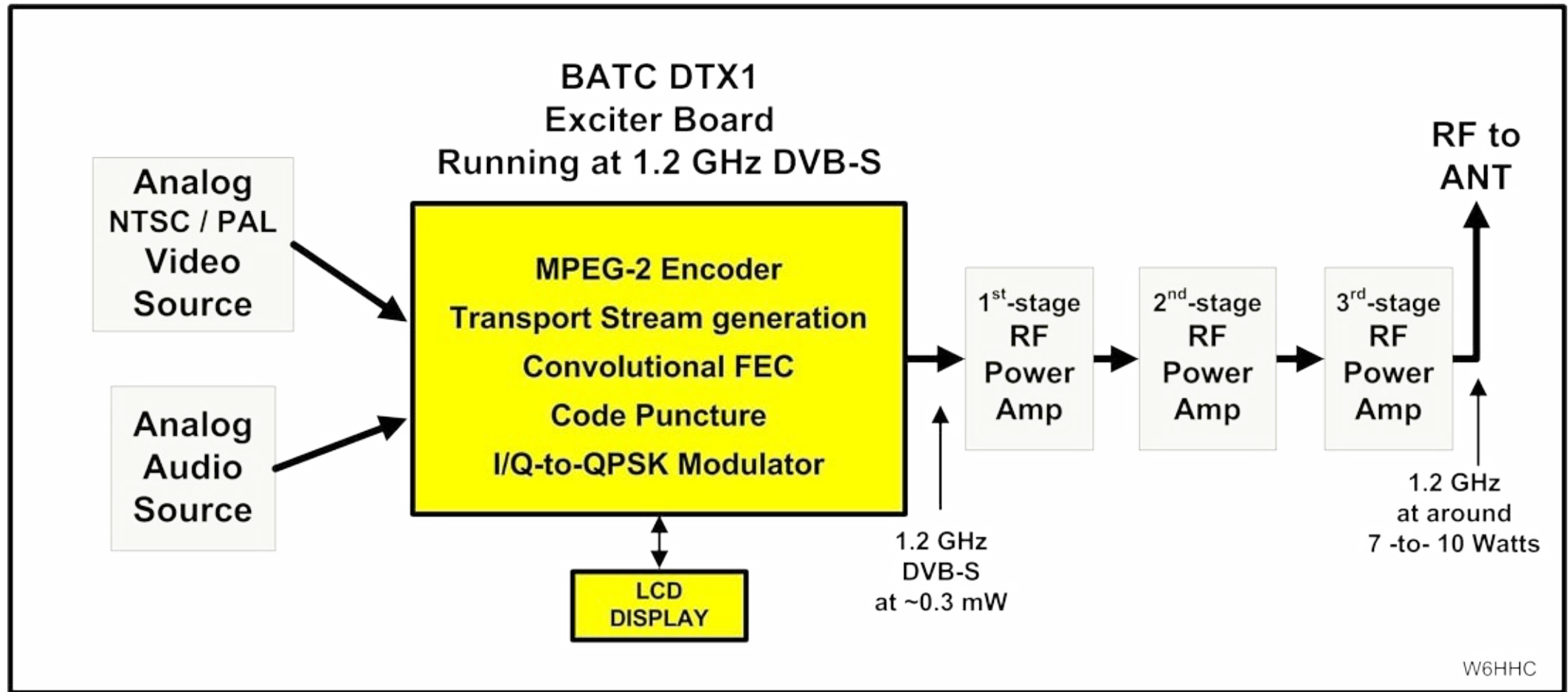


Figure 4 - Block Diagram of DTX1 DVB-S Transmitter for D-ATV

The SR-Systems MiniMod board is shown in Fig 1 and will produce about 1 mWatt RF output. I will need a small RF amplifier to get that power up to about 25 mWatts to drive the 10 Watt RF. All Digital RF modulations require very linear Class A power amplifiers. We plan to run a 30W 1.2 GHz linear amp at about 10 watts or so. Note that the SR-Systems datasheets caution that the RF output of the MiniMod board is UNFILTERED. Stefan-DG8FAC of SR-Sys explained this note means that we need to suppress the second harmonic and the third-harmonic a little (using a band-pass filter). Following the RF output of the MiniMod with two 1.2 GHz amps provides the required harmonic suppression. Amplifiers for DVB-S need to be be-rated from their FM

power rating, but less de-rating than required for ATSC. The DVB-S 1xTS D-ATV signal can be configured for variable wide bandwidth if from about 2 MHz to 6 MHz wide. Finally, DVB-S protocol using QPSK modulation is not-well suited for HD (High Definition) transmissions, it creates a much larger RF bandwidth than other modulation technologies. But HD DATV is not one of our goals. Table 1 below looks at an estimate of costs for a DVB-S transmitting station based on the SR-Systems HamSet-3 pricing (NOTE: no VAT is required for USA sales and “low” and “high” columns estimate Euro-to-US\$ fluctuations.).

Table 1 – Cost Estimate of DVB-S Transmitter

Item	Description	Manufacturer	Model	Cost Estimate Low end	Cost Estimate High end
1	MPEG Encoder Board (HamSet-3)	SR-Systems	MPEG-2 Encoder V5	~US\$229	US\$286
2	1.2 GHz FEC & IQ Modulator for DVB-S	SR-Systems	DVB-S 1xTS MiniMOD3	~US\$372	US\$464
3	Shipping and Handling	SR-Systems	100 Euro	\$120	\$150
4	First RF amp	??	(about 50 mW to about 1 Watt)	\$25	\$200
5	RF Power Amplifier 30W (very linear)	Down East Microwave	Part Number 2330PA	\$240	\$240
	TOTAL			\$986	\$1,340

- Next let's look at ATSC Protocol

While there are several ham designs in Europe for DVB-S D-ATV boards...there is only one ham design that we can find for an ATSC D-ATV transmitter. Again Stefan-DG8FAC of SR-Systems in Germany produces a board for the US 8VSB terrestrial video standard. Block diagram in Fig 2 uses the SR-Systems MiniMod-ATSC board

and MPEG-2 board as the heart of a D-ATV transmitter. There is one “quirk” with MiniMod-ATSC design. The US ATSC standard calls for transmitting audio in AC3 format (Dolby), but the Dolby licensing fees for AC3 are very expensive. SR-Systems elected to pair up the 8-VSB video with MPEG-2 audio to avoid the AC3 licensing fees. This 8-VSB/MPEG-2 combo works in many receivers in US as we will see later in this article, but is not compatible with the plentiful and really cheap ATSC Terrestrial SetTopBoxes.

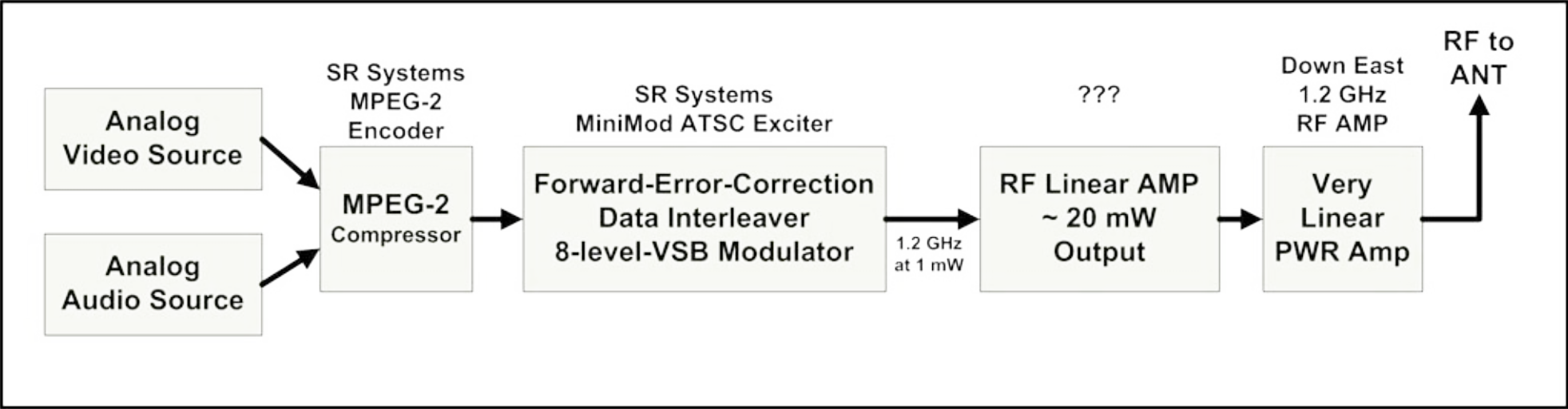


Figure 5 - Block Diagram of ATSC Transmitter for D-ATV

The ATSC transmitter block diagram looks almost the same as the DVB-S. The MiniMod ATSC board will also produce about 1 mWatt RF output. I will need a small RF amplifier to get that power up to about 25 mWatts to drive the final 10 Watt RF amplifier. All Digital RF modulations require very linear Class A power amplifiers. We plan to run a 30W (FM-rated) 1.2 GHz amp at about 10 watts or so. Note again that the SR-Systems datasheets caution that the RF output of the MiniMod board is UNFILTERED requires that we need to suppress the second harmonic and the third-harmonic a little. Following the MiniMod output with two 1.2 GHz amps provides the required harmonic suppression. RF amplifiers for ATSC protocol need to be be-rated from their FM power rating even more than required for DVB-S. The 8VSB signal will have an RF bandwidth of about 5.5 MHz wide. Table 2 looks at an estimate of costs for an ATSC transmitting station.

Table 2 – Cost Estimate of ATSC Transmitter

Item	Description	Manufacturer	Model	Cost Estimate Low end	Cost Estimate High end
1	MPEG Encoder Board	SR-Systems	MPEG Encoder	~US\$290	~US\$360
2	1.2 GHz FEC & IQ Modulator for ATSC	SR-Systems	ATSC MiniMOD	~US\$852	~US\$925
3	Shipping and Handling	SR-Systems	100 Euro	US\$120	US\$150
4	First RF amp	??	(about 50 mW to about 1 Watt)	\$25	\$200
5	RF Power Amplifier 30W (very linear)	Down East Microwave	Part Number 2330PA	\$240	\$240
	TOTAL			\$1,527	\$1,875

Possible D-ATV Receiving Station

Now we will look at possible choices for the D-ATV receiving station. The video can be displayed on an old analog TV, a new DTV/HDTV, or a computer or a notebook computer. In Fig 6 and Fig 7 below, we show nine possible alternative configurations: four configurations are aimed at receiving ATSC ham signals and five configurations are aimed at receiving DVB-S ham signals.

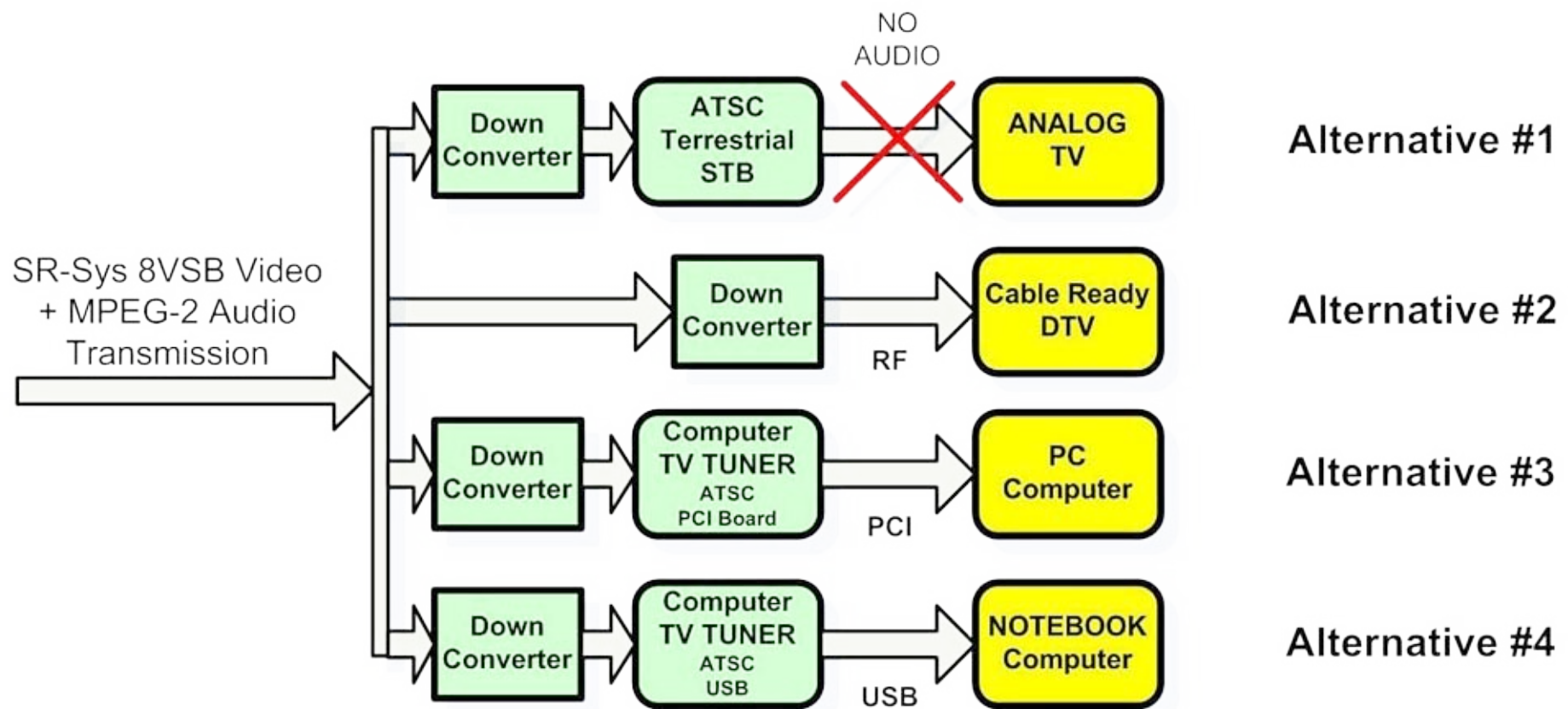


Figure 6 – Possible DATV ATSC Receiver Choices

Now we will walk through each of the receiving station alternatives that are shown in Fig 6...starting with receiving ATSC ham signals.

Alternative 1 – Using a Terrestrial ATSC STB

The first approach for receiving ATSC is to use the cheap (\$50 new) ATSC terrestrial SetTopBoxes that have been made common by the US government preparations for eliminating commercial analog TV broadcasts. The MPEG-2 audio compression from the Fig 5 transmitter appears to create a real problem for this approach. The STB is expecting the AC3 format (not MPEG-2) for audio. We have found no US hams who have succeeded in receiving the intended ATSC D-ATV transmission from SR-Systems MiniMod on these ATSC

terrestrial SetTopBoxes.

Alternative 2 – Using Cable-Ready DTV

In the second approach, some models of “cable-ready” digital TVs can receive QAM (for cable) as well as ATSC (for terrestrial) and will correctly handle the MPEG-2 audio OK. Nick-N6QQQ in Santa Clara has reported he tested this approach with the MiniMod ATSC board and it does work well. This approach needs a front-end down-converter to take the received 1.2 GHz signal and bring it down to perhaps the 480-to-700 MHz range of US ATSC DTV tuners. Perhaps some cable-ready DTVs may not work?

Alternative 3 – Using Computer PCI ATSC Tuner

In the next approach, we use a PCI board designed to add an ATSC TV tuner to a PC. Nick-N6QQQ has reported MiniMod success with using computer peripheral tuners, simply because all they do is take the 8VSB and put out the MPEG-2 transport stream. The computer winds up doing the rest of the work by decoding the MPEG-2 video and the MPEG-2 audio. The Hauppauge WinTV-HVR-1600 PCI TV Tuner Card – 1101 covers analog (NTSC) and DTV (ATSC) for under \$100. Another interesting approach for a computer is the Silicon Dust HD HomeRun box that networks to the computer. Again, we need a down-converter to take the incoming 1.2 GHz signal and bring it down to the range of US ATSC DTV tuners.

Alternative 4 – USB ATSC Tuner for Notebook

In this approach, we use an ATSC tuner with a USB output that can deliver to a Notebook computer (no room for PCI card). The notebook will again accept the MPEG-2 transport stream output and provide for the presenting the video and audio. The Hauppauge WinTV-HVR-950Q TV Tuner Stick can be purchased on the internet for around \$70 new. Again, we need a down-converter to take the incoming 1.2 GHz signal and bring it down to the range of US ATSC DTV tuners.

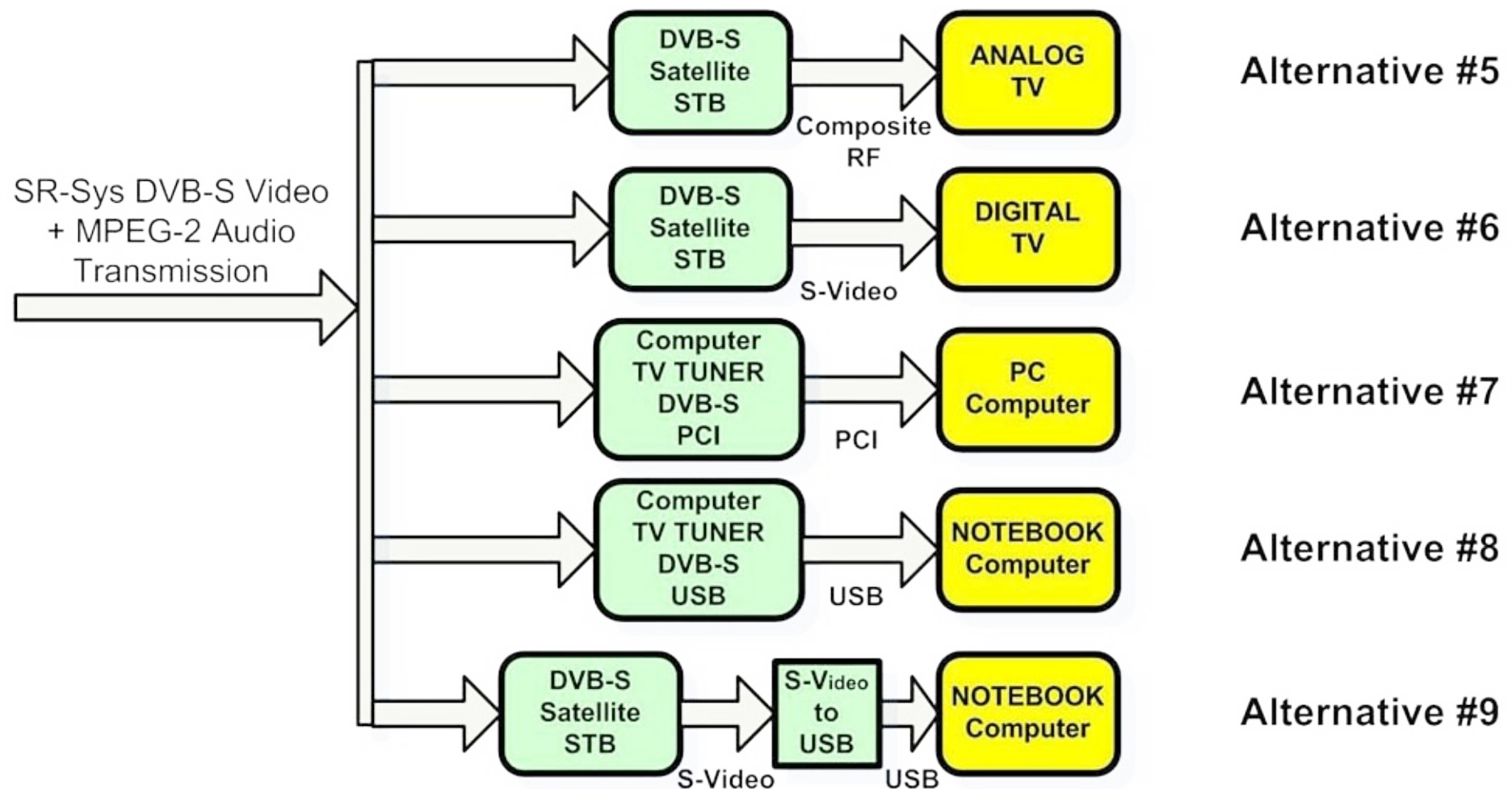


Figure 7 – Possible DATV DVB-S Receiver Choices

Now we will walk through each of the receiving station alternatives that are shown in Fig 7...for receiving DVB-S ham DATV signals.

Alternative 5 – Using a Satellite DVB-S STB

Our first approach to receiving DVB-S transmissions uses a DVB-S satellite box (commonly called Free-To-Air

or FTA). A “composite RF” output from the STB can go straight into an old analog TV set. The frequency range of the DVB-S STB tuner range for satellites will include the 1.2 GHz ham band, so no down-converter is needed. The Viewsat VS2000 Xtreme is an example of a DVB-S FTA STB that can be purchased new for about \$100 or bought used on eBay for about \$50.

Alternative 6 – Using DVB-S STB with DTV

This approach is the same as #5 above, except it takes the S-Video output of the Free-to-Air DVB-S SetTopBox to provide the input to a HDV set.

Alternative 7 – Computer PCI DVB-S Tuner

In this approach, a PCI DVB-S tuner board is installed in the PC computer. The Hauppauge WinTV Nova-s PLUS DVB-S PCI Card costs less than \$100.

Alternative 8 – USB DVB-S Tuner for Notebook

This approach uses a DVB-S USB tuner box (for example: the SkyStar USB2 model costs about \$100) to output directly to the USB port on the notebook computer.

Alternative 9 – Using DVB-S STB with Notebook

This approach is very similar to #6 above except we add an S-Video to USB converter to take the STB output to the USB input on the notebook computer. A typical S-Video-to-USB converter is the Startech.com USB 2.0 and costs about \$50 through Radio Shack (in addition to the STB cost).

Selecting Our D-ATV Station

Robbie and I had both hoped for an ATSC approach for D-ATV because of the easy availability of low-cost terrestrial STBs in the US. But, neither of us wanted to deal on a trial-and-error basis to see if equipment we purchased for receivers would really work with the current “MPEG-2 audio quirk” of ATSC D-ATV

transmissions. So our decision is to plan for a DVB-S D-ATV station here in Southern California. Also, by comparing the cost estimates in Table 1 and Table 2, you can see we will save almost \$500 by choosing a DVB-S transmitting station instead of an ATSC station. As a note...if it was possible, both of us would have gladly paid an extra US\$50 or 50EUR for an AC3 Dolby license charge to avoid the "MPEG-2 audio quirk" situation that would allow us to go to the ATSC route with full compliance.

Now that we have chosen our D-ATV transmitting station, any of the D-ATV receiving station approaches ALTERNATIVE #5 through ALTERNATIVE #9 in Fig 7 will work well for DVB-S. The costs of each of these five receiving approaches are reasonable. So the reader can choose the approach that appeals to him. I will probably choose ALTERNATIVE #8 because I want to use my notebook computer (instead of a TV set) for my home D-ATV station. Robbie-KB6CZJ prefers to go with ALTERNATIVE #5, because he prefers the wide-availability and feature-rich-capability of a DVB-S FTA SetTopBox.

There are still a few details to sort out for our station, but hopefully you can see that this top-down approach to planning a D-ATV station provides a "big picture" of alternatives...allows us to understand the trade-offs....and allows a direction to be chosen.

Contact Info

The authors may be contacted at KB6CJZ@ARRL.net and W6HHC@ARRL.net

More D-ATV Links

- AGAF D-ATV components (Boards) – see www.datv-agaf.de and www.AGAF.de
- BATC Store – purchase PCBs and parts for DigiLite – see www.BATC.org.uk/shop/
- BATC info site for DTX1 exciter – see www.DTX1.info
- SR-Systems D-ATV components (Boards and transmitters) – see www.SR-systems.de
- British ATV Club – DigiLite Project Forum – see www.BATC.org.UK/forum/
- TAPR 2012 DCC Proceedings – "DATV-Express Recent Project Progress" – see www.TAPR.org/pub_dcc.html
- Typical Internet store for FTA DVB-S Receivers – see www.GoSatellite.com

- *DigiLite Project for DATV (derivative of the "Poor Man's DATV")* - see www.G8AJN.tv/dlindex.html
 - *"WHAT EXACTLY IS 8-VSB ANYWAY?"* – see www.broadcast.net/~sbe1/8vsb/8vsb.htm
 - *Nick-N6QQQ blog on putting together an ATSC D-ATV station* – see <http://nsayer.blogspot.com/search/label/ham>
 - *Series article "ATV – the Digital Fork in the Road"* – see CQ-DATV Issue 5 CQ-DATV.mobi
 - *Orange County ARC entire series of newsletter DATV articles* – see www.W6ZE.org/DATV/
 - *Yahoo Group for Digital ATV* - see groups.yahoo.com/group/DigitalATV/
 - *British ATV Club – Digital/DigiLite/DTX1 forums* – see www.BATC.org.UK/forum/
 - *CQ-DATV online (free) magazine* – see CQ-DATV.mobi
-

Video Switcher - Propeller Powered

by Mike Stevens G7GTN



Project Introduction

Back in CQ-DATV 4 we had a very quick overview of the Micro controller that this project is based upon. Certainly we all have some type of requirement to be able to switch video sources from our available range of video equipment. I understood that I wanted to be able to make use of several different input mechanisms to the actual 8 channel video multiplexer IC used here.

These were then selected as being VGA screen and PS/2 mouse, Sony IR Remote and finally Serial control from either a custom PC Software application or standard serial terminal software running on any platform able to accommodate 9600 baud rate communications. Before we look at both the circuits and included Source code you might want to download the free Windows based Propeller Tool compiler and programming software from the manufacturer's web site <http://www.parallax.com/>

You might already have the feeling that you do not have to build every single section for a functional project? You have the exact concept as no one part relies on the next bar the obvious requirement of the Video Multiplexer either MAX455 (Dual Supply Voltage) or MAX4315 (Single + 5V Supply)

If you decide not to build any particular section then simply either leave the pins unconnected or even better modify the code to better suite your actual needs and create your own custom additions. This is all a part of the flexibility of the overall design and my selection of this particular Micro controller in creating this design.

Micro Controller

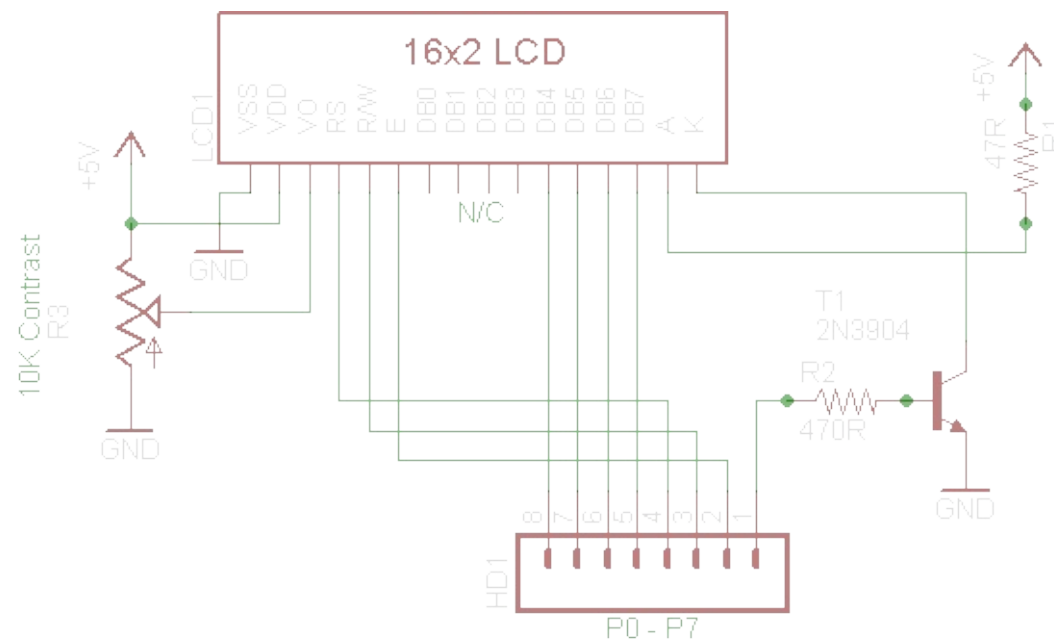
The Propeller Micro on power up downloads the binary image from the Eeprom (32K) and starts to run the compiled byte code in the controllers RAM Space.

The processor is clocked by a 5MHz XTAL and using the inbuilt 16X PLL multiplier gives us our 80MHz clock speed. None of the code is speed dependant with the exception of the VGA Driver Object which must be run at a clock speed of at least 80MHz

You can also of course make use of a 6MHz XTAL and run the controller at 96MHz clock speed, a small change is required in software (this being noted in the source) that accompanies this project.

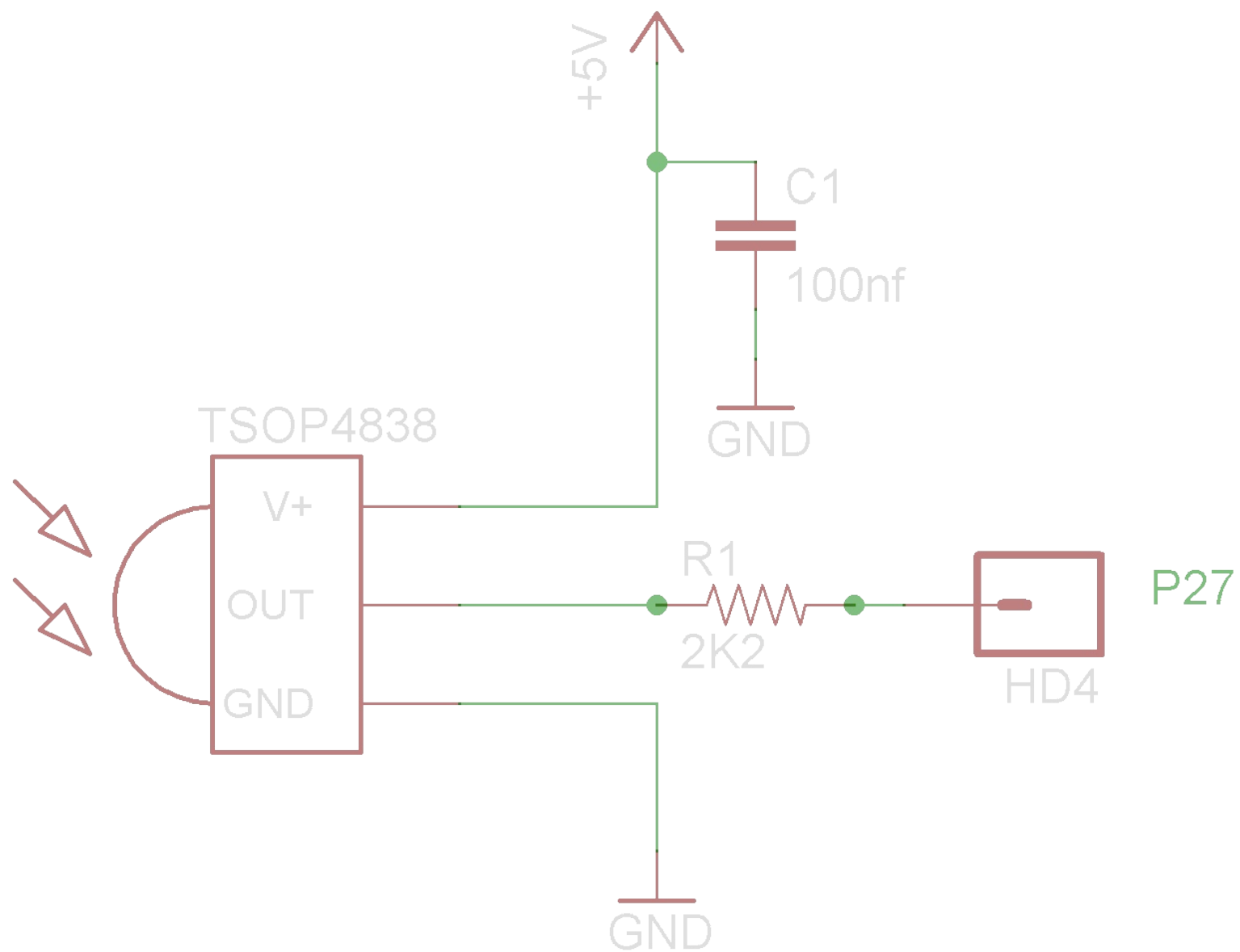
User LCD

A standard LCD (HD44780 or compatible) chipset is driven in 4 bit mode to provide user feedback. LCD lines DB.4 - DB.7 are connected to P0 - P3 the 3 LCD Control lines RS, R/W and E are connected to P4 - P6 Using P7 via a basic transistor switch we also control the backlight within software. Resistor R1 is calculated and used to stop the backlight from burning out due to excessive current draw.



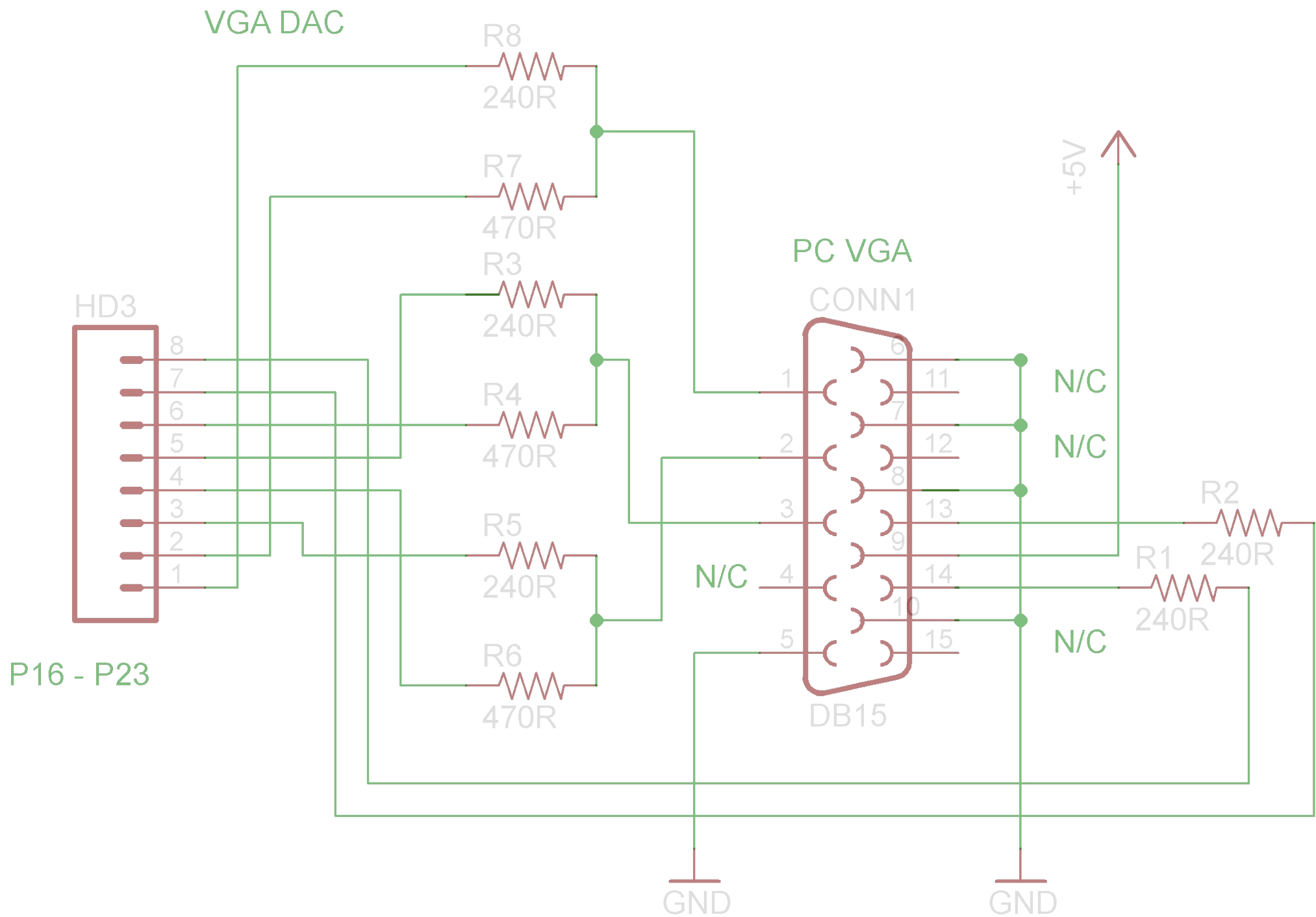
Sony IR Decoding

Our Sony 38KHz IR is detected via a TSOP2348 (or similar) and decoded within software to provide the facility to remote control the unit. The resistor is used to protect the Propellers I/O pin from interfacing a +5V part to only 3V3 tolerant I/O lines. The IR decoding process is being run in a separate COG or processor, allowing this and our VGA generation to coincide in perfect synchronisation.



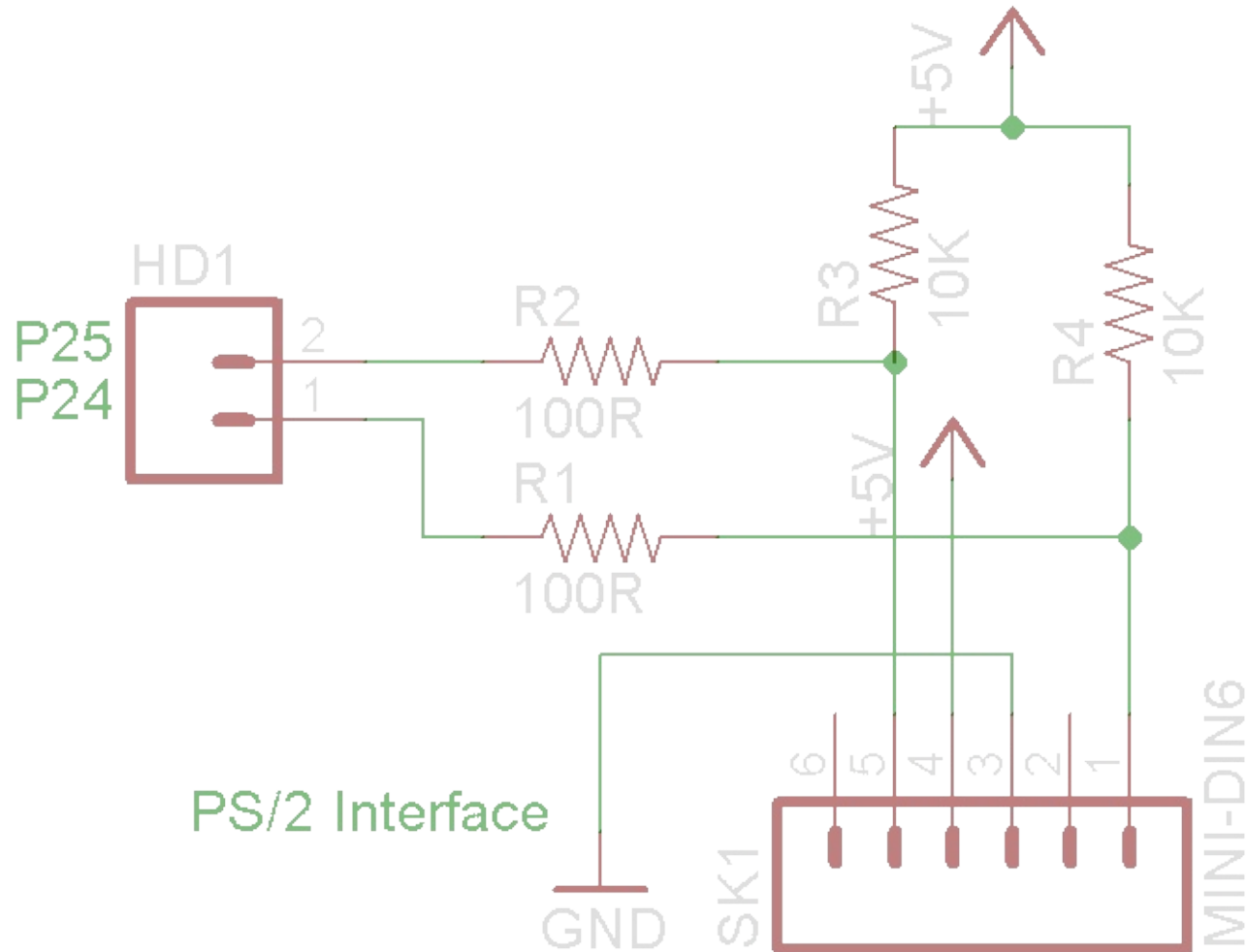
Generating our VGA Screen

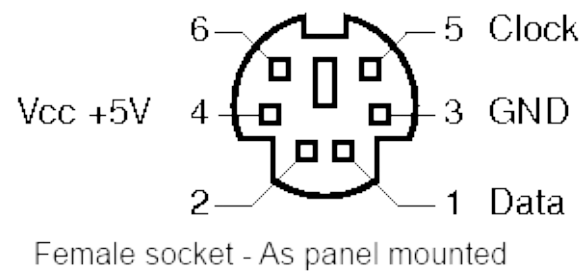
The next group of I/O pins (8) from P16 - P23 provide a set of three resistive 2 bit DACs using 240R & 470R resistors to drive the RGB channels of a standard PC VGA screen. The HSYNC & VSYNC are both driven via 240R Resistors. This VGA screen is generated purely in software and creates our user interface this is quite a memory intensive process and requires a big percentage of our available 32K memory and available COGS, these being our usable processors from the 8 total.



PS/2 Mouse Control

Two further I/O pins P24 & P25 provide the Data and Clock respectively for a standard PS/2 type mouse. Both of these pins require as shown 10K pull up resistors to our +5V supply line and 100R resistors in both lines before the I/O Pins. The firmware on start-up checks for the presence of the mouse, if this is not found the COG that controls this is stopped to save power. This means that any mouse attached is not hot pluggable.



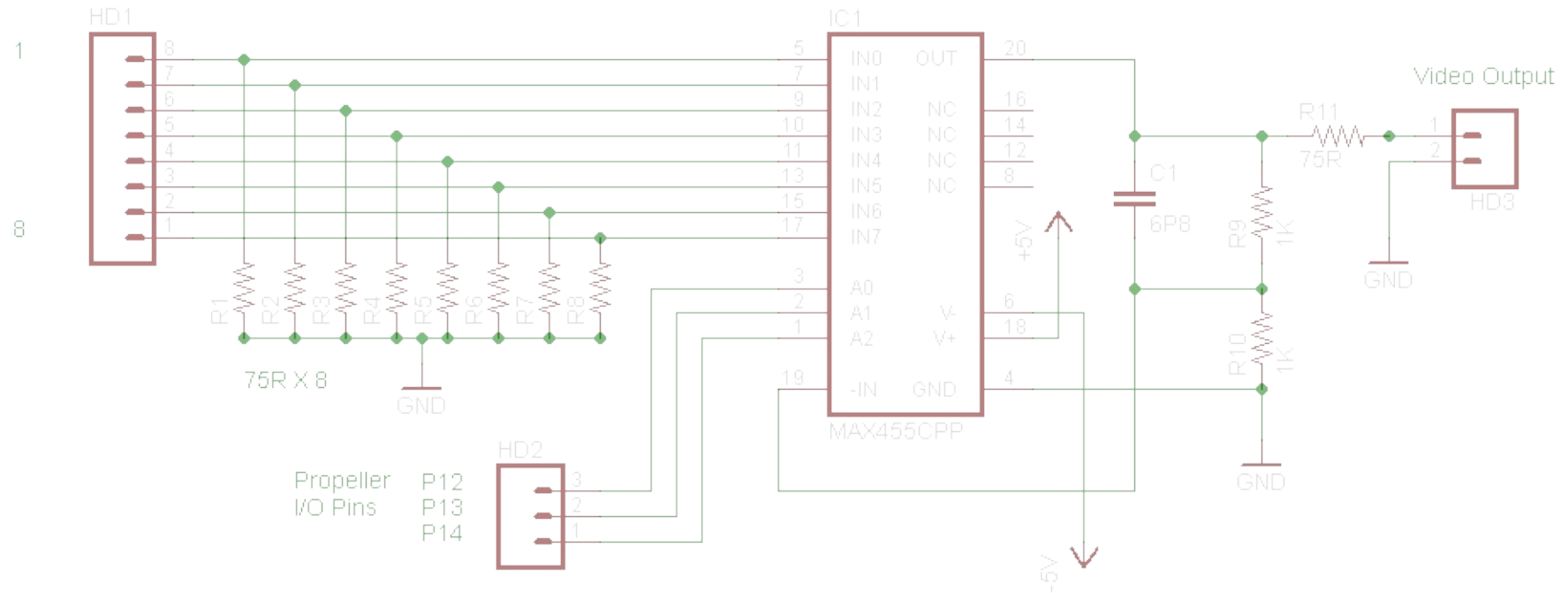


The Video Multiplexer

Three further I/O pins P12 - P14 from the Propeller are used to place the logic levels on our Video multiplexer circuit, in this case the MAX455. This is now a slightly dated device in that it requires a dual volt supply, +5V and -5V you could of course replace this with a MAX4315 if so desired. If using the SMD MAX4315 the Shutdown pin should be pulled to +5V

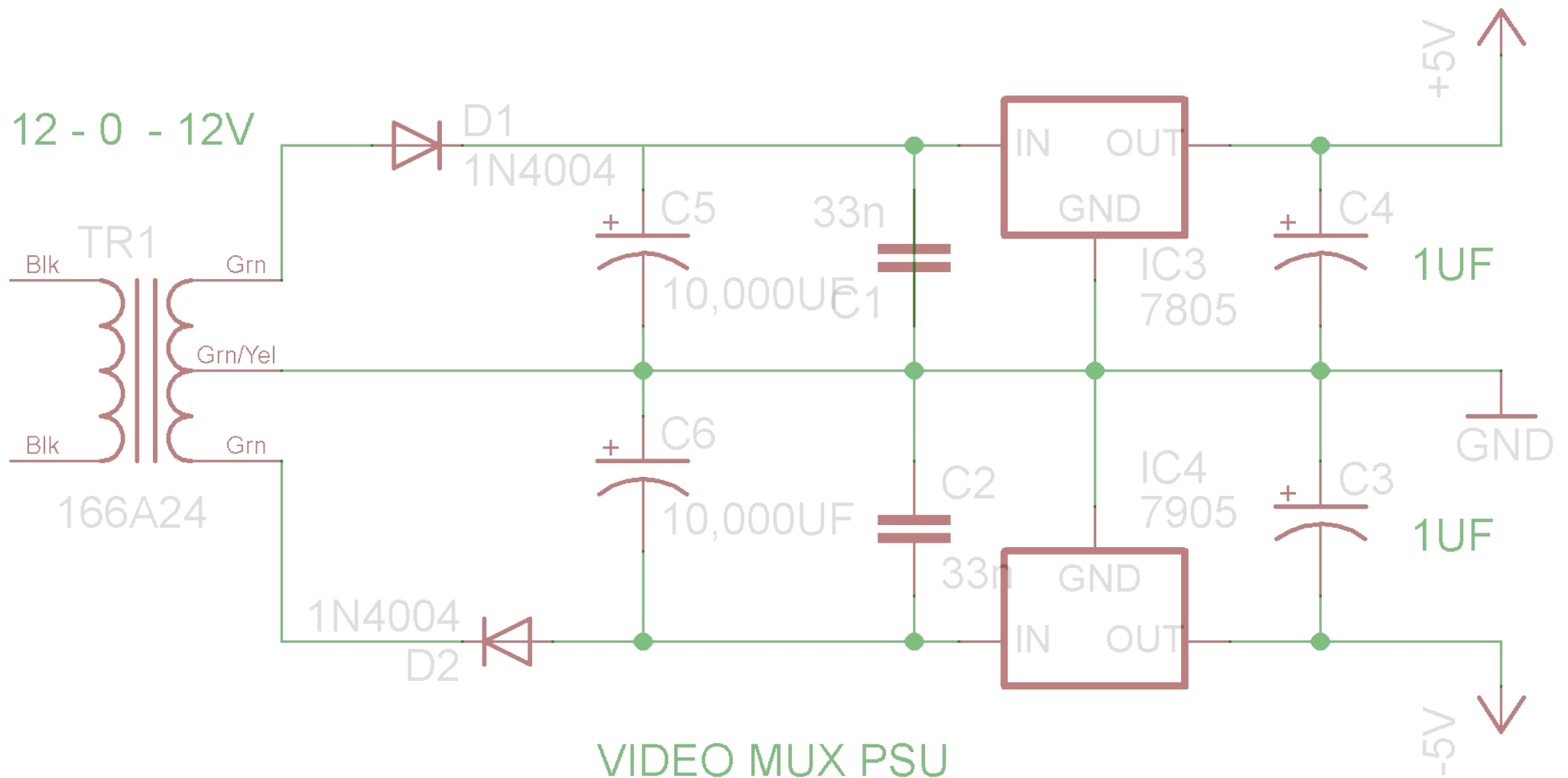
As we have noted our power supply circuit requires that we make use of a 7805CV and 7905 voltage regulator combo to get our required voltages of + 5V & -5V to drive the chip. These need adequate smoothing capacitors. Each video input channel is pulled to ground via a 75R resistor as a source terminator. The video output from the MAX455 is configured as shown in the devices data sheet and provides a clean approximate 2V P-P signal when feed to an actual video monitor.

VIDEO INPUTS



The Video Multiplexer Power Supply

If we decide to use the MAX455 we add a slight complication for ourselves in that the device requires a split power supply arrangement of +5v & -5v shown is a suggested design for such a supply.



Construction

Building this design would best be achieved by making use of one of the Parallax Propeller Quickstart boards that we saw back in CQ-DATV4 the rest of the circuits can then either be constructed on Veroboard or on one of the matching Quickstart prototyping boards. Obviously for those keen use can be made of a DIL Propeller chip as long as you have the means to programme the eeprom. This can be achieved on a basic level by making use of a eeprom programmer to get the compiled source saved as a binary file in to a 24LC256 eeprom device. Or you have the more expensive option of purchasing a Propeller Programming Plug. This

does actually make the use of a pre made board a quite smart choice on convenience and also financial grounds. To help anyone that may not wish to meddle in the murky waters of software and just wants to use an eeprom programmer I have compiled the code to a pure binary file called 24LC256.BIN ready for you to program your I2C rom with directly using the software you are already accustomed to.

General operation

The project can be controlled by using your PS/2 mouse and clicking on the VGA on screen buttons, or indeed using a Sony IR remote control either original or compatible and programmed to send Sony codes. The remote Buttons from 1 to 8 select the video channel. Button 0/10 will switch through all channels with a 5 second delay being employed between each as a simple means of testing. The LCD will display the channel number you have currently selected.

Available Resources

Along with the firmware A4 sized PDFs have been generated of the full circuit diagrams. This includes a head start on Part 2 of this project where we will add some more features including interfacing an SD Memory card for easy firmware updates. We will also add a LM386 Based audio amplifier for user key tones when decoding the Sony IR. On the firmware side will also add full Serial protocol as an additional control mechanism for the project along with a custom PC control application.

This file switcher.zip can be downloaded from the usual CQ-DATV downloads page which is available at <http://www.cq-datv.mobi/downloads.php>



TV AMATEUR



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45. Jahrgang

3. Quartal 2013

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SSTV-FAX-Ecke

TV Amateur is a German Language ATV Magazine It is published 4 times a year and if you would like to subscribe go to <http://www.agaf.de/>

The current issue covers:-

- *New laser - ATV - distance record v. Wilfried Fritz , DJ1WF*
 - *Raisting is coming by Klaus Welter, DH6MAV*
 - *Receiving signal detection on Comag SL30 v. Noel Matthews, G8GTZ*
 - *Sockets and plugs in the kitchen made by Klaus Welter, DH6MAV*
 - *Darko's craft room : 10- GHz VCO v. Darko Banko OE7DBH*
-

Happy Days

By Trevor Brown



In April 2013 the BATC committee met on the only day in the year I could not attend and in a meeting chaired by Dave Mann and without two Club officers present as per the constitution, at this meeting I was removed from my post. I was surprised that whatever the problem the committee had with me that they were not interested in listening to my side of events. I am not a one day wonder I have worked hard for BATC since 1972.

Sorry if you are a BATC member and feel I have let you down, I really did my best and did not leave my post of my own volition. I am as disappointed as you in that at the close of press for CQ-DATV 6 only one issue of CQ-TV has been printed so far this year, this has never happened before, and has to be the most disappointing result ever from any BATC committee.

The reason I raise this is not sour grapes, but that I have had a lot of emails from members who are thinking about voting with their feet when their subs run out, most of these are at the year end, when I left BATC committee we had 811 members (I used to check it daily). Please continue your subscription BATC is a brilliant club with a great bunch of members, administration problems can be sorted remember 2014 is a BGM year

Moving on to new pastures Ian the editor of CQ-DATV has recruited me to his team, so I am no longer homeless and part of a new magazine which is leading the way. Ian G8IQU also believes that our hobby needs

a magazine and by using electronic distribution (something he introduced to BATC for CQ-TV) he hopes CQ-DATV will unite the ATV population with a publication that will deliver news events and constructional projects that are the life blood of ATV. The downloads are blossoming and the feedback is exceptional and for me personally, it is a pleasure to work with Ian he was the best CQ-TV editor we ever had, and that includes me as a past CQ-TV editor.

CQ-DATV is still evolving; we have a new app under development that will contact Android users when the latest version is available for download.

20:37

WEDNESDAY
2 OCTOBER, 2013



Wi-Fi



GPS



Sound



Screen
rotation



Bluetooth



Ongoing



B4A-Bridge

19:43

Connected



Title

18:24

Text
SubText

Info

Notifications

Clear



CQ-DATV

20:36

The latest edition of CQ-DATV.Mobi
is now available to download.

EE



We have added a Facebook page which is gathering interest; so far it only has my pictures which reflect happier days at BATC. These are an extract.



Join batc on-line
via PayPal just £10
for 3 years

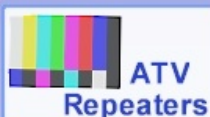
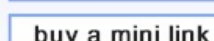
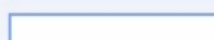
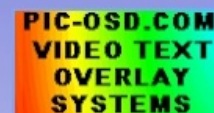


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batc is now offering mini links to non commercial groups. These new small mini links can be hyper linked to either your website or to a members web stream

The links cost £50 for a 12 months, the fee goes directly to batc and will be used to maintain expand and support the batc streamer site

So next time you run an event you can point viewers to your link on the front page of the streamer, no need to get a live event password, no need for your viewers to scroll through the members streams, it's there just point and shoot and watch

Mini links are aimed at small groups and not at commercial organisations, if you are a commercial organisation then the larger links are still available at £250 per year

We hope the new links are affordable to small groups and that they will help channel traffic direct from the front page of www.batc.tv

Sign up today for your link via, PayPal, just click on the bottom link

Links will be issued in descending order on a first come first served basis

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buy a mini link

Sponsored mini links £50

This was my first draft at the streamer web page, but that was not the first BATC Cyber project.



This was, the front page for a pre Internet BBS I designed the artwork with apologies to the film Casablanca (I am at the bar third from the left)



The picture is of me holding a copy of CQ-TV magazine in front of a car with an ATV registration was taken in Dayton USA in 1988 John Wood and I had just put the ATV handbook together and I thought that the Dayton Hamvention was a double opportunity in that a visit would provide an ideal launch platform for the New Book

and that it would generate copy for CQ-TV magazine. I actually was made very welcome by all and was a guest at Don and the late Sue Miller's home for the duration of my stay.

AMATEUR - TELEVISION HANDBOOK

John L. Wood
Trevor Brown



It was a budget airline trip and my luggage was handbooks and PCB's with the odd space for a change of tee shirts and a couple of spare pairs of socks.

I met and made many friends. I did get to speak;. One of my most treasured items is the 1988 Dayton Hamvention speaker ribbon it is on the wall behind me. I did not bring any books back home either.



Another BATC recruiting trip was a stand at IBC the second largest broadcast TV exhibition in the world

attended by some 30,000 broadcast TV engineers. We used historic broadcast equipment to attract the crowds and then distribute BATC leaflets and back issues of CQ-TV. The VTR machine dates back to my time in ITV and was one of the actual machines we used to record edit and transmit many of their programmes. It weighs nearly a ton and was a challenge just getting it there. I hired a tail gate truck and put it on a ferry from Hull to Rotterdam and then I drove to Amsterdam. It was a nightmare to keep working for the 5 days of the exhibition, but it brought in a lot of new members. BATC were asked back to IBC Amsterdam for the following 5 years so I am now an expert in driving transit vans full of equipment.

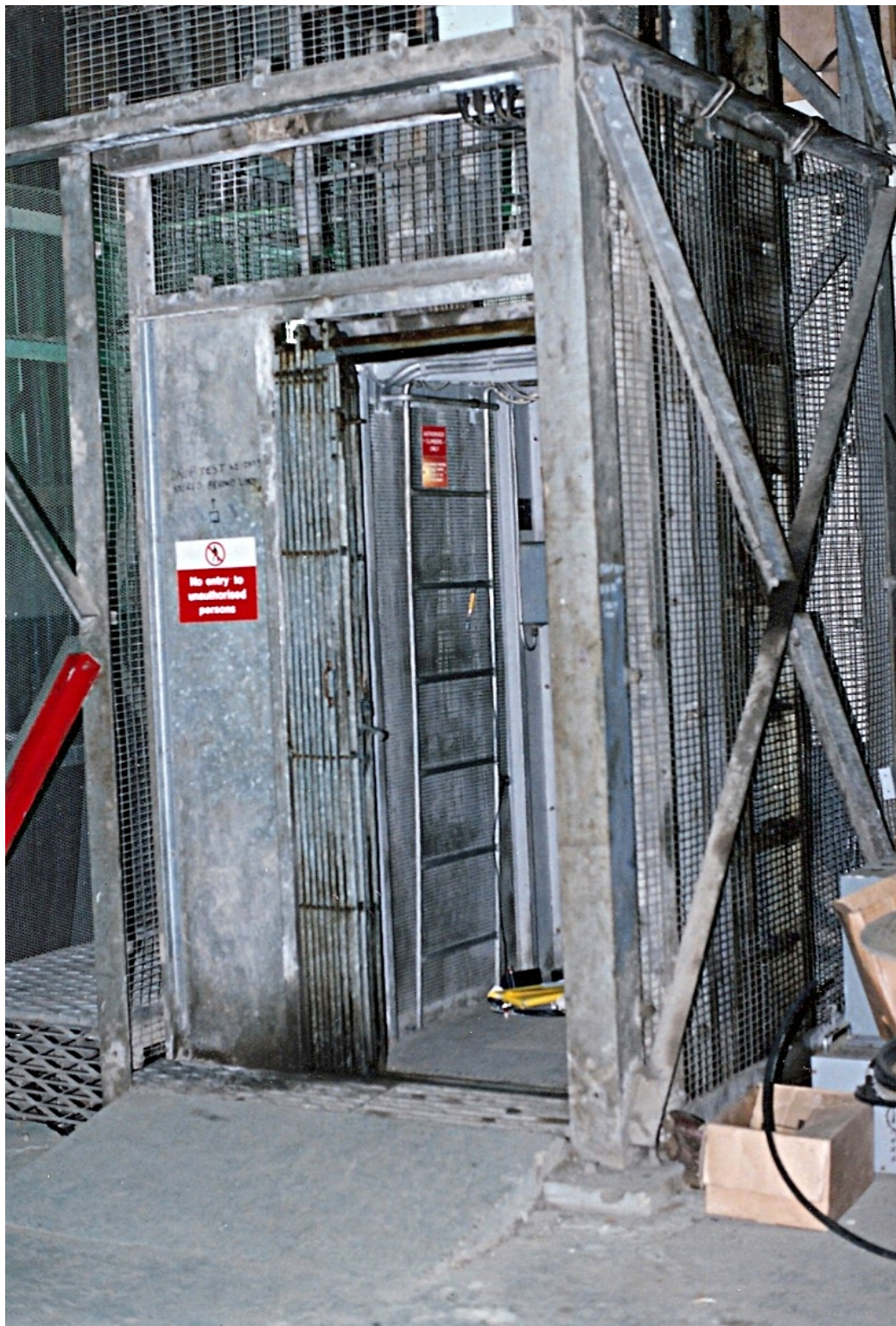


Left to right yours truly, Paul Marshall, Dave Hill all just wondering how to get all this kit back home.

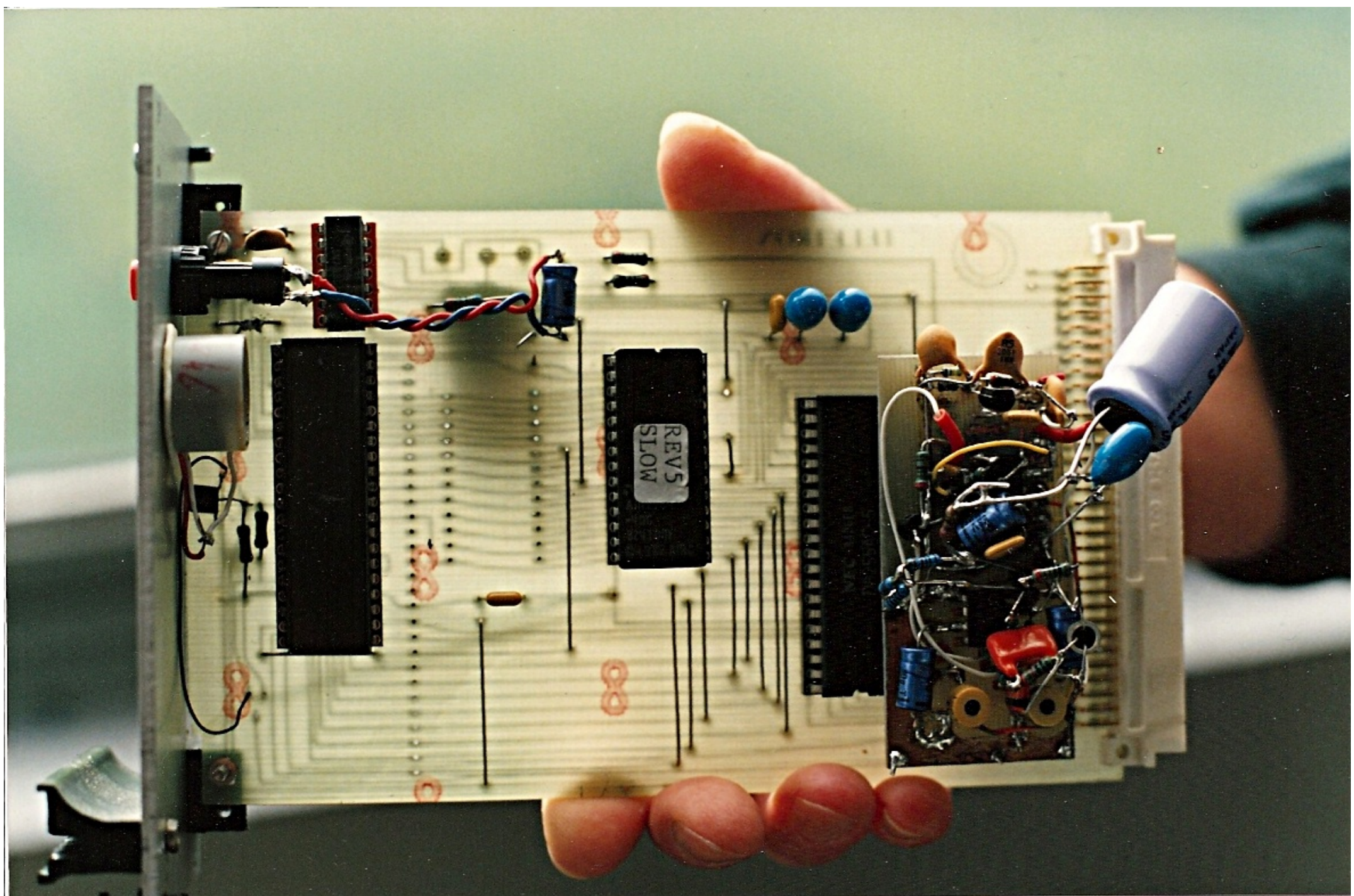
Some of the Jollies were much closer to home and less of a drain on my pocket.



This is the Emley Moor Tower home to the ATV repeater GB3ET



and that's the lift you need to take to get to the top.



My first venture into Micro Processors the Z80 based Teletron Project which I developed to control GB3ET.

Sadly we lost the site for GB3ET, my first venture into building an ATV repeater is no more, but while it lasted we had an ATV repeater 1200Ft AGL yes above ground not above sea level.



A rare picture of the BATC president to be Peter Blakeborough G3PYB almost working, notice how sharp the picture is not a hint of motion blur (we shared the same works QTH a while back)

Was I BATC Chairman when he was that young!!!!



My last memory of the BATC in action was the 60th anniversary meal which we all enjoyed greatly.

Happy Days in BATC I will add to the CQ-DATV Facebook and please pop in and press the like button, the link is on the front page of www.cq-datv.mobi and please keep your membership up..the problems are just a blip in our long history, but don't stop reading CQ-DATV, ATV needs a magazine.

Streaming video

By Tom Medlin W5KUB

W5KUB.COM has been streaming live ham radio events for over 11 years. Each time there is still a learning experience which we try to use to improve our next broadcast. We have become very well known for our broadcast of such events like the Dayton Hamvention where we had approx 47,000 viewers who followed us the entire show.

W5KUB.COM

W5KUB.COM

AA1KS - Callsign Lookup

←

→

↺

w5kub.com

Imported From IE

Google

Facebook

Twitter / Home

ATT.NET - Email, Ne...

Speedtest.net - The ...

eHam.net Home - A...

Callsign Database b...

AR Newsline - News

W5KUB.COM

Bringing ham radio to you

W5KUB

Hamvention broadcast

Ham radio broadcast 710 / 429K

USTREAM LIVE

12:26 PM [W3FGP] Thank you Bob.

12:26 PM [ve3skp@cogeco.ca] \thanks bob

12:26 PM [HamRadioRick-N1HID] skipping here

12:26 PM [CR7AFP-Phil] tell Bob to send them to Portugal

12:26 PM [kk4eqf] Tom get a couple for raffle

12:26 PM [CR7AFP-Phil] the books

12:26 PM [m3xyp gerard] Bob i send you the photo of the tattoo.

12:26 PM [WA6LTV_Chuck] Thanks Bob,

12:26 PM [KF5ULI_Angi] TY BOB

12:26 PM [_Carl-WA1ZCQ] FOR BOB HEIL: What are you doing to engineer our SIBILANCE!

12:26 PM [kk4eqf] Tom get some heil books for raffle

12:26 PM [CR7AFP-Phil] ty Bob

12:26 PM [Ferry PD9FER] HRD Please

12:26 PM [KC2YEJ] thanks bob

12:26 PM [WD5GJP] Tom: alpha booth

12:26 PM [KJ4YGC] prizes tom prizes

12:26 PM [KF5ULI_Angi] Tom u r fine

12:26 PM [n2gyn] WD5GJP Yes

12:26 PM [ve3skp@cogeco.ca] its sging up their

Users

Rooms

AD7MT-Dawn

ka5ciu

Kathy

KF5ULI_Angi

n0ris christina

N7NBB-Cam

NZ9T_Renee

w0msc

W5KUB

W5KUB-Tom

_Carl-WA1ZCQ

2M0ZAX-Adam

A.C. N4SVD

AA0LF_Tom

aa9gr_rodger

AB4WL

ab9sy

ac0mw

Send

avton on May 15 at 8:00 AM Central.

Chatroom Help

APRS see our location

No Advertisements

Room 2

Guest book

Join us on Facebook

Prizes

Email W5KUB

Connectivity provided by Exede

Click here for a Special Announcement

Dayton Hamvention

QRZ callsign lookup:

Visitors 593757

Click here for new chat room

Page 72

W5KUB.COM not only streams the show, but also the drive live from their truck as they sometimes drive more than 500 miles.

Recently we were involved with members of the Sheffield Amateur Radio club. We met and worked with Ian G3zhi, Trevor M0TWS, and Steve M1ERS in an effort to help them with their live video stream of the National Hamfest. They have video streams set up on BATC.TV. and we also streamed it on W5KUB.COM. I thought that their video streams went well but as with all new endeavours, you learn a lot. Here, I will attempt to convey what we have learned to making a successful broadcast where people stay interested and look forward to returning during the next show.

There are many items which must be covered. Lacking or not doing any of these automatically degrades the broadcast.

1. You must have a dedicated team to put on the video broadcast. This is tough work, long hours, lots of testing, planing, organising and unfortunately those members of this team will miss out seeing the hamfest. When you are behind the camera, you don't see much of the hamfest. You see very little through that small 4cm viewfinder.



2. People must be assigned specific assignments. Someone has to watch the audio levels and set each one separately. People being interviewed have a tendency to talk all distances from the mics. Someone must operate the camera. You don't want to interview someone who moves a little and you don't realise that for the past 5 minutes you have cut his head out of the picture. You must have someone interfacing with your viewers on the chat room They have questions for your guest, or they may even have important comments like "there is no audio" . Its terrible to do a 10 minute interview and have no audio.chat room monitors must also keep law and order in the room. During our large broadcasts, we have about 1400 in the chat room. Most are very friendly and act properly but there is always one who tries to cause problems. Your monitor

solves that problem instantly. With a click of the mouse that trouble maker is gone forever. Wouldn't it be very bad if bad language and fights were going on in the chat room and no one at the broadcast site even heard about it for 2 or 3 hours? You need another person who can answer questions from the local crowds. People always come up to you and ask, "what are you doing" or "how do you do that" etc. You have to talk to these people and if you are talking to them, you are not able to focus on the broadcast.



3. You must make the viewers feel they are part of the broadcast. The live chat room brings them into the broadcast. They ask questions of the vendors, and other interviews, This is really great for the viewers since they now feel part of the hamfest.

4. Internet connectivity is top important. For good quality video which even looks good full screen, we encode at 1000Kbs. Anytime you get below about 700Kbs the picture does not look good.

Internet speeds change during the broadcast. You need to test your speed and don't try to use the max. If you see 1000 Kbs upload, you can not run that speed. you will have to set your broadcast to about 75% of the upload capacity.

5. Audio is just as important as the video. If your viewers don't get clear audio they will complain and leave. Microphones on most cameras pick up all the room noise. You don't realise how loud it really is. Use wired mics or use wireless mics which you can give to the persons talking. Its hard to believe, but we have noticed that the room noise goes completely away and you hear just the person talking. Watch out for wired 20ft mic cables. There are so many people moving around they never see the cable and usually trip on it and pulling the equipment into the floor.

6. Keep your viewers interest. W5KUB.COM gives out many prizes to our viewers. In fact we give out more prizes to our viewers than many hamfest give to the local people attending. You would be surprised what giving prizes will do to your viewer attendance. We have had people watch the video broadcast for 72 hours straight without leaving. We even have people who have taken vacation from work to watch. To be eligible for a prize, a viewer needs to register on our chat room site. This way we have a real address (confirmed) so we can locate him when they win a prize.

7. Set up your chat room where you know who is chatting. if you have everyone as "guest" its not much fun. But when VK6XX says something, you can immediately see where he is. Chat room should have functionality to Kick, Ban, Silence, at a minimum. Additional things which are nice is the ability for viewers to private chat with others

And Lastly did i say you have to keep it interesting? You must have content. Special guests, vendor interviews, demonstrations etc. During the National hamfest, there were 3 live video feeds. The feed from the special event station was the most watched. Viewers saw the operators, they heard the real time contacts. In fact one person on the radio even to the special events operator that someone had places a bag in front of the camera, and therefore they removed it. Now, that was interesting, a person on the radio was also watching.



And for those of you that think the video is an easy thing to do, think again. we probably spend hundreds of hours before any broadcast, planning, testing, and getting the word out to everyone. We have to coordinate the prizes, put together schedules of special guests, and much more.

The stream of the National Hamfest was a success. Sure it could have been better but for a group that did this for the first time, I think they did a good job. They learned a lot and we also did.



I look forward to future partnerships with these guys across the pond and want to help spread these ham radio events to people across the world.

Our next live broadcast will be at R and L Electronics in Hamilton, OH. on Dec 14th. This is a ham radio store and each year they have a customer appreciation day. This will be their first year in web broadcasting the event.

I hope the above gives you a little knowledge of what it takes to run a successful video event. I left a lot out but believe i covered the important items. I will be happy to provide more information or answer your questions.

Tom can be contacted at wa5kub@gmail.com

Please check out our ham radio video broadcast page at <http://w5kub.com> and please join our W5KUB video broadcast group at <https://www.facebook.com/groups/279273778772594/>

National Hamfest from Newark

The 27th and 28th of September 2013 saw the streaming of the National Hamfest from Newark. The streaming was on the BATC streamer and repeated on www.W5KUB.com



Gates open 09:30 George Stephenson Hall Doors open 10:00 27th & 28th September

NH  **The National Hamfest**

Hosted by Lincoln Short Wave Club, RSGB National Club of the Year 2012 and Sponsored by the RSGB

The formula was unusual in that three streams were transmitted from the main hall, the door and the radio tent. I think this may have limited the transmission bandwidth as the pictures were lower resolution than we have come to expect. I would have preferred one transmission switched between the three camera's and at a higher resolution.



The pictures were from static cameras with the exception of the main hall which was equipped with PTZ (Pan Tilt and Zoom). I think they missed an opportunity to go hand held and provide interviews with the visiting public and traders.

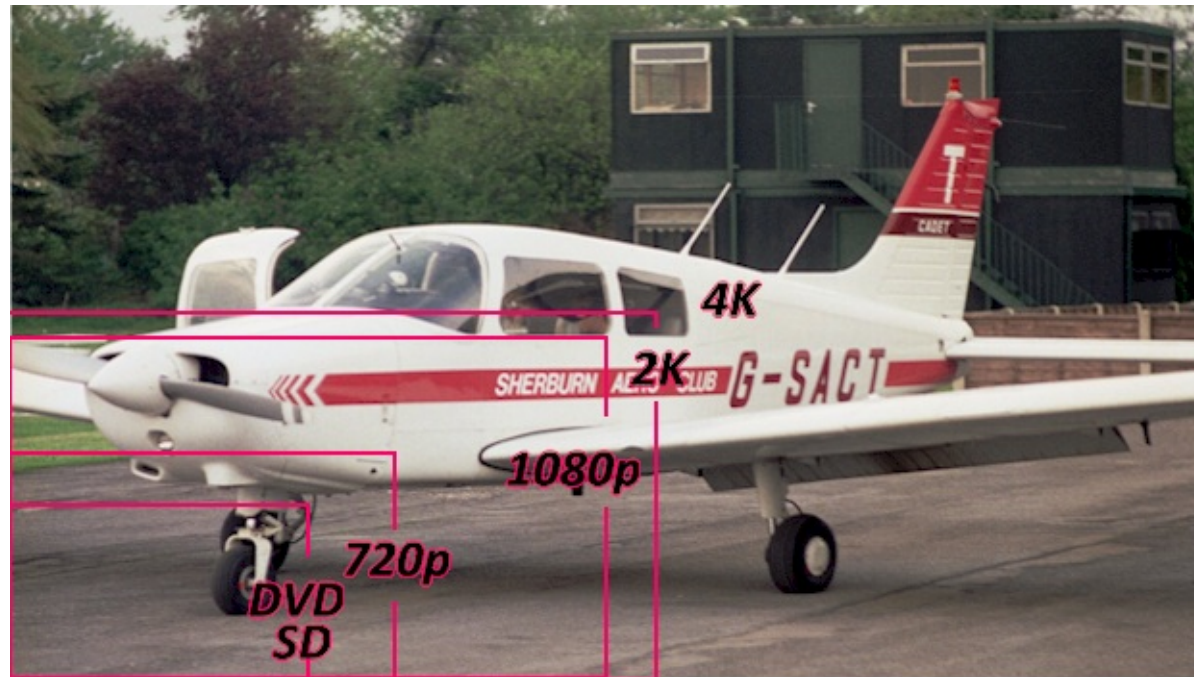
The highlight of the day was a heated discussion which ensued between a visitor and his partner over the precise location of some missing keys, always check you are not on TV before you answer your mobile phone. This is the first time Sheffield Amateur radio club have streamed and at CQ-DATV we wish them lots of luck with future events.

See <http://www.youtube.com/watch?v=wPEDRe3tewY&feature=youtu.be>

4k DATV?

By Trevor Brown

Ok so a new Television standard has been launched called 4K, let's start by clearing up any confusion; the 4k refers to the horizontal resolution in pixels. 1080p and 720p refers to the lines or vertical resolution (I know you knew that already). I hope the diagram below puts it into perspective; I have plotted pixels as picture size when in reality the screen size is the same and the resolution improves. I hope what comes across is that a 4k picture is twice the resolution of 1080p which at best is 1,920 pixels across.



Ok well out of amateur price ranges I hear you say, well actually maybe not, there are camcorders and screens available and yes the screens are not cheap but you can always argue the screen comes out of the family viewing budget (no I have not tried the argument yet, just rehearsing it here). How about a camera for the shack that's a different budget in our house, part of the ongoing "if anything happens to me please don't let my ATV kit go for what you think I paid for it" argument. The shack budget is subject to slightly different

accounting practises, the universal laws of mathematics are different, as in what does 2+2 equal, when answered by an accountant its “what would you like it to equal”.

As the sole reader of CQ-DATV in our household I thought I could share with you some cost calculations based on a less euphemistic accounting

The GoPro black edition 3+ camcorder currently retails at £360 and it will record in 4K, Ok it's not cheap as chips but its not silly broadcast money. The funny thing is its not broadcast money, but it is broadcast, have you seen the broadcaster using them, well the answer is yes look for the reality cops shows and helicopter hero programmes and they are pinned to most of the characters jackets, then wait for a shot to come up from that camera angle and when it does compare it to the, broadcast shot before, not bad. The BBC won't let them be used for the entire programme, and the pictures may need extra work by the colourist, but the pictures are being broadcast to our screens. The Go Pro does not have an iris and uses fixed focus at a small f stop to get the depth of field required to eliminate focus requirements, so it needs good light as this technique does not exactly flood the small sensor with light.



So the camera is not quite off the table, but the screen will require work, you will have to argue what the family budget is for a new 4k screen in the living room. The content argument may raise its head, so let's

have a few stock answers to hand.

4k movies exist in some cinemas, will you be able to rent one, well let's do the sums on these, 90 minutes of movie will require 3 terabytes of storage or 200 blue-ray discs, (I suspect the video compression people are burning the midnight oil on this one), and I am not sure Hollywood producers would be too keen on these files reaching Joe public, even if the storage issues were solved

YouTube has a 4k section but will require a 15mb/s Internet connection for live viewing and it does not have the pull of Downton Manor

If your other half is an avid games player (yes unlikely I know) the PS4 and Xbox 1 that have just been launched do not support 4K, so don't start singing the virtue of video games

So the screen is going to be a difficult argument, so let's revisit the Go Pro as the must have camcorder to film the holiday pictures or the grand children growing up (I am working on it) the screen is a still the problem with the rather high price tag which is!, well guess it's in the title 4k it's not just pixels it GBP's for the screen, but there are rumours they will half in price next year. So I thought buy the camera now and record the grandchildren in 4K at Christmas and hope for a screen in the New Year, what do you think ?



This heavy price tag is for the budget entry screens; if you live on a different planet, with different laws of mathematics then Sony have a nice 84" flat screen under development the XBR-84X900 TV. 3840 x 2160-pixel resolution with integrated speakers which will sell for \$24,999 US. I think it might be cheaper to buy the aeroplane at the start of the article rather than just film it and watch it back on a dream 84" flat panel

I said at the beginning 4k DATV, will that be DATV Express 2 then ken, needs an HDMI 2 input none of this 1.4 rubbish, but don't rush not fully equipped this end yet.

We are going to need some more bandwidth, but fortunately there is a spectrum neutral auction coming up so we may need to pass the hat around BATC.

Note to Mike Cox we need a 4k test pattern generator with an HDMI 2 output.

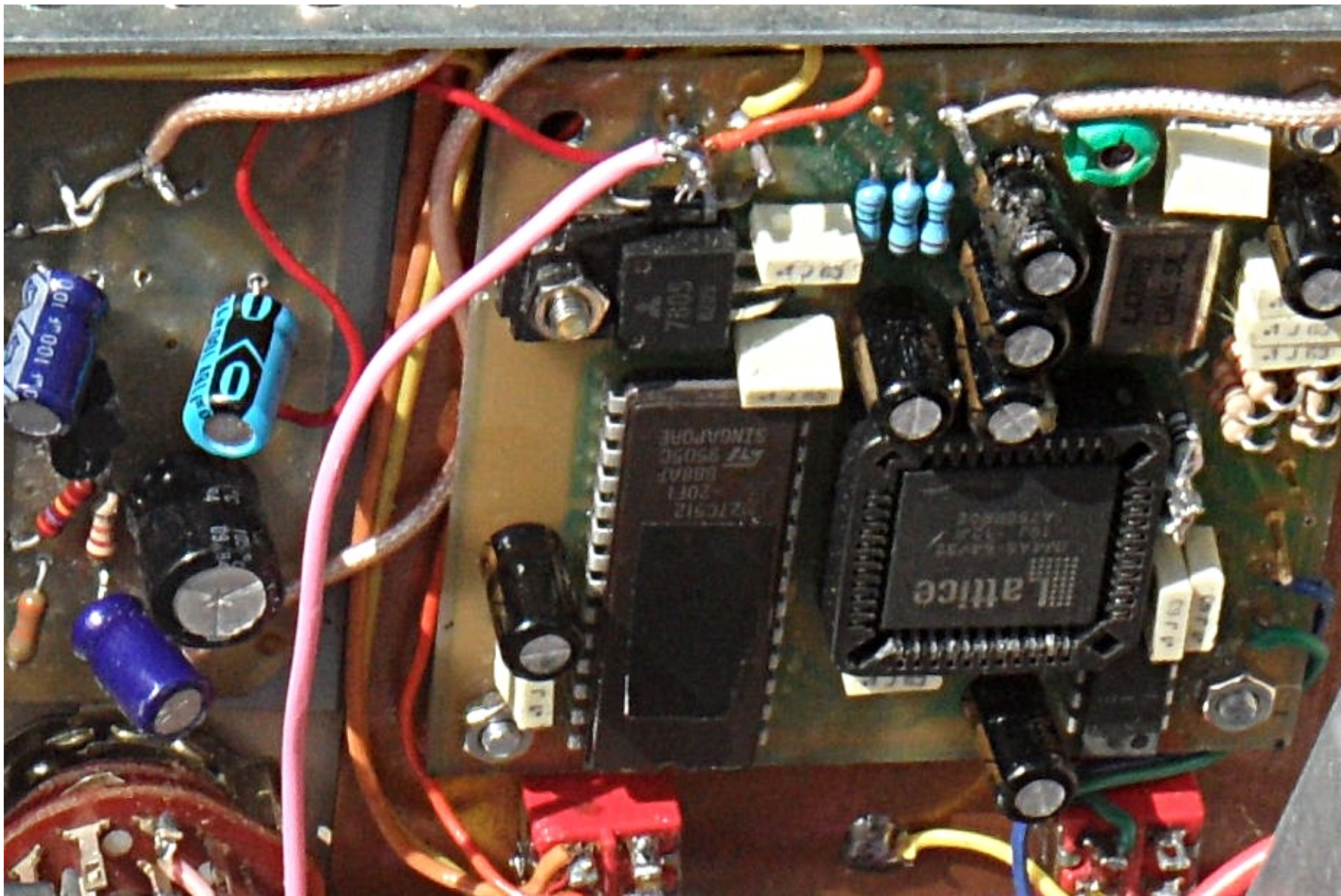
Note to Chris Smith the streamer needs work

http://www.youtube.com/watch?v=rdQ0i3v_KVY&list=PL5BF9E09ECEC8F88F&index=5

My story

By John Lukey, VK2ZUH

I have had a long time interest in television and have been a member of the BATC for many years. I seem to remember my first edition of CQTV was No 49. I like to keep up to date with developments but find things like SDI and digital processing in general take quite a while to sink in.



The G3RFL test card

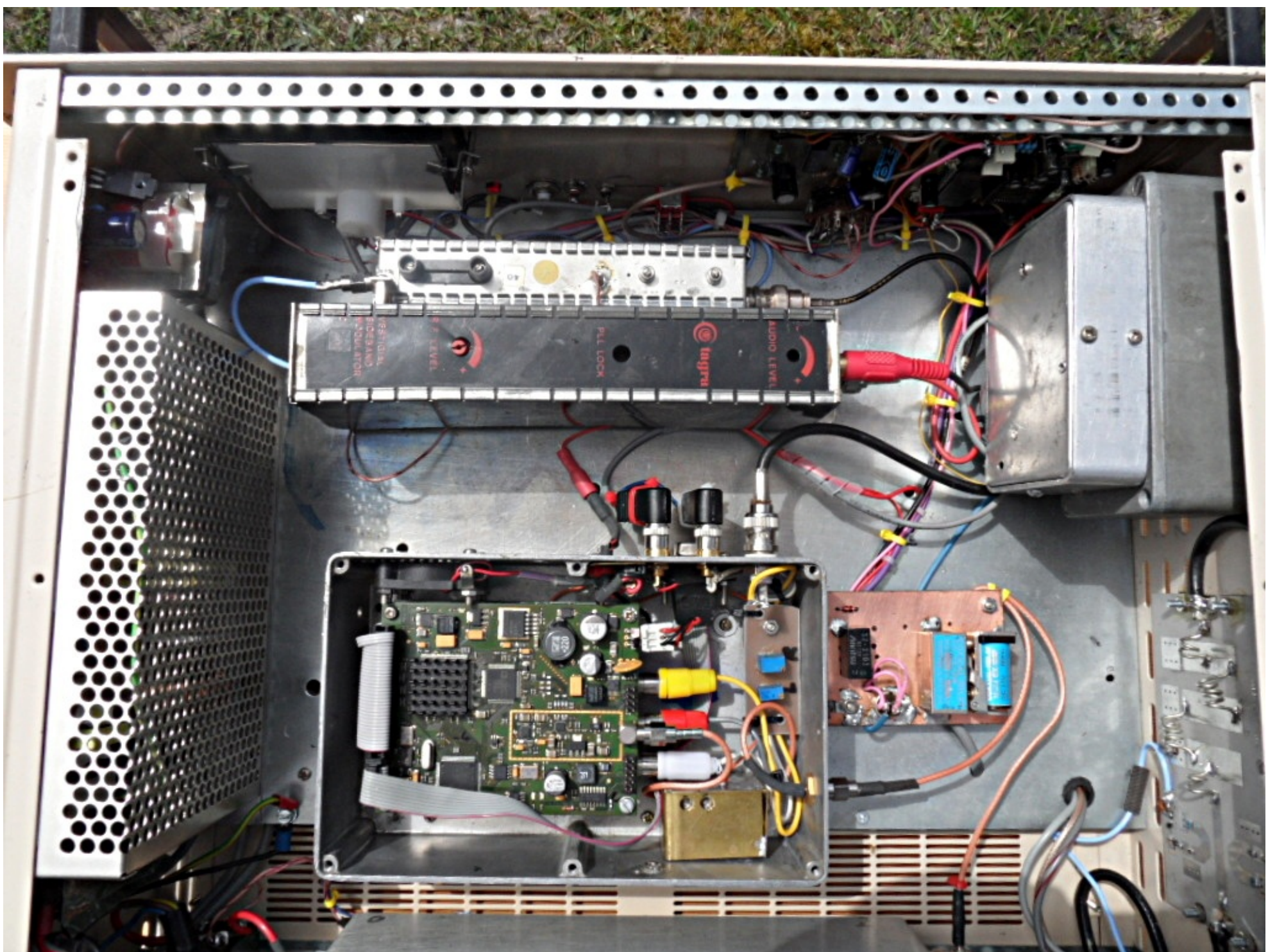
I became interested in digital transmitters when the Digilite project appeared, it seemed like a good opportunity to learn something about this new technology and also try my skills at making SMD projects. Everything went together well and the only problem I had was with the Tuning Board, which turned out to be a faulty display and not the board. I found out that trying to use 23 cms around here is not the best idea as the Royal Australian Navy has a large depot down the road and ships seem to like to run there Radar even

when in port.



The result from the above generator

Whilst having a chat to Richard VK4XRL at the Wyong field Day, he mentioned that he was selling his SR Systems boards and 10 watt amplifier on 446.5 MHz. I soon talked myself into buying them. The amplifier was in a rather large case and had been used for the digital ATV repeater in Brisbane. It didn't really suit my purpose, so I was looking around for a more suitable box. It just so happened that our local council had some 10 watt UHF TV analogue TV transmitters for sale on eBay. These were originally used as fill in transmitters in some of the TV dead spots in the area. When we had to go fully digital with the TV service, they became redundant. Once I got to know about these I put in a bid and was successful. It seems that mine was the only bid anyway. At least I got to pick the cleanest of them. The rest were sold later I am told. As the transmitter was used at around the 700 MHz range it wasn't much use as it was but the case certainly was. I rebuilt the power amplifier onto the large heat sink on the back of the case and used the switch mode power supply from the original power amplifier.



I then put the SR Systems boards in a die cast box and made up a bit of control circuitry .I also included the Test Pattern Generator that was featured in CQ-TV designed by John G3RFL. All went well at that stage. I purchased a 70cm low pass filter from the U.S.. I also had a 70cm analogue exciter going spare and decided that I might as well put that into the box as well. I reasoned that at least with analogue there is a signal to peak up beams etc. In the end I just had to switch in whichever exciter I wished to use into the P.A.



I had to build up audio and video distribution amps to feed each of the exciters. The idea seems to be working OK. I found that there seem to be a lot of spare holes in the case where I have tried things out and changed my mind. All part of the fun. I have tried everything out with some of the local hams but as they don't use anything above 2 metres, I had to take along an antenna and cable as well as a TV. They were all impressed but left it at that. I am now looking around for the next project.

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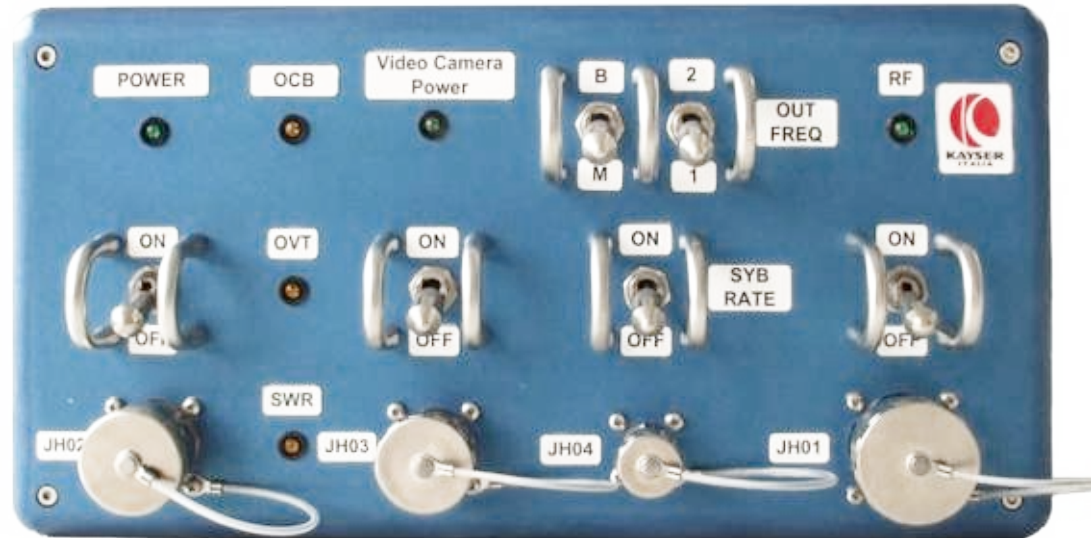
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ISS Ham Video launch campaign

By Gaston Bertels – ON4WF, ARISS-Europe chairman

The ARISS DATV transmitter, dubbed “Ham Video”, already onboard the International Space Station, will soon be installed in the Columbus module and commissioned.



Front panel of the HamTV transmitter

Commissioning will be done in several steps, each during a full pass of the ISS over the Matera ground station (see Bulletin 2). It is not yet known if these passes will be chosen in close succession, or if they will cover several weeks. ARISS proposes ESA to operate so called “blank” transmissions during the commissioning period. If this is accepted, it means that Ham Video will transmit permanently without camera. The camera will not be used because it is fed on batteries and servicing it would need prohibitive crew time. Transmitting recordings is part of a future project, but not available presently.



New HamTV Antennas for ARISS Telebridge Station IK1SLD at Casale Monferrato, Italy

Although ground stations will receive a black image without audio, “blank” transmissions contain all information needed for the setting up and the fine tuning of the station. Moreover, collected data will be used for a performance study of the ARISS L/S-band antennas as well as for an evaluation of the global system.

For this launch campaign, ARISS addresses a call for collaboration to the amateur radio community, especially to the operators interested in space communications. Several satellite operators have shown interest.

Ham Video technical characteristics are available at www.ariss-eu.org . Look for the “Ham Video” link in the left sidebar. Suggestions and useful addresses for the setting up of a Ham Video ground station are also provided.

Among the components of a satellite ground station, the antenna system is the most expensive. High gain

antennas are needed, moved by azimuth and elevation motors and driven by an appropriate computer program. For Ham Video reception, a 1.2m dish with precision tracking is recommended. A station compliant with the recommendations provided in the aforementioned reference text should be capable of 3 to 4 minutes of DATV reception during a pass of the ISS. AO-40 operators who still have an S-band dish can now use it for Ham Video.

On the other hand, interesting data can be gathered by stations with a much simpler setup. A dish with a self made helix feed could be used without motors. This antenna could be positioned in a fixed direction, determined before a pass of the ISS, pointing to the position of the ISS at closest approach, which corresponds to the maximum elevation of the space station during the pass. With the setup as described hereunder, 1 to 2 minutes of solid reception of the Ham Video signal should be possible.

Call for participation to the Ham Video launch campaign

ARISS addresses a call to amateur radio experimenters who would like to participate to the Ham Video launch campaign.

Data gathering during the initial “blank” transmissions is important and the help of volunteering operators will be most appreciated. More details to follow.

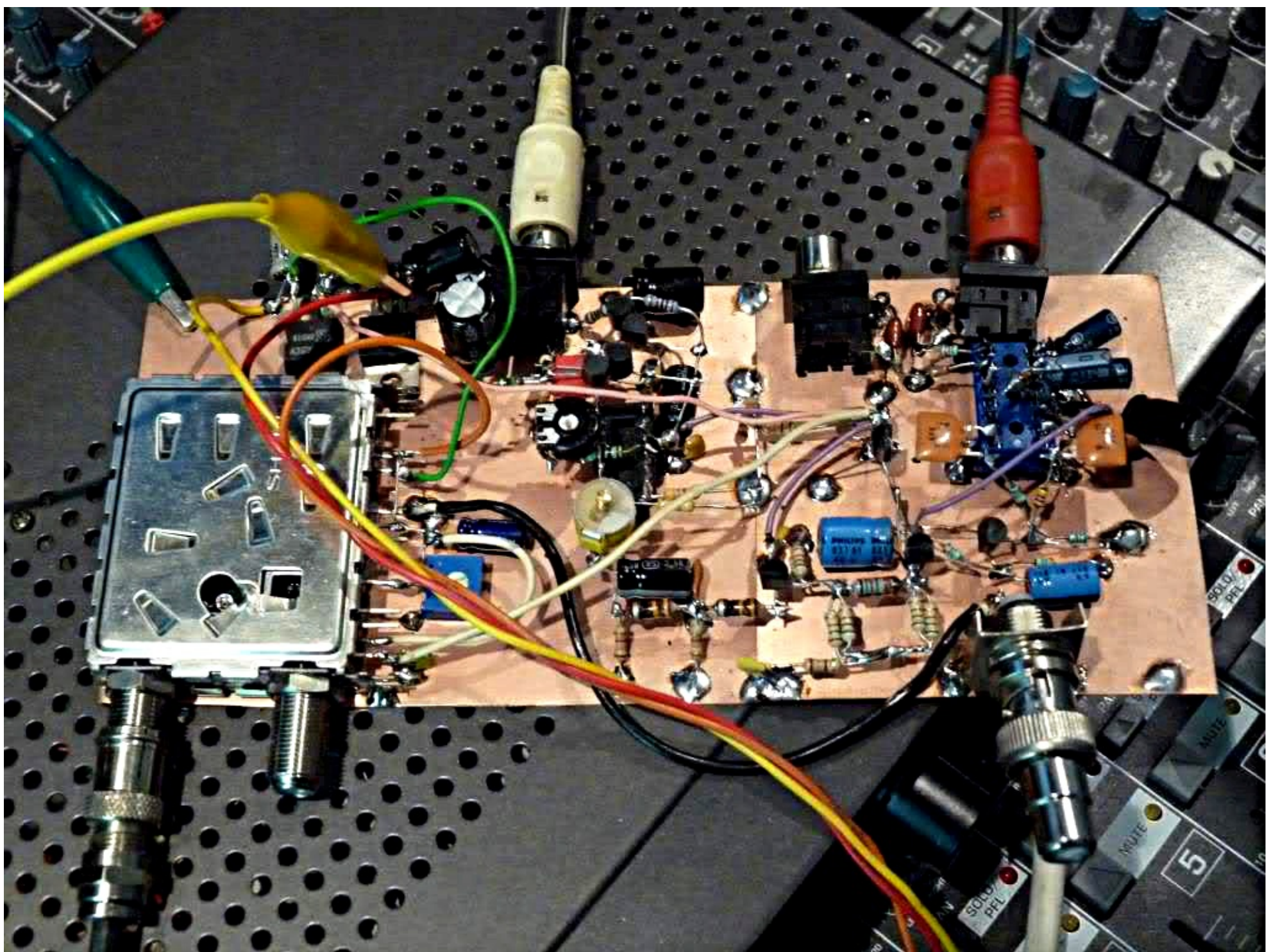
It is to be noted that builders of the hereunder proposed “Simple Station” could later update their equipment and add tracking motors. Chained stations will be needed for ARISS Ham TV school contacts. Video and audio from the ISS will be web streamed to the schools over the Internet.

We will keep you informed of these developments. For the time being, as a starter, let us concentrate on receiving “blank” transmissions.

Caption contest

Just for fun....

Last issues picture is shown below.



“Looks like Ferric Chloride is NOT being made/sold anymore” - John G3RFL

“Now I have tided it up I can see the problem” - Trevor

“Oh which way are you going...I thought you were positive?” - Richard VK4XRL

“ISS to Houston..Roger the DATV kit has arrived. I understand the hams built it, but the construction is ..err unusual - over” - Trevor

“This one works” or “I will be entering this version into the construction competition” - Roger G4OCO

And the winner is Trevor

This issues picture is shown below.



Please send your entries to caption@cq-datv.mobi

Information

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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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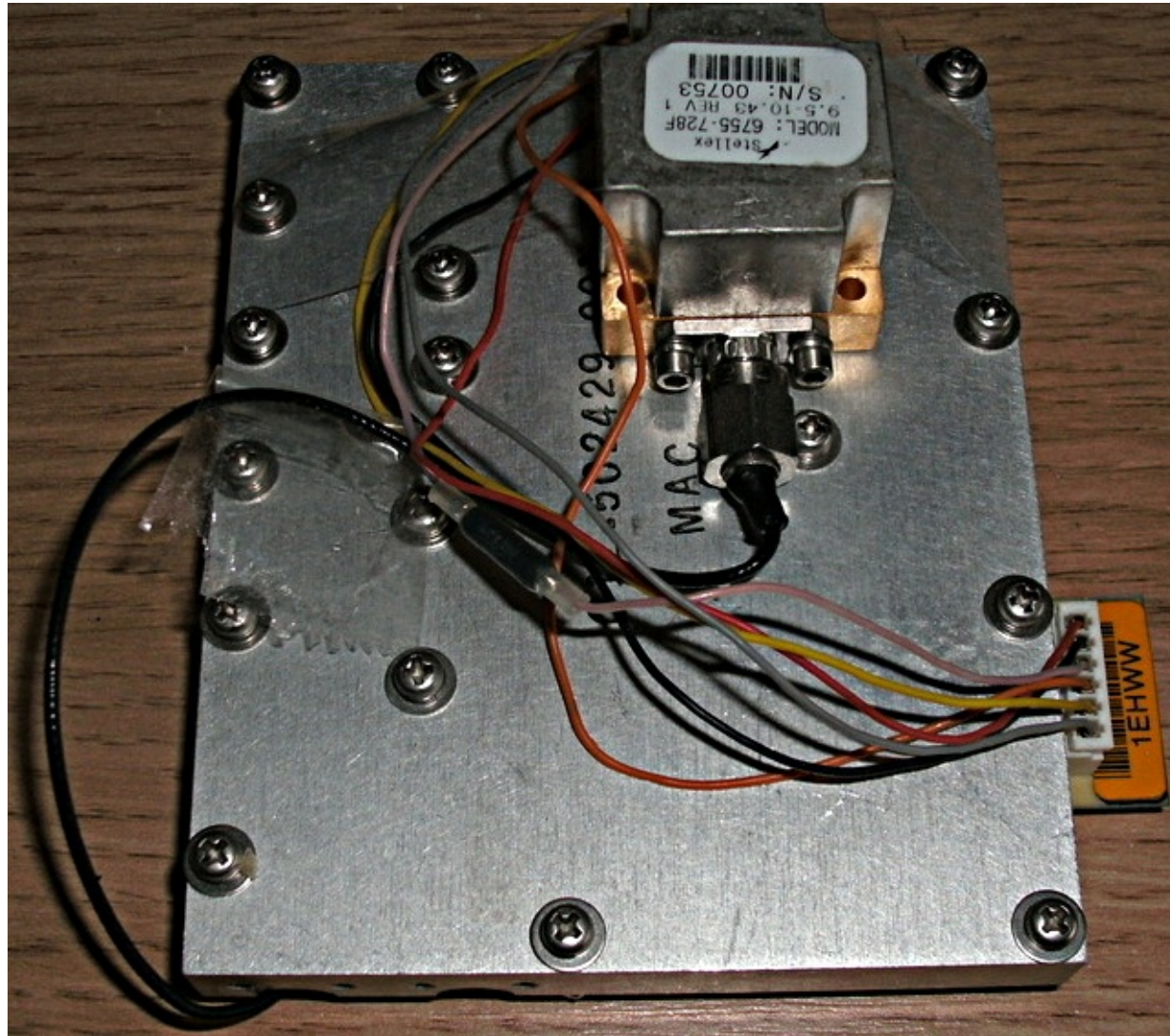
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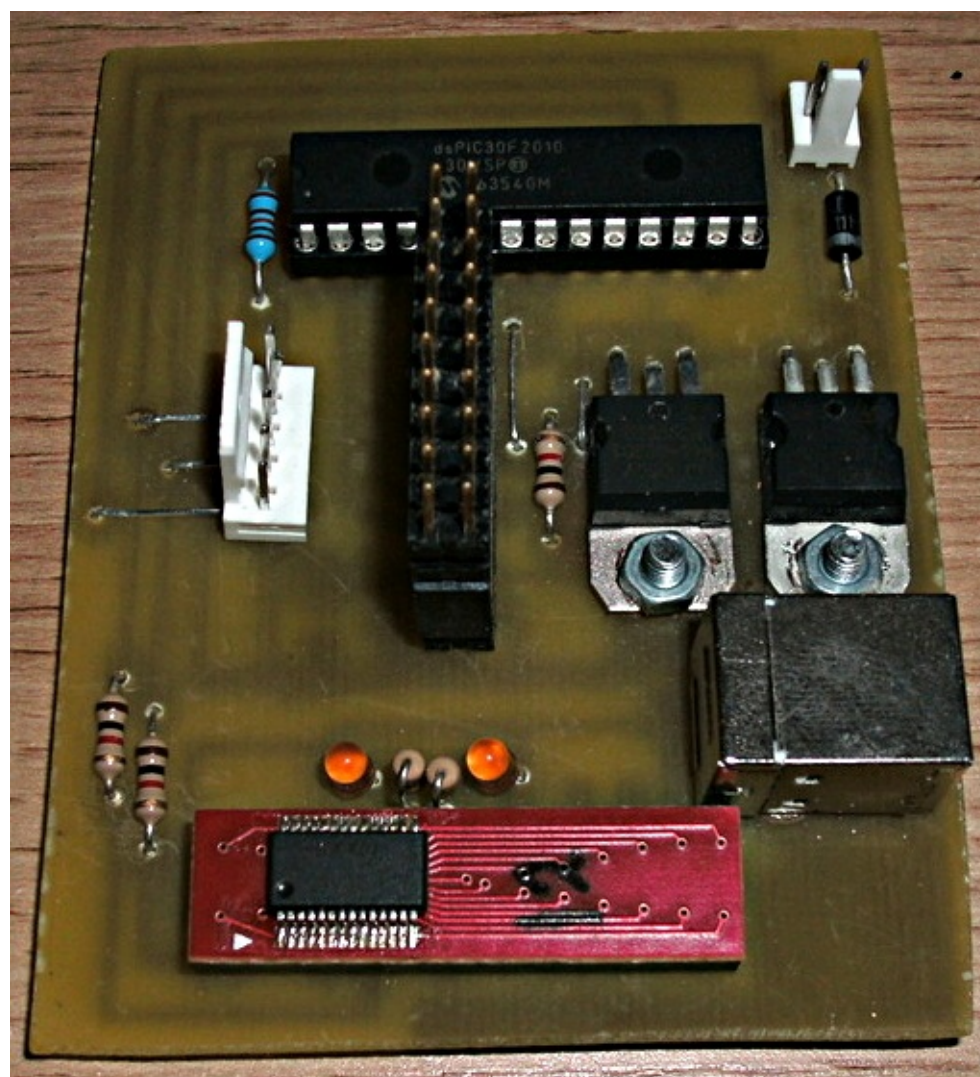
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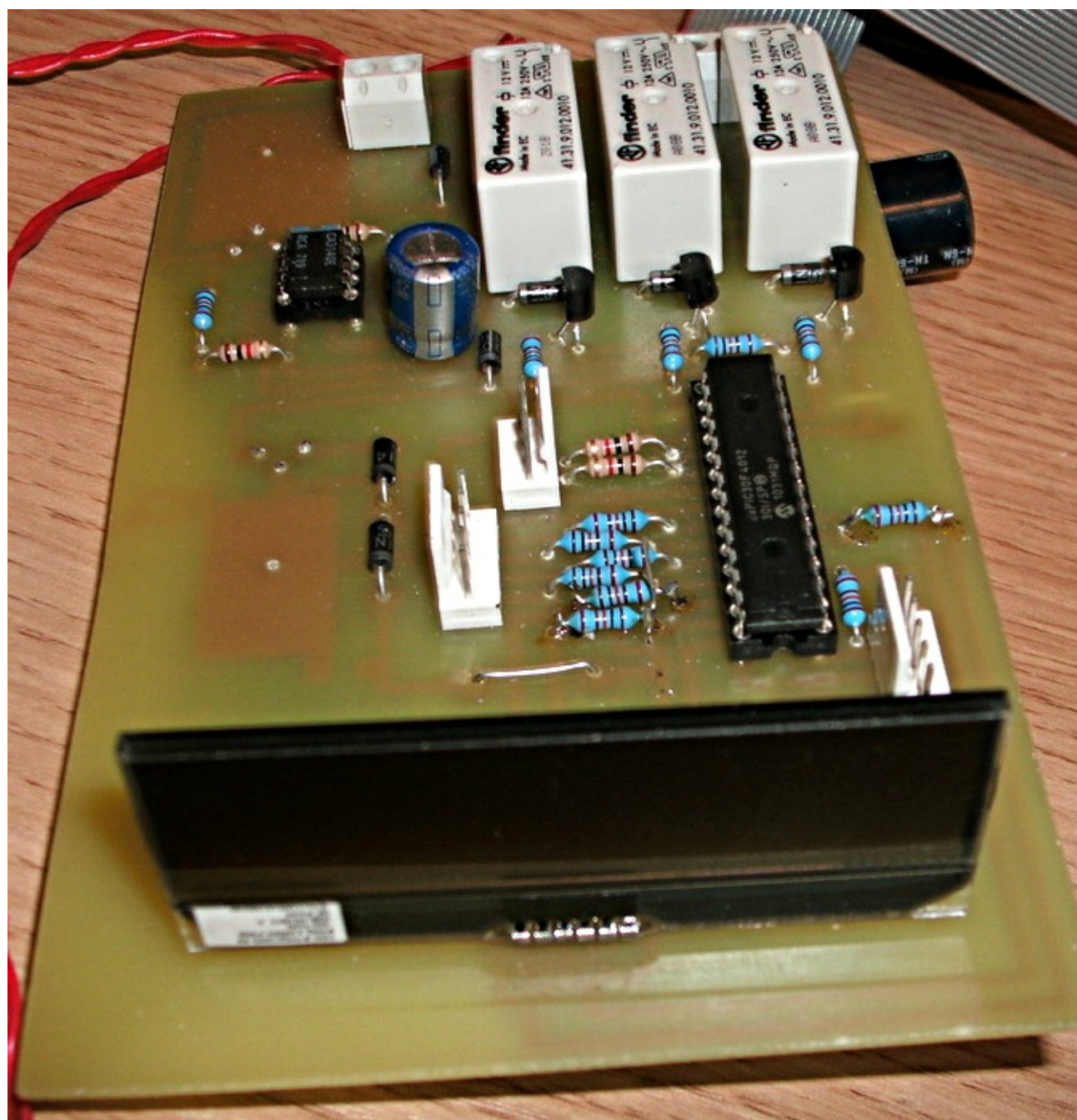
Coming up in CQ-DATV

John will be explaining how to connect eBay Yigs in a fully synthesised PLL and has produced a PCB layout to make it a constructors dream



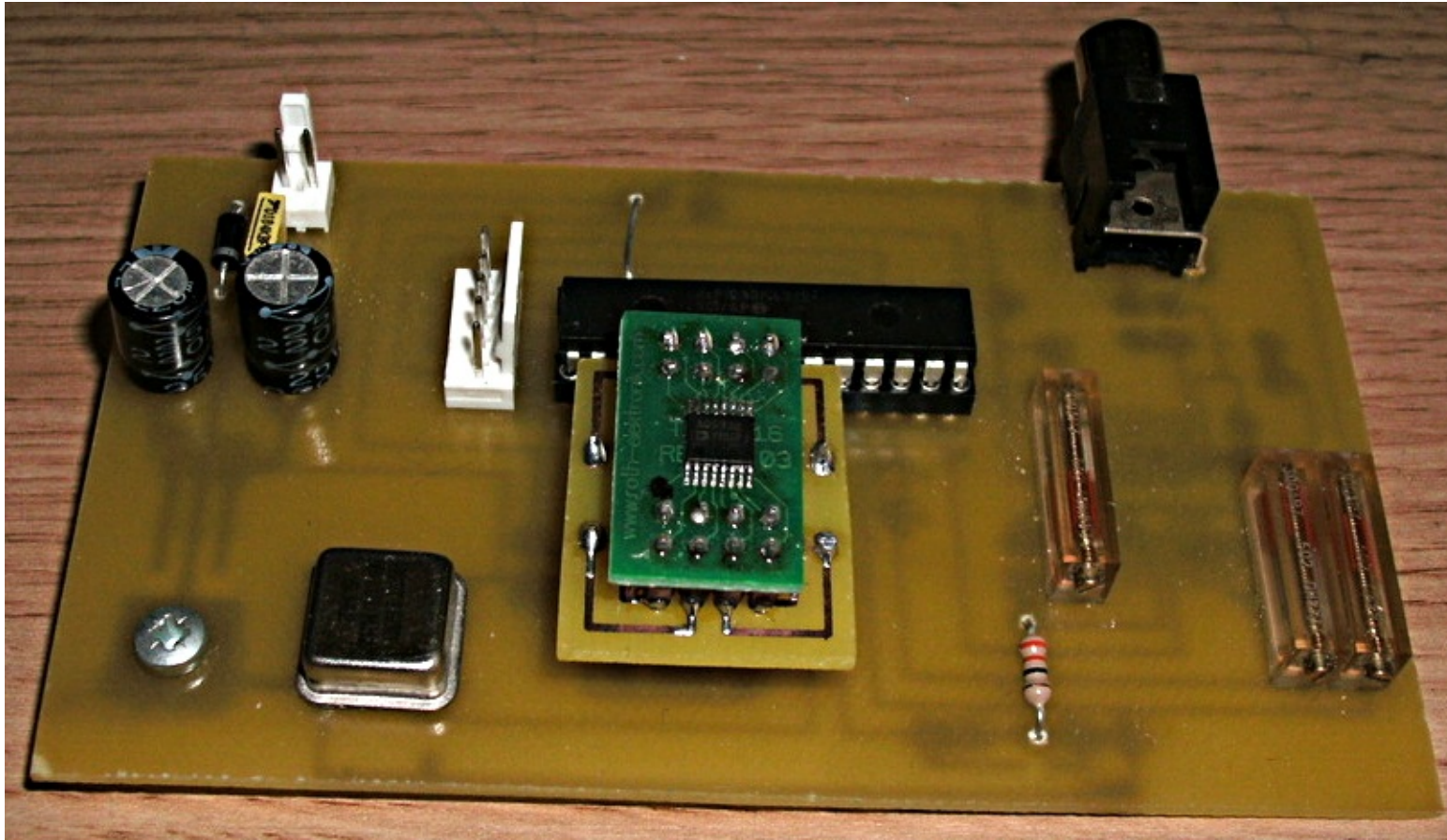


John has also improved his electronic compass and interfaced it to a linear actuator so his pump up mast can be turned by servo control





Video freq generator 100KHz to 5MHz in steps so that you can check TX and RX freq response by looking on a 'scope.



If you would like to contribute then please contact editor@cq-datv.mobi

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