In this issue

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This area is getting decidedly sparse.
Please consider contributing an article.

Editorial

The countdown, has begun, the next issue of CQ-DATV will be commemorating the 5th year of CQ-DATV magazine.

Our first issue went to press in February 2013. Did anybody expect a free ATV magazine to still be in production 5 years after conception?

It's one thing deciding what the hobby needs, it's another providing it! ATV needed a platform that was not constrained by membership requirements and the electronic publication platform opened this door, but also enabled us to exploit http links, which was always a problem with paper production. We could publish and distribute an ATV magazine at almost zero cost and feel we were contributing to a greener planet.

CQ-DATV produced 6 issues in the first year and then in January 2014 we made the jump to a monthly publication. Our thanks to all of you who have contributed, we could not have done this without you.

In this Issue Trevor looks back on Satellite transmission from the early days of Oscar 1 through to the first transatlantic transmission of live television by Telstar and beyond, including the first amateur reception of the ATS 6 satellite in the UK.

There is no doubt we have come a long way in a very short time and still have a great distance yet to travel on this incredible journey.

When Arthur C Clarke proposed the Clarke belt and Geostationary satellites, he opened up a whole new world, but then Trevor is the man who spoke to him personally on the telephone and persuaded him to be an ATV president of a different magazine in a different world.

The word is he used to have "Arthur C Clarke phoned me for technical advice" on his CV, we never saw it when we took him onto the CQ-DATV editorial team, another missed opportunity!

Trevor is not the only person looking back at the start of a New Year. John Lannigan has turned the clock back to days of the Sinclair Spectrum, that much beloved child of the 80's and for some reason nobody knows why it was so loved.

It was not the rubber keys or the tokenised BASIC where it took longer to locate PI on a key than it ever did to type PI (not that the 48K basic model would accept that), nor was it the cassette tape storage that more often than not would never retrieve your programme.

So why was it so loved? Our guess at the CQ-DATV office is the Z80 CPU, don't laugh, we know a 4 MHz clock that did eventually make it to an 8MHz clock in the Z80B, but remember all the beloved games like Manic Minor, Jet Set Willy, Jet Pac, need we go on.

These were all written in machine code, so they were small efficient files, (had to be remember the 48K limit) and they ran, none of this high level language, compiled to we know not what, talking to a windows operating system producing the circle of doom.

Perhaps that's enough for any of us to shout 'bring back the Spectrum', well they have! There is now a new Russian Spectrum called the Pentagon, perhaps an in-joke at the Kremlin, but it's back and with disc storage and whole lot more as John explains.

Before anybody raises the RF word we have a constructional project from Andrew Mosley VK1AD which is a very simple to build 23cms aerial, looks ideal for a repeater or even more than one to get the required polar diagram, and remember, in

our next issue we have John G3RFL's polar diagram plotter so you need something to test it with, so our advice is get building now.

So as we say every month sit back and enjoy CQ-DATV issue 55, but for a change why not make a New Year's resolution that 2018 is the year you are going to transcend being a reader and become a contributor, everyone has a story and if its ATV related our readers would love to read it, you can contact us at *editor@cq-datv.mobi*

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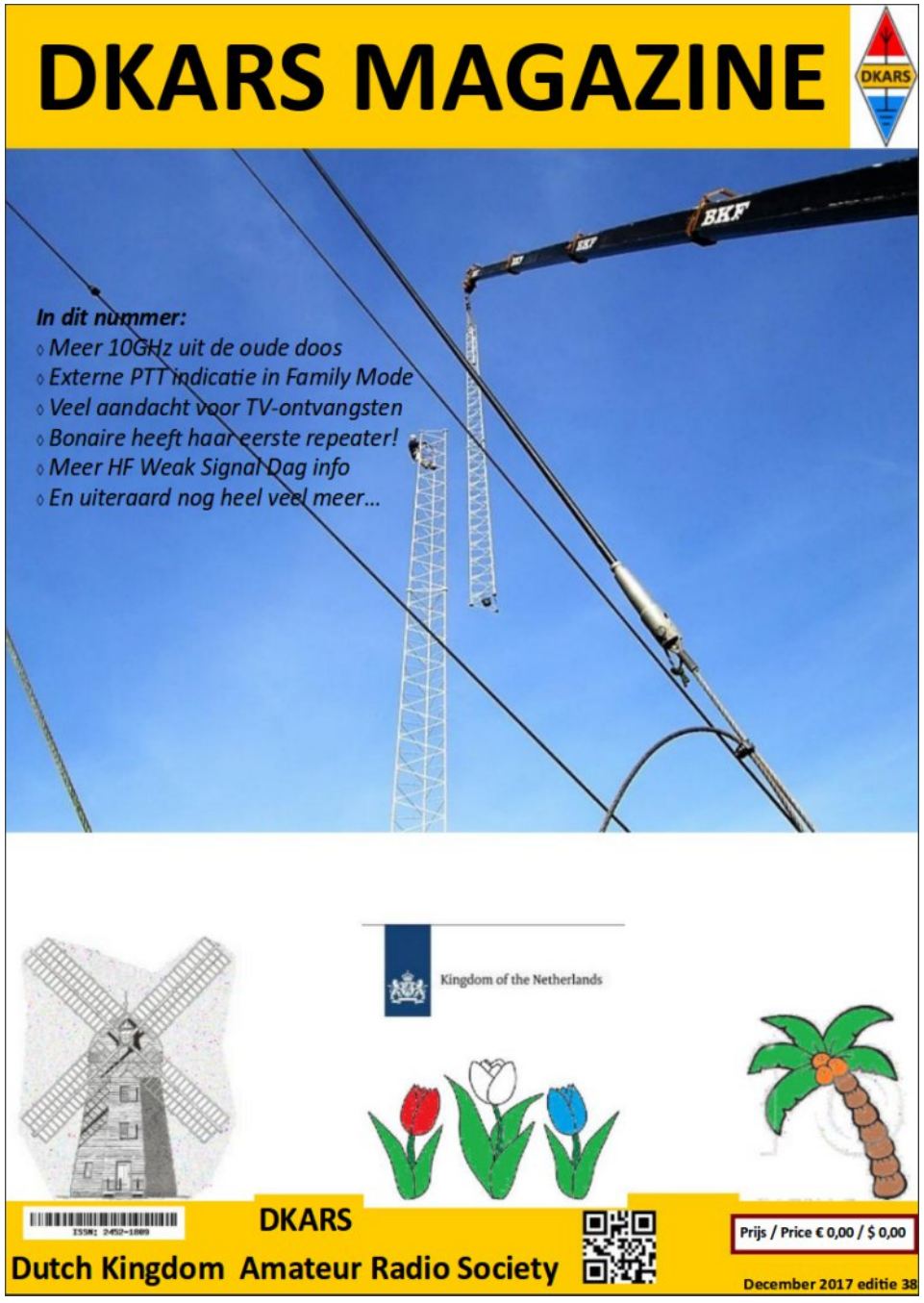

Check out the DKARS website at:-
http://dkars.nl/

Foundations of Amateur Radio eBook

Six years in the making, after much prodding from fellow amateurs, the transcripts of the weekly podcast 'Foundations of Amateur Radio' are now available as a series of eBook volumes on Amazon to bring together the over 300 different episodes covering topics about our amazing hobby

http://www.southgatearc.org/news/2017/december/foundations-of-amateur-radio-ebook.htm#.Wi1rqVVl9aQ

HAMKit - Amateur Radio, Television and Electronics Projects and Kits

The HAMKit website has had an update as we launch our Shop, new Products, Wiki and News pages

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DKARS Microwave experiments with phone and video at 10 GHz from 1973 till 1980

pictures are awful, need to ask for better ones.

ATV via Hamnet Cross-border connection

The ATV in our Hobby unfortunately plays a small role, but still important Hamnet has expanded and implemented many DMR-D-STAR ATV services etc.

Transnational Networking: We are particularly pleased to present the results of the cooperation between OE6 OE8 and I3

After the last ATV antennas had to be dismantled by Gerlitze (from the old stone tower), for several years no ATV connection in the Villach area was possible. up to now it was not possible to carry out QSO with I3 via ATV.

After a few years we were contacted by our neighbors I3. We discussed how it is possible to restore ATV connections and connect the two OE and I3 nations through Hamnet.

Various possibilities were hypothesized through radio links, through the Slovenja, the Alps, or other solutions, but all this represented large expenses.

Cristof also presented his plan to use Gerlitze to access Villach in ATV via DVB-T.

It was decided to establish a VPN tunnel for the connection between Udine I3 and Villacco OE8 in the LKH station.

The hardware was built with Microtik routers while Alexander IW3RMR purchased two Grandstream BOXs that convert the analog CVBS video into IP Stream. OE6RKE sponsored the Microtik to bring new wind into the ATV topic.

On September 24, the OE8BCK group OE8WUR and OE6RKE trapped the journey to Udine, to be exact from IW3RMR. When the hardware was done, the Grandstream boxes were quickly assembled and configured. The VPN tunnel was fast between a Linux computer and the Microtik card, apart from an initial routing problem, immediately resolved brilliantly by Michael OE8WUR. So a new location was connected to the Hamnet network.

Now it was possible to receive an ATV stream from IR3UDA, all in Hamnet and also send the entire ATV stream of Hamnet to our neighbor IR3. The first test was successful and was performed by Alessandro with great enthusiasm.

More information can be found at
http://hamnetdb.net/?m=site&q=ir3uda

In October the ATV meeting took place in Slovenja, in which we decided to dedicate 90% of the time of the transmissions

to the IR3-OE section in the dedicated quad sector.

From now on some QSOs between I3 and OE have already been possible. Visualization is also possible from the public internet address http://188.230.222.186:8880/ [3]. link to the ARI Udine website under ATV live video.

This ATV system was also used for ATV links with OE1 OE6 OE8 S5 and now with I3.

Access by the OE to the ATV network is possible via Hamnet or in SHF in the dvb-S standard as well as the band in the narrow band dvb-t 70 cm.

For info, please send your requests to *atv-oe6@ml.oevsv.at* website

A big thank you to Alessandro IW3RMR, Cristof OE8BCK, Robert OE6RKE and Michael OE8WUR for the article.

73 de OE8WUR

New facebook group - Pentagon 128 micro - based on the Sinclair Spectrum 48K.

It differs from the original in many ways, 128K RAM Floppy disc support and other features, consider it a Spectrum on steroids..!

The aim here is to help fellow members with the build, share idea's and showcase your latest creation.

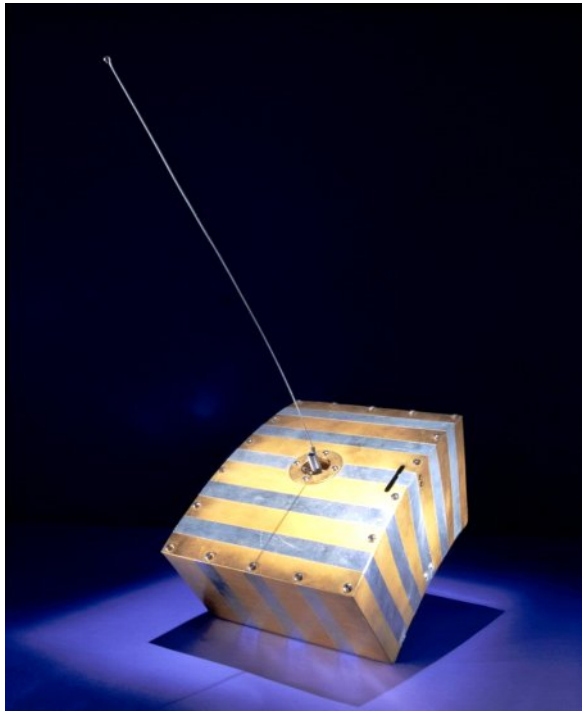
The rules here are simple, ALL posts must be in English, no spam advertising, no trolling, and be civil to others. That said, welcome to the group, enjoy yourself and have fun.

https://www.facebook.com/groups/2010022152575001/about/

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://agaf-ev.org/*

Live via Satellite

Live via Satellite, a common phrase these days, but that was not always the case, Trevor looks back on 50 years of Satellite TV.



OSCAR 1

In 1961, for those of you that are old enough, OSCAR 1 became the first Amateur Radio Satellite.

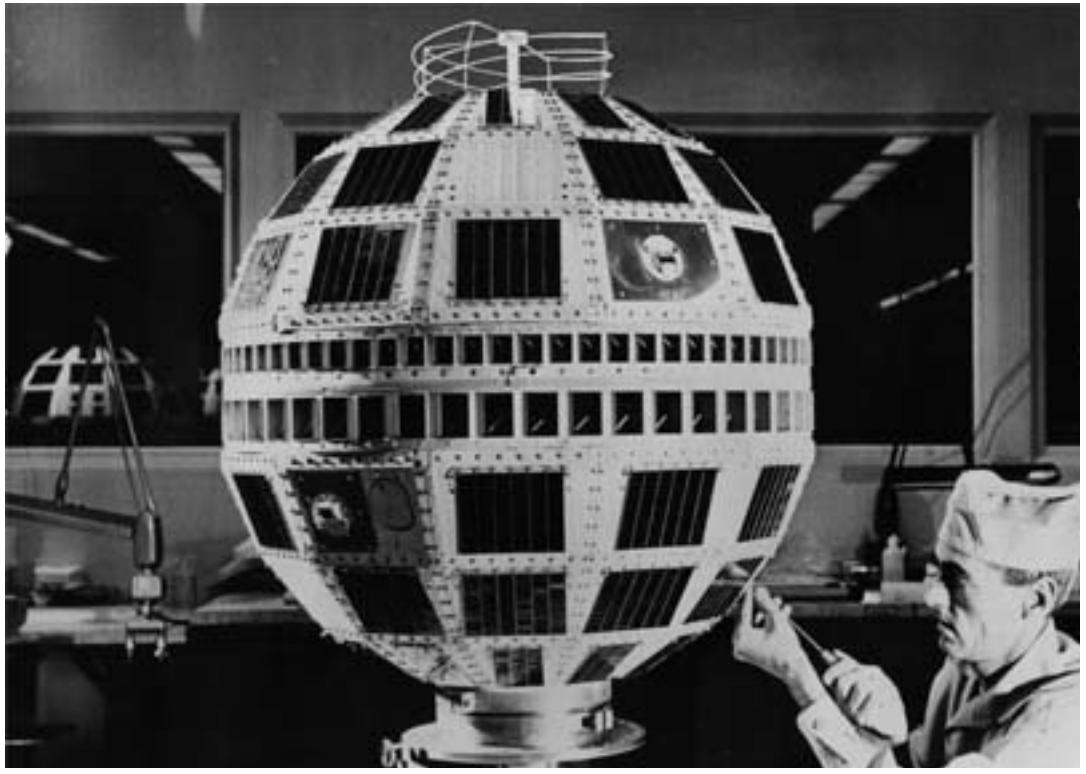
For 22 days it circled the earth sending HI in Morse code on the 2m band, 144.983 MHz to be precise. I can remember putting the crossed dipole yagi's together, that we were assured were the only aerial that would receive OSCAR, persuading a fellow ham to hand hold them and track the pass on a pair of remote headphones in the garden and yes, I heard the HI in Morse code!

OSCAR 1 was conceived in San Francisco and with a lot of ARRL support, brought to fruition. This Amateur built satellite used a battery powered 140mw transmitter, and radiated the signal via a 60 cms antenna. The launch date was the 12th of December 1961 and it ceased transmitting on January 22nd 1962, just 22 days later.

Project OSCAR had been created for an outlay of $62. It became the first of a long line of amateur satellite projects, most of which lasted longer, delivered more, but never again for this budget.

I think at the time I never expected Television to be delivered this way, amateur or professional. But then so much in the technological world surpasses our expectations.

Telstar 1



The next step in the chain for me was Telstar, launched by a Thor-Delta rocket from Cape Canaveral Air force station Launch Complex 17 on July 10th 1962 (my Birthday) again a moving Satellite, none of this geosynchronous orbit nonsense.

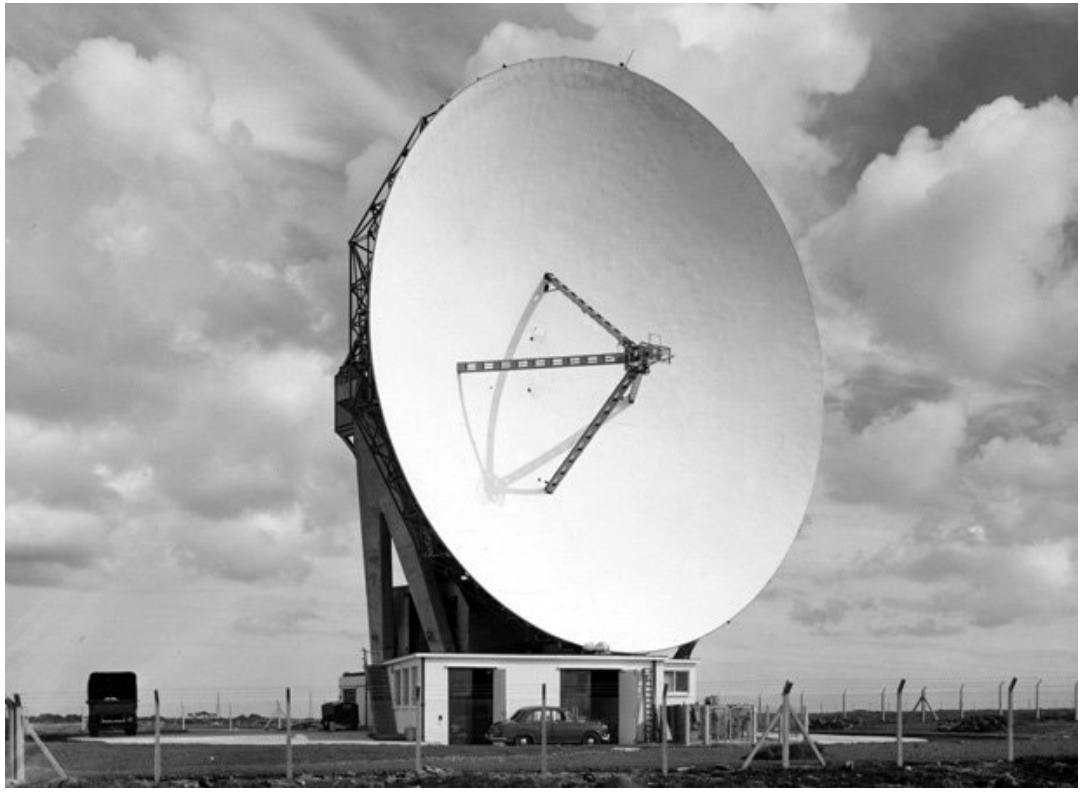
Telstar was designed to provide Broadcasters with a TV link across the Atlantic and was built as an international collaboration between AT&T, Bell Labs, NASA, the British General Post Office, and the French National Post, Telegraph, and Telecom Office.

Telstar was placed in low Earth orbit and circled the planet every two and a half hours, providing a 20 minute window between Europe and the U.S. per orbit.

The power consumption had increased. Telstar consumed 14 watts. When it was not relying TV pictures it could be switched to Telephony and carry 600 simultaneous phone calls.

Thor-Delta prior to the Launch of the earlier Explorer 10

The first Telstar transmission was from the USA and was to be received simultaneously in France and the UK on July 11th 1963, in the UK using a 25.9 metre dish affectionately called Arthur. This was an open parabolic design and although no longer in use, it can still be seen today, because it is a Grade II listed structure.



A Dish Called Arthur

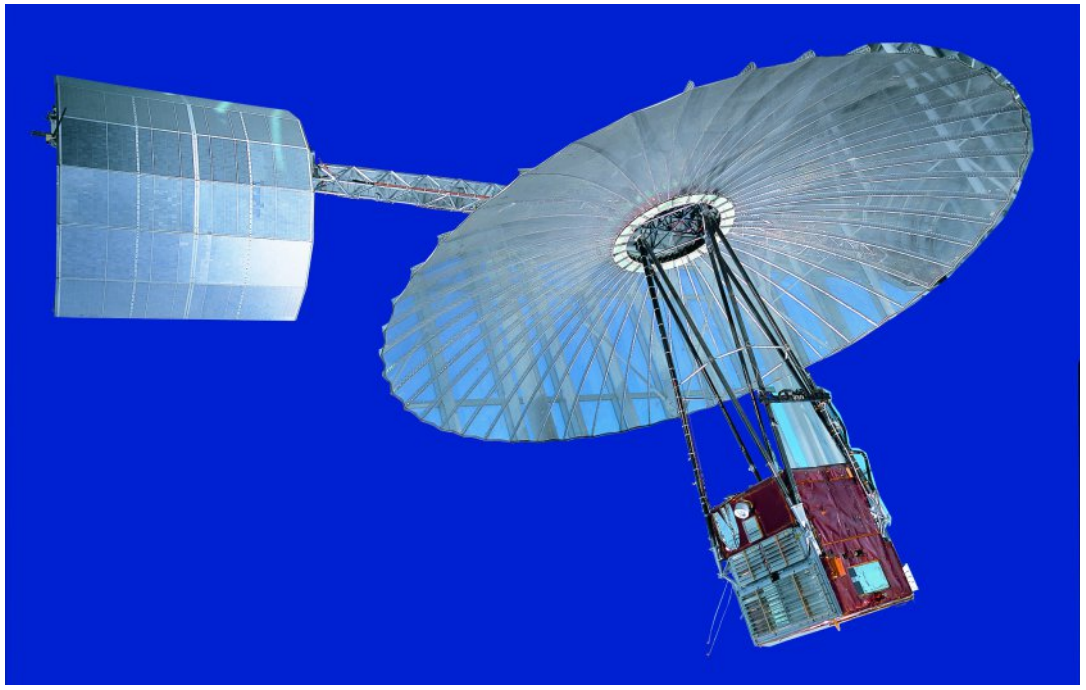
There was competition between the UK and France to receive this first transmission and the UK messed up! It was a circular polarised transmission and at Goonhilly Down, the UK receiving station, the polarisation was set the wrong way for the first pass and the results, as you can imagine, were disappointing. While across the channel the results were euphoric, this did not please the engineers, but by the second Pass two and a half hours later polarisation was reversed and the same results the French experienced reached the UK.

Telstar only delivered at best a 20 minute window, some times less so video footage had to be cut down or restricted to short news items, never the less, getting a VT role cue from Goonhilly was exciting, before my time in Broadcast, but I had older colleagues often reminisce what it was like in their day.

Goonhilly Control Room

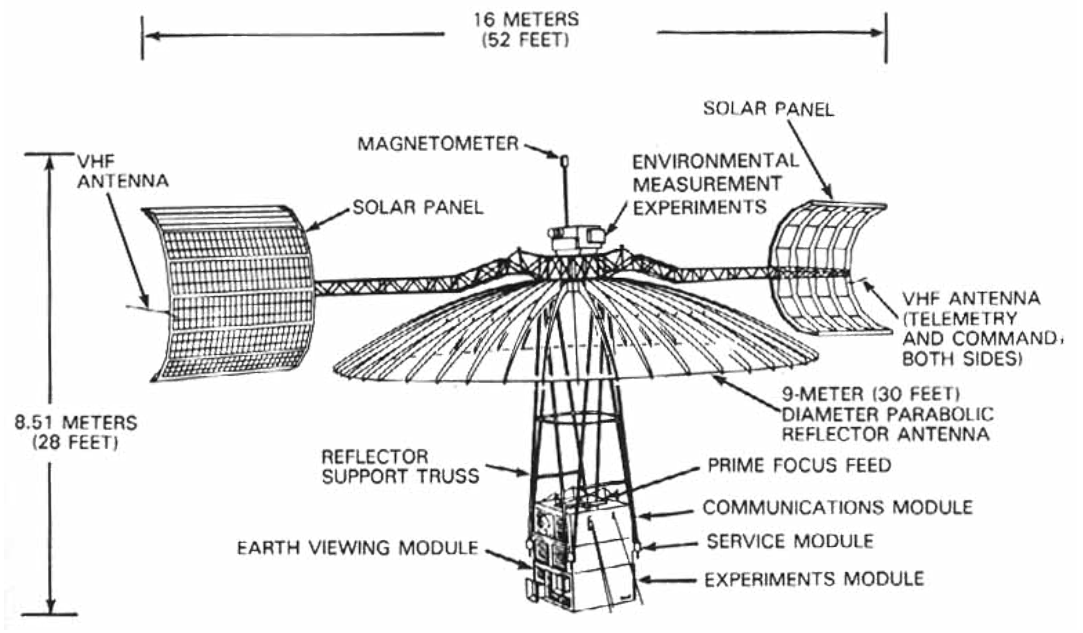
So we have moved from Beacons to TV transponders in a very short time. The next step was a geosynchronous orbit.

This came on to May 30th 1974 and the Launch of the ATS-6 **(Applications Technology Satellite-6)**, the world's first Direct Broadcast satellite. This was a joint experiment between NASA and ISRO (Indian Space Research Organisation) and ran until July 1979.Along with a geostationary orbit, it was the first space craft to have 3 axis stabilisation.



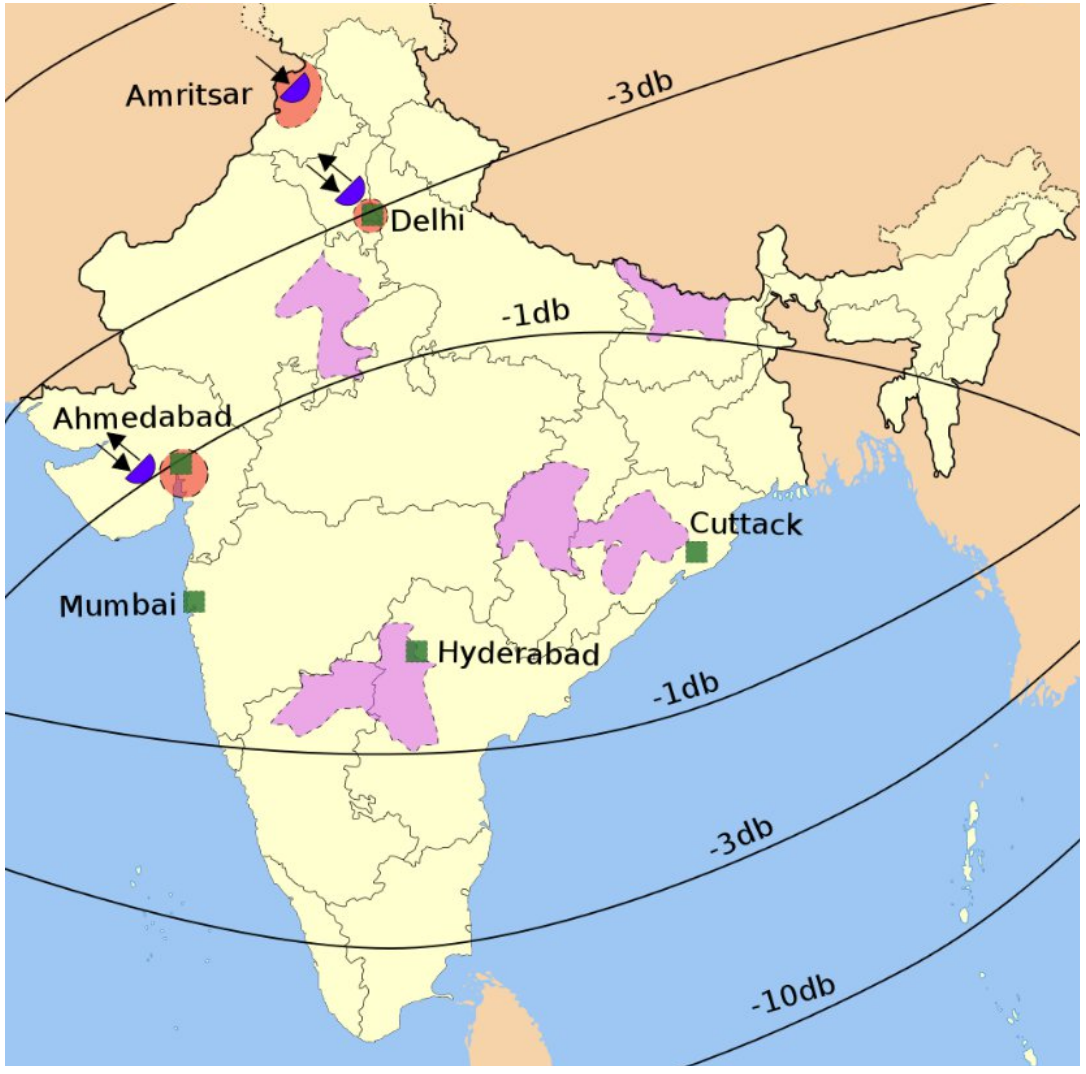
Above: ATS 6 Satellite

Below: Diagram of the internal workings of ATS 6



ATS-6 was a precursor of many technologies still in use today by geostationary spacecraft: large deployable antenna, 3-axis attitude control with slewing capable antenna pointing through RF sensing, electric propulsion, meteorological radiometer and most important, a geostationary orbit.

This next generation of TV Satellite was a quantum leap and as we see form the polar diagram it was focused on the Indian sub continent



ATS 6 Polar Diagram

So if you lived in Mumbai the dish was optimised for you, but in the UK it was more than 30db down, but that did not stop Steve Birkhill receiving pictures in Sheffield, about 30 mins drive from where I live. I could not let this pass without a visit, sorry I never took any stills, but I was armed with a home Camcorder (Betamax) and the footage is now on you tube *https://www.youtube.com/watch?v=NAcab_IDTiU*. Sorry about the quality, Betamax capture was not ideal.

Steve Birkhill's Dish that received the ATS 6 pictures in Sheffield

The next step for me was UK direct TV broadcasts in 1986, two to be precise! First was Astra 1B transmitting PAL as an FM signal with analogue sound later to be joined by BSB (British Satellite Broadcasting) transmitting MAC (Multiplexed

ASTRA 1B

BSB Logo

Analogue Components type D) signal, via 2 satellites called Marco Polo 1 and Marco Polo 2 otherwise known as BSB1 and BSB2. Mac was the brain child of The European union and the BSB license was on condition that they used this format. Europe really put British Satellite Broadcasting on a back foot from the start by insisting on this expensive technology.

I opted for the affordable Astra satellite on my first attempt at receiving a picture from space, I was well impressed with my blue cap LNB and my 60 cms dish on the front patio that turned to white noise if anyone came to the front door and blocked the path to the satellite.

The receiver came from a surplus rally and well there was something about watching Star Trek, from outer space. The pictures were not perfect by any means, but Alan Sugar did offer £1m to anyone that would show him a better picture.

This soon appeared from the Marco Polo satellites and it's expensive D-MAC delivered digital pictures with a component connection to the TV scart socket, no I never had one at home, the kit was far too expensive.

I never received the £1m pounds either, perhaps I might not apply to be his business partner

The commercial battle between the two systems fought it out until Sky took over British Satellite Broadcasting and renamed the company B sky B. Marco Polo 1 was sold and acquired in-orbit by Nordiska Satellitaktiebolaget in 1993, and operated until 2000 as Sirius 1 in the 5°E orbital slot. It was then moved to 13° West, and renamed Sirius W operating in an inclined orbit, Nordic Satellite AB expected it to be serviceable past 2006, although it was sent into junk orbit in May of 2003.

Marco Polo 2 (BSB 2)

Marco Polo 2 was again acquired in-orbit by Telenor of Norway in 1992, and renamed Thor 1. It was located at 0.8° W until it was switched off in January 2002. However, in November 2002, it was moved to 7.4W, and was reactivated with digital test signals broadcasting towards Scandinavia. However, the end was near. Marco Polo 2 was sent into junk orbit in early January of 2003.

Once Marco Polo and BskyB was no more, the kit was available as you would expect at surplus prices and I could not resist. The problem was D-MAC was no more - it had been superseded by D2-MAC a narrower channel system that allowed more channels. There were D2-Mac transmissions from France and Germany.

The receivers could be converted and yes, both satellites received in the UK were circular polarised. One was clockwise and the other anticlock, but if you used the small BskyB dish as opposed to the Squarial, the polariser could be pulled out rotated and refitted to receive the other satellite. I think they were co-sited and I frequently popped out into the garden and rotated the plastic polariser to change satellite. Alas they are no more.

The next step has to be a geostationary satellite with an ATV uplink and downlink and at the moment that looks like Qatar's Es'hail 2 satellite. This will provide the first Amateur Radio geostationary communication capability linking Brazil and India.

It will carry two **AMSAT P4A (Phase 4A)** Amateur Radio transponders. The payload will consist of a 250 kHz linear transponder intended for conventional analogue operations in addition to another transponder which will have an 8 MHz bandwidth.

The latter transponder is intended for experimental digital modulation schemes and DVB amateur television. The uplinks will be in the 2.400-2.450 GHz and the downlinks in the 10.450-10.500 GHz amateur satellite service allocations. Both transponders will have broad beam antennas to provide full coverage over about a third of the earth's surface.

Es'hail 2

This will we hope launch in 2018. So yes, we are more than 50 years into satellite television and the story is still being written.

Want to be notified when issues of CQ-DATV are published? Then join our *mailing list*.

Construction of a 23cm 1296 MHz Bi-Quad Antenna

Written by Andrew Mosley VK1AD

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https://vk1nam.wordpress.com/2017/12/27/construction-of-a-23cm-1296-mhz-bi-quad-antenna/

I'm enjoying the challenge of 23cm 1296 MHz homebrew antenna construction for SOTA purposes. My 23cm portable antenna collection includes:

12el DL6WU Yagi 12dB gain – lightweight boom construction using a folded dipole

6el DL6WU Yagi 9 dB gain – ruggedised all brass construction gamma matched, ideal for the Australian scrub bash

and

2el HB9CV Yagi 4 dB gain – all brass construction, useful lightweight option for local summits around Canberra

23cm Bi-Quad Antenna

This post demonstrates the method to constructing a 23cm Bi-Quad antenna which I plan to use for SOTA activations.

The Bi-Quad is also known as a double-quad antenna.

Whilst I haven't modelled the Bi-Quad against my 6el yagi, I understand the Bi-Quad gain is around 9 dB with a 60 degree beam width, happy to be corrected.

All dimensions are in millimetres (mm).

Materials:

- *SMA female socket to RG-402 (solder type)*
- *55 mm length of RG-402 semi-rigid copper shield coax. Outer diameter 3.6 mm*
- *Double sided copper clad PCB*
- *500 mm length of 2 mm copper wire (junk box)*
- *2 x 32 mm stand-off insulators. I used 7 mm diameter plastic sprinkler riser tube*
- *2 Cable ties*
- *Solder*
- *PCB enamel*

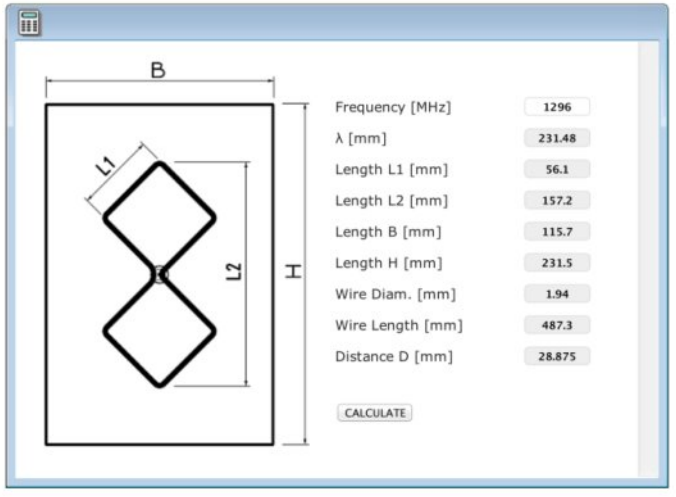
23cm Bi-Quad antenna dimensions

Varying the space between the driven element and the reflector surface changes the antenna feed point impedance.

Although the calculator shown below specifies a spacing of 29 mm, I found a spacing of 32 mm produced the lowest VSWR at 1.1:1.

For dimensions see: *Changpuak Bi-Quad online calculator*

23cm Bi-Quad Antenna Dimensions – courtesy of changpuak.ch



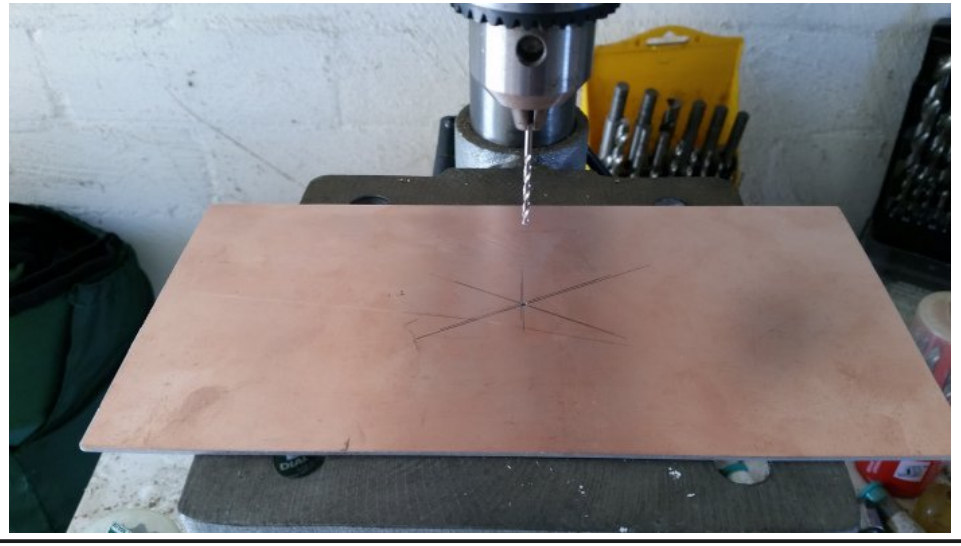
Note: D is the Distance from the Dipole to the Reflector.

Method

Start with a blank double sided PCB 300 x 250 mm. Mark out a rectangle 231 x 116 mm to form the antenna reflector.

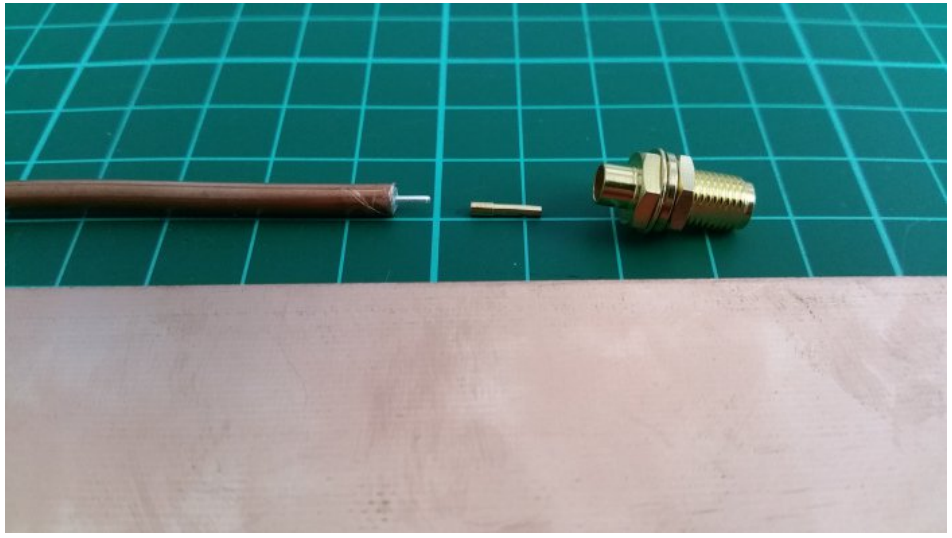
Double sided PCB – antenna reflector marked out 231 x 116 mm

Reflector cut to size 231 x 116 mm. Drill a 2 mm hole in the center of the reflector.



Left: Mark out the center of the reflector and drill a 2 mm pilot hole.

RG-402 3.6 mm semi-rigid feed line and SMA connector assembly



Trim the RG-402 coax to expose the center conductor

Driven element

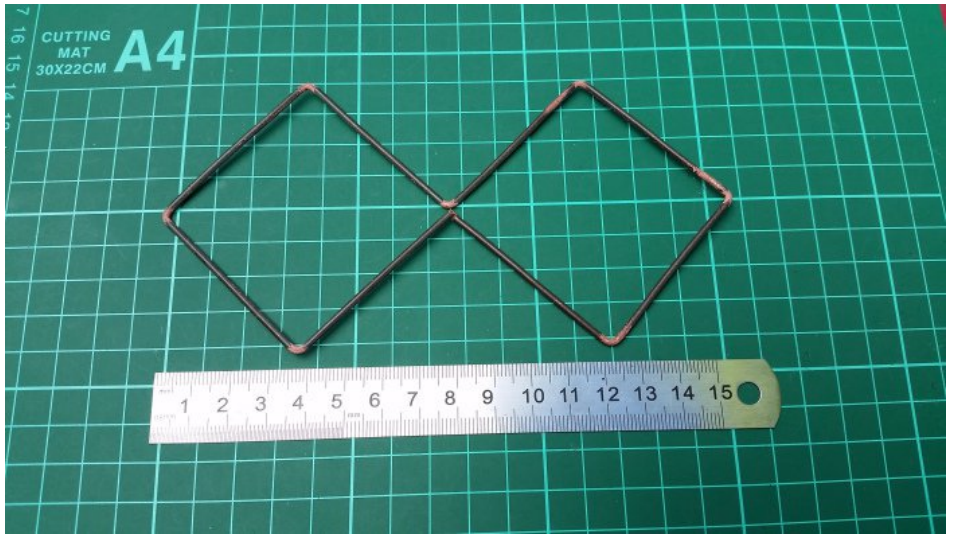
I had on-hand a 500 mm length of 2 mm copper wire found in the junk box.

Fold the wire at right angles to produce two 56 mm quads, remove any excess wire.

The center fold of the two quads forms the antenna feed point.

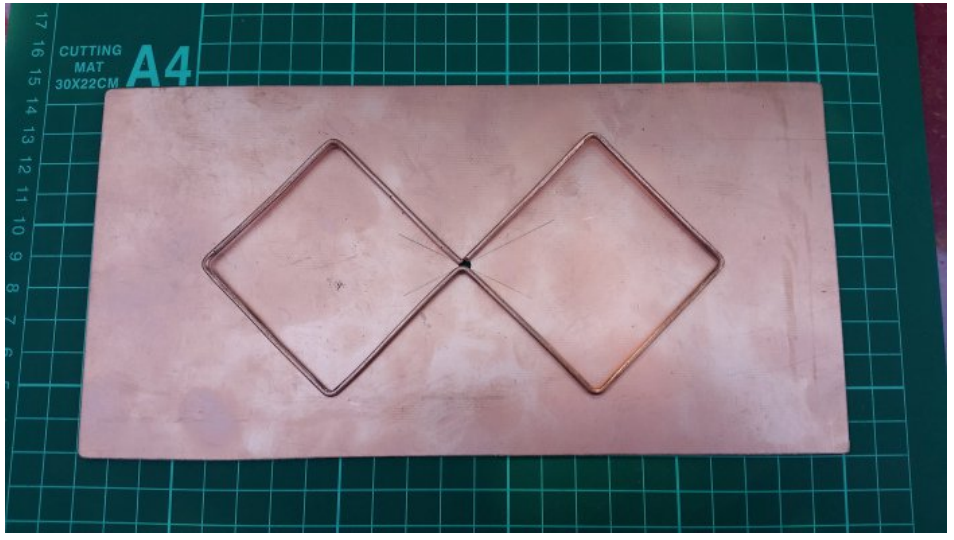
The two open wire ends are soldered to the RG-402 copper shield.

I will use emery paper to remove the build up of oxides. After construction is complete I will spray the assembled antenna with a light coat of non-conductive PCB enamel.



Bi-Quad driven element with wire ends meeting in the middle

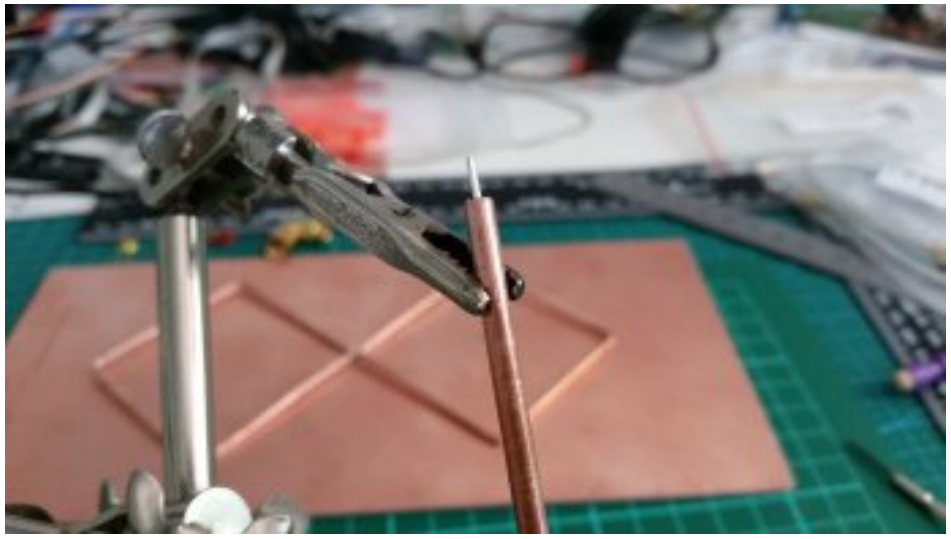
Drill the reflector center hole (3.5 mm) or use a taper ream to match the outer diameter of the coax, aim for an interference fit. You may have other ideas or options on your choice of coax.

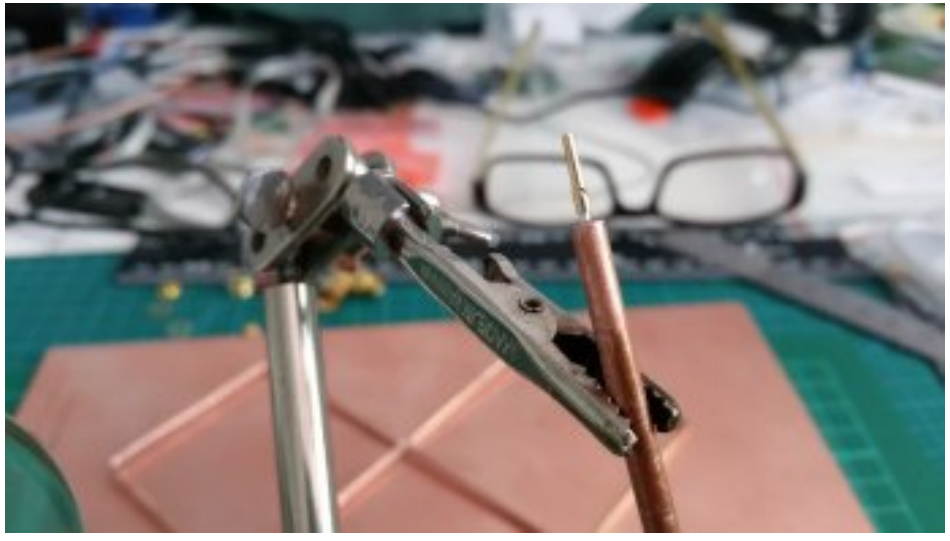


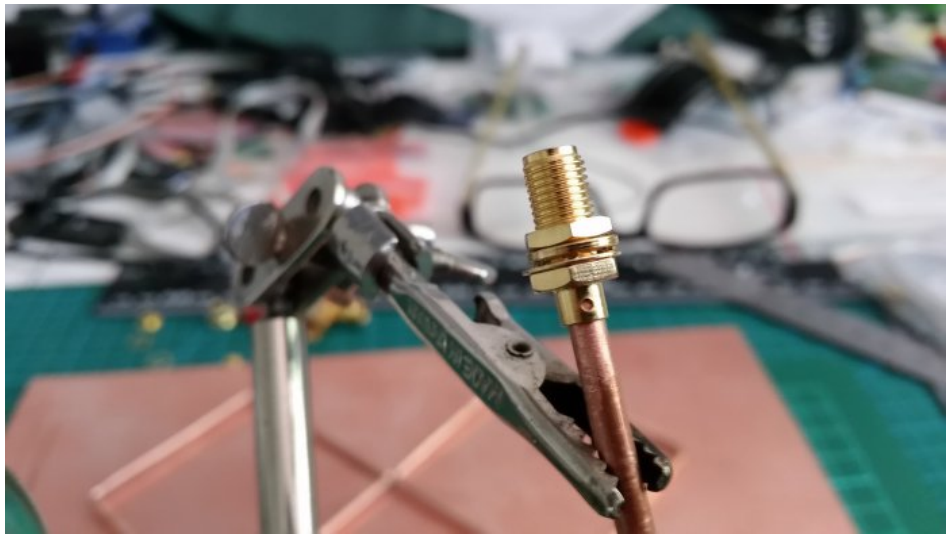
Driven element cleaned with emery paper

Feed line SMA Connector

Prepare the RG-402 for the female SMA connector.

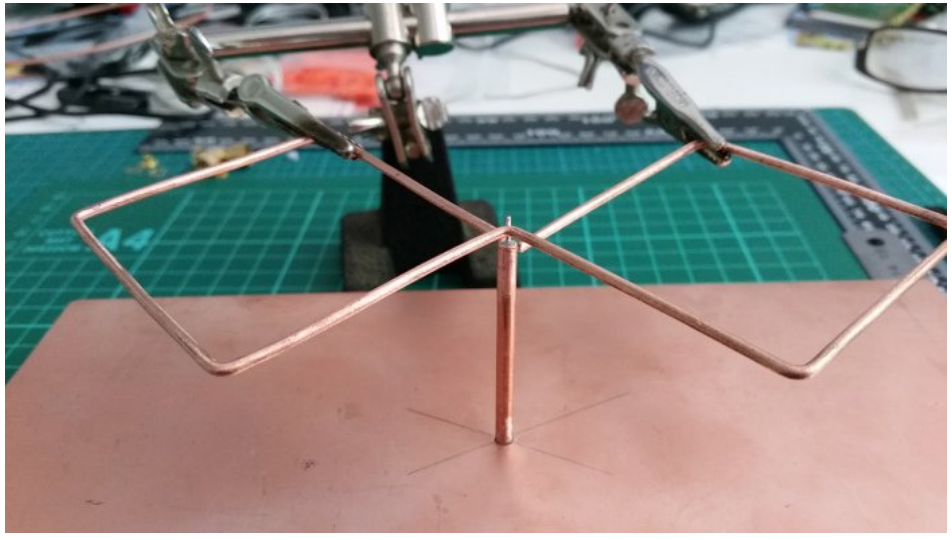






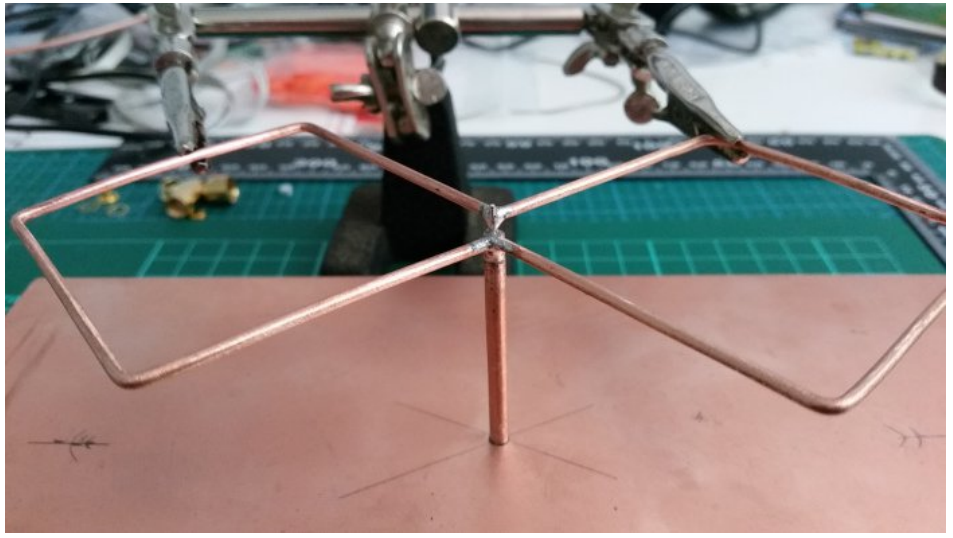
Assembly

Next, the driven element is positioned before soldering, you need a spare pair of hands! Before soldering make sure the spacing between the quad ends and the reflector surface are the same. The driven element must be parallel to the reflector surface. Be patient this step is fiddly.



Position the center of the driven element for soldering to the coax center conductor

The picture below demonstrates the center of the folded Bi-Quad is soldered to the coax center conductor. The two open ends are each soldered to the shield.



Driven element soldered in place

Test for 50 ohm Impedance

At this stage connect the Bi-Quad antenna to a suitable VSWR meter and a low power 23cm transmitter or if you have one a microwave antenna analyser.

To find the lowest VSWR reading slide the driven element assembly through the reflector center hole. For my assembly the lowest VSWR reading corresponded with a spacing of 32 mm.

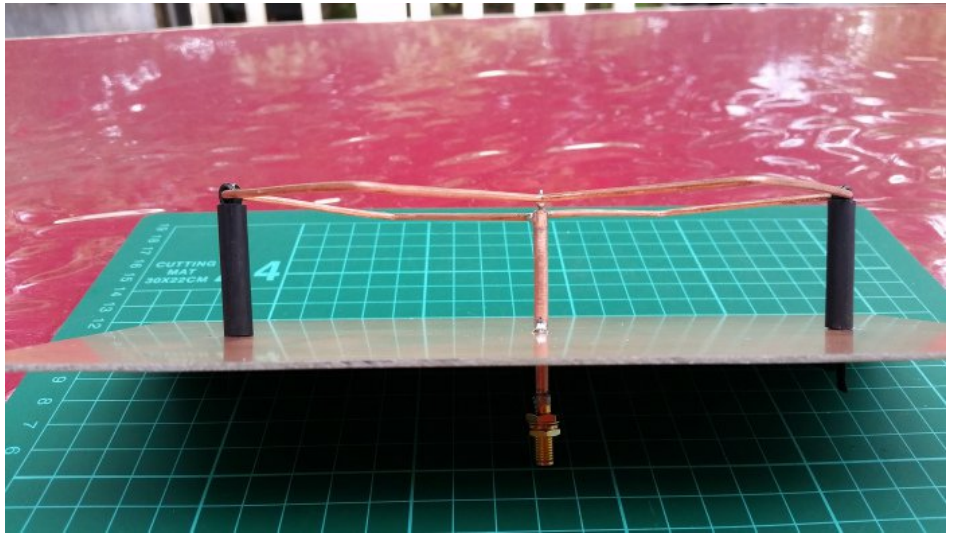
Next cut two 32 mm lengths of sprinkler riser tube to form two stand-off insulators, test and trim to the length as required.

Drill two holes in the reflector to align with the quad ends. See my pencil markings on the reflector surface.

Mount the stand-off insulators and secure the driven element ends with cable ties.

Next check the VSWR reading a second time.

If the VSWR hasn't changed solder the RG-402 copper shield to the reflector surface. Repeat on rear side where the shield extends through the hole.



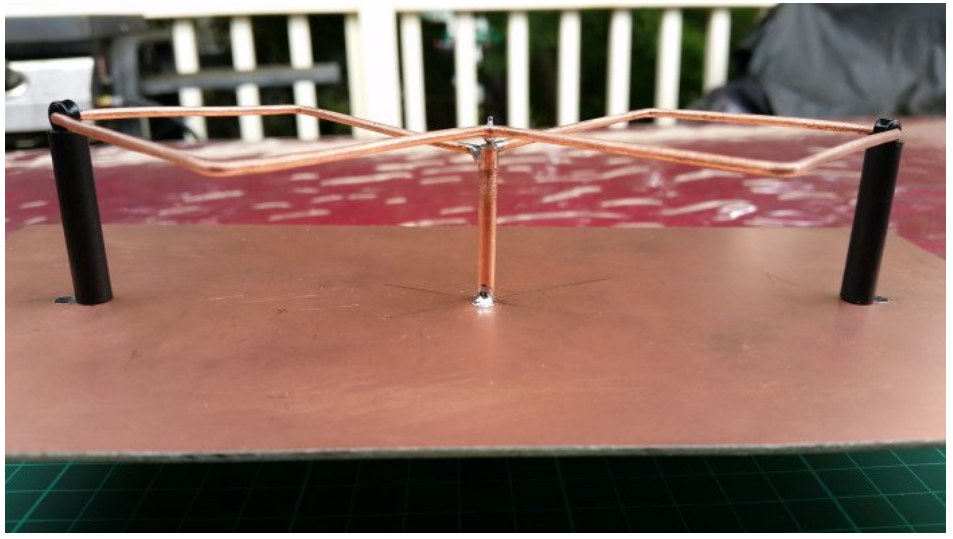
View of the driven element and coax feed line. Driven element ends are supported by plastic stand-off insulators

You have the option to mount the SMA connector flush with the PCB, I chose to extend the feed line though the board by 20 mm.

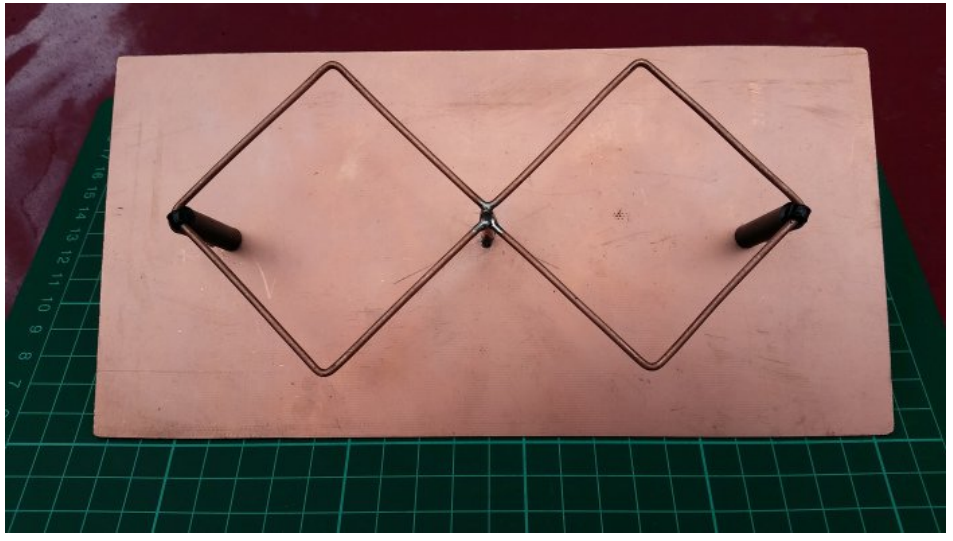
The space behind the reflector offers options for portable mounting.

For permanent outdoor mounting arrangements, you may like to enclose the antenna in a UV resistant plastic box.

23cm Bi-Quad antenna assembly finished!



23cm Bi-Quad assembly side view



23cm Bi-Quad assembly top down view

Thanks for reading this post. Good luck with your 23cm antenna construction

Post update – Thursday 28 December 2017, I used this antenna from SOTA peak VK2/ST-005 Webbs Ridge @ 1308m ASL heavily wooded by Eucalypt and Wattle trees.

With the help of Matt VK1MA located in Canberra at a distance 24 km (shadowed by a 1200 metre mountain peak) this antenna produced a 1 S-point difference over my 6el brass yagi, signal report was 5-8.

I know the test is subject to all sorts of variances including the density of the local bush scrub, rugged terrain and the potential for signal path changes, however it was useful for me to test the Bi-Quad antenna in a real world scenario.

I'm very happy with the outcome, it passed the Aussie Bush Scrub test!

The following photos demonstrate the density of the bush scrub on mountain peaks around Canberra. We have very few green rolling hills free of obstruction.

When I have the opportunity I will test the antenna along a point-to-point signal path between two distant peaks free from terrain obstructions.

My next challenge is to design and build a bracket for mounting on a camera tripod.

Published: 27 December 2017 (Last Update: 29 December 2017)

Decontis dtv tools DVB-T/S measurement, analysis and monitoring software

Written by Drew Wollin VK4ZXI

Introduction

There has been a lack of good DVB-T monitoring software for both TX monitoring and RX measurement, unlike DVB-S that has Tutioune. I came across a commercial grade package from Decontis that is relatively inexpensive and uses a cheap USB-T dongle. While comprehensive, it is not particularly easy to use, but is network-based. I have managed to get it going and plan to use it for TX power amplifier modification and monitoring. My favorite element is a proper constellation chart.

Other software and hardware

The available DVB-T measurement, analysis and monitoring software is limited. CrazyScan2 for terrestrial/cable DVB-tuners *https://sourceforge.net/p/crazyscan/wiki/Info/* uses PCTV USB tuner. The other alternative is to use a TV tuner, which gives MER and BER, but not constellation diagrams. A standalone TV installer instrument can be used, but good ones are expensive. Professional equipment is very expensive.

For DVB-S there is the excellent Tutioune:
http://www.vivadatv.org/page.php?p=tutioune-en

Decontis

Decontis dtvtools is an excellent DVB analysis and monitoring software package. It is available for DVB-T, DVB-S and others.

It is complex, commercial grade software but relatively inexpensive. *http://www.decontis.com/*

The DVB-T bundle, comprising SAMalyzer, SAMcorder, SAMitor, SAMbuddy-RF, SAManalog, SAMager-Agent, and SAMrack, is shareware and 50 € to buy. It is amazing value.

There is virtually nothing on the web on how to use it. A non-English YouTube is helpful.
https://www.youtube.com/watch?v=T08c2yv8MeI

There are manuals for each module but none are particularly useful for setting the package up for first time use.

The sequence to use it is to install everything and connect a supported TV tuner. Start SAMcorder, use default settings and read the manual, scan your local TV stations and select one frequency. Use IP stream as output. Starting services will bring up another SAM window, select one frequency/stream, open to show channels. Clicking a channel will bring up SAMitor and the TV picture. Start SAMbuddy-RF and open both links to start analysis. Click constellation and start it to give constellation diagram. Then sit back in awe if it all works!

Use other components as desired, it helps to read the manual as it is complex software.

Issues

The software is limited by the tuner in terms of bandwidth. My interest is high quality DATV on 70cm and can use 7 MHz. I use a PCTV TripleStick 292e USB that can do 6, 7, and 8 MHz.

Generally, dtvtools only supports tuners which support Microsoft DirectX BDA technology.

It is possible that the HiDes RX dongles might work as they are BDA. I quickly tried an old UT-100D with no success, but I am fairly sure it was the wrong driver. It unsuccessfully scans the device. I will investigate further later.

The software is available as a DVB-S bundle. I haven't tried it. It is hard to beat Tutioune hardware and software.

SAMcorder has an ASI input and a IP stream output which may be of interest to some.

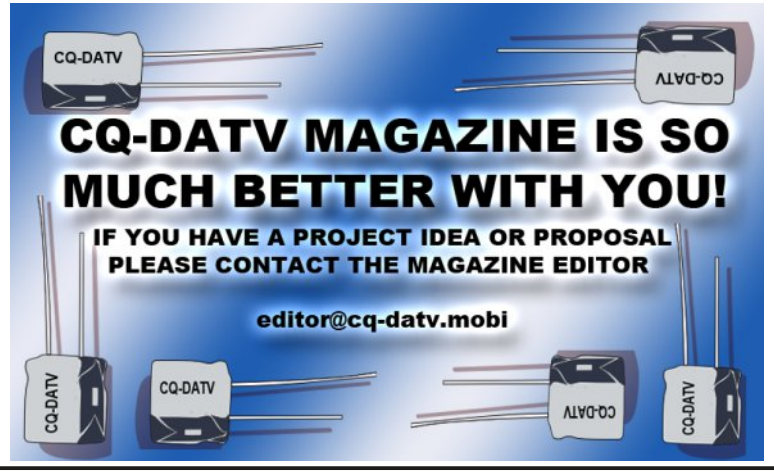
TV Tuner

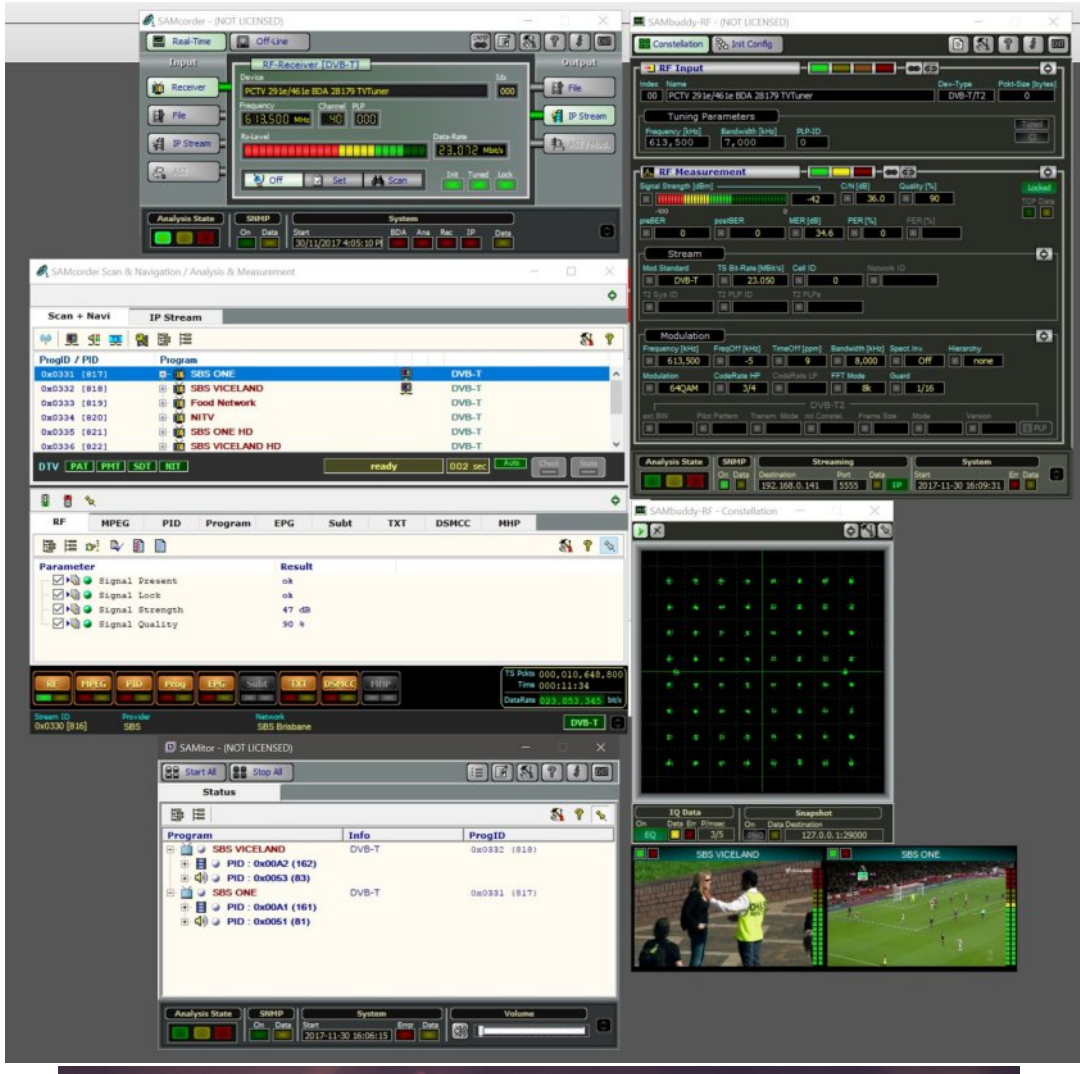
For compatible tuners see p6 of SAMbuddy-RF. Others may work. Generally, dtvtools only supports tuners which support Microsoft DirectX BDA technology.

I use a PCTV TripleStick 292e USB. It is a pretty amazing device, like most tuners, a SDR frontend.

http://www.pctvsystems.com/Products/ProductsEuropeAsia/Hybridproducts/PCTVtripleStick/tabid/308/language/en-GB/Default.aspx

http://blog.palosaari.fi/2014/04/naked-hardware-15-pctv-triplestick-292e.html





Sinclair Spectrum

Written by Dr John W Lannigan G8TDU

Return of the Spectrum

There is an old saying, "What goes around, comes around" Generally an idiom meaning that some things will come full circle. Whilst this may be true of many things, one would hardly expect this to apply to a vintage computer that many of us 'oldies' remember with fondness, our own grown Sinclair Spectrum but strange as it seems, its true.

Many years ago, during the cold war in the former Eastern Bloc, many computer designs were copied, and mass produced for the people. One of these designs was in fact the 48K Sinclair Spectrum, our first colour computer, and these clones became very popular, the same as they did in the West. The life of the clone Spectrum however, lasted much longer in the Bloc, simply because of economics.

Out of all of the Spectrum clones, by far the most popular was, and still is, the Pentagon, whose name was derived from the odd shaped corners of the PCB.

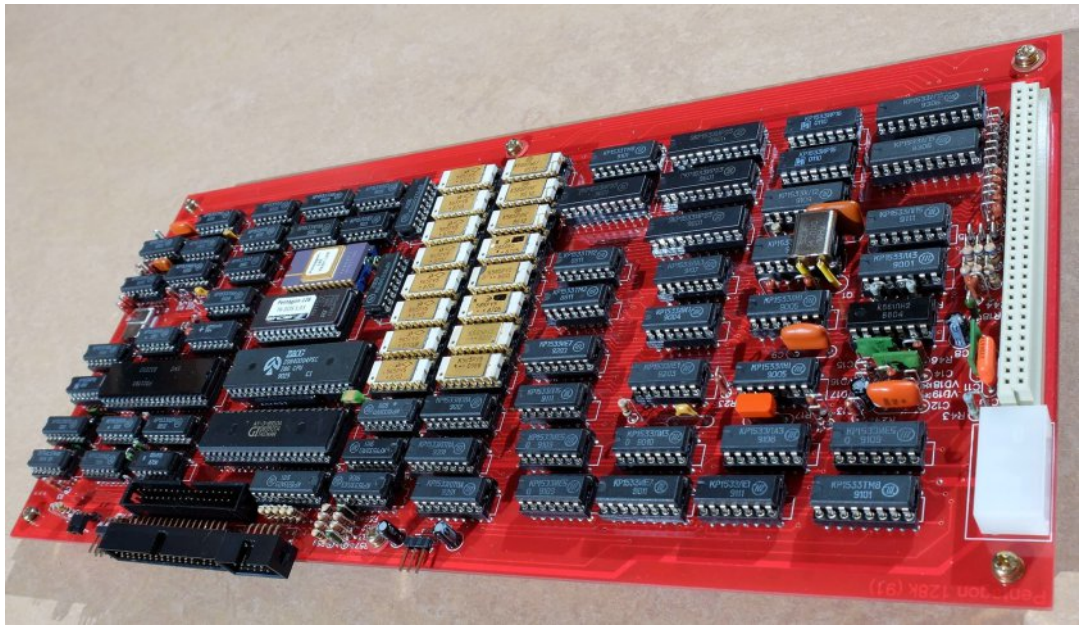
The Pentagon still has a huge cult following over in Eastern Europe, where it has undergone many revisions and upgrades, and the latest revision dates back to 2014, where this version of the Spectrum has now been given a dose of steroids and boasts a huge range of features including 128K of RAM, AY8910 sound card, better video whilst still retaining full compatibility with the original Spectrum Software and hardware add ons.

This latest version, the Pentagon 128 also fully supports Floppy Disc with Trdos, other possible options are HDD support, Centronics interface, extra extended graphics modes, real time clock, 4Mb RAM, turbo speed at double the clock, to name but a few.

When I first got my hands on my 16K Sinclair Spectrum back in the early 80's I could see many advantages and uses for it in Amateur Radio. I modified my Speccy video output by adding a buffer and stripping the sync to provide Genlock for 2 monochrome camera's. I could fade between either camera or the Spectrum video output to add colour and subtitles to my video content. I spent countless hours in the shack with a hot iron, and produced many peripheral I/O boards for my system, happy days and many fond memories indeed.

Vintage and Retro computing is becoming a big business now, and its hardly surprising to find that these original Spectrum's are now fetching well into 3 figures.

I was surprised to discover on a well known auction website, sellmyretro, that one enterprising Russian gentleman Vialiy is selling the latest Pentagon 128 kit with a full set of parts and a very professional screen printed PCB for just $99 (£71) and it didn't take me long to order one and pay by PayPal.



This Spectrum clone can be found here....

https://www.sellmyretro.com/offer/details/pentagon-128-rev.-2014-russian-sinclair-zx-spectrum-clone-diy-kit-10942

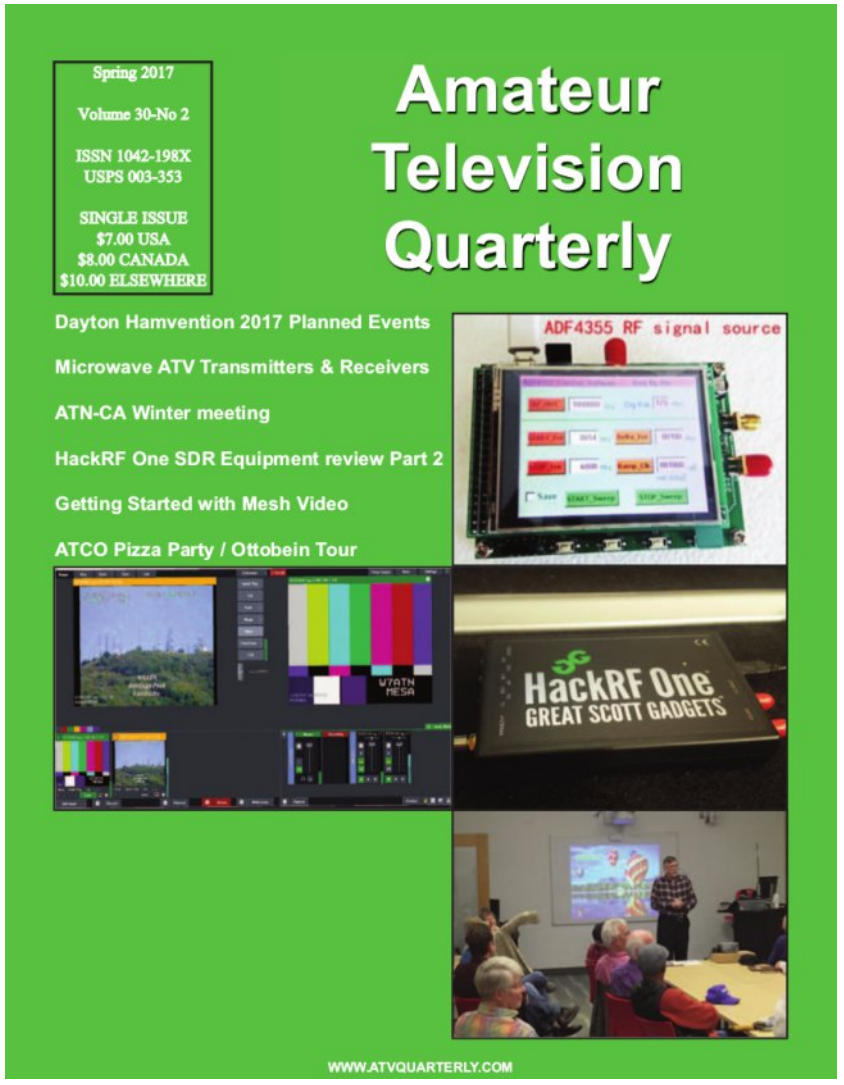
And my new support group for the Pentagon 128 on FaceBook can be found here....

https://www.facebook.com/groups/2010022152575001/

Meanwhile, I feel like a kid again, waiting for the kit to arrive. Over the next few weeks, I will be featuring the build and getting to know the computer in the support group, and maybe here.

So whilst it may be true, that what goes around, comes around, in this case, its collected a few goodies along the way.

Happy Computing.



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DATV-Express Project - November update report

Written by Ken W6HHC

The entire DATV-Express Project Team recently met by Skype and decided that there is NOT enough interest in the DATV-Express boards that have sold out to build another production batch. The project team declared an END OF SALES policy on November 28. The main reason is that lower-cost products (ADALM-PLUTO and Mini-LimeSDR) will most likely become available very soon. The Analog Devices ADALM-PLUTO SDR Tx/Rx may become available again in first week of January 2018 at a price of US$100 or US$150. The mini-LimeSDR Tx/Rx from Lime-Micro is rumored to ship in mid-January at a price of US$140. Both of these new SDR boards will be lower priced than the DATV-Express Tx-only board (US$300).

Ken W6HHC reconstructed the main mile-stones in the DATV-Express project.

- *At TAPR conference DCC 2009-October presentations, Art WA8RMC made statement that he could design a low-cost DATV transmitter board…but needed help from a software ham.*
- *In June, just prior to the TAPR DCC 2010, Charles G4GUO sent an e-mail to TAPR board-of-directors explaining he had a concept for a SDR DATV-S exciter board…but needed help from hardware hams to design PCB and build the PCBA. Could TAPR help.*
- *Mark WB9QZB of TAPR board contacted Ken W6HHC about Charles' request. Ken contacted Art about the opportunity…then confirmed the interest back to G4GUO.*
- *During TAPR DCC 2010-September presentation, Ken W6HHC announced the formation of a low-cost DATV*

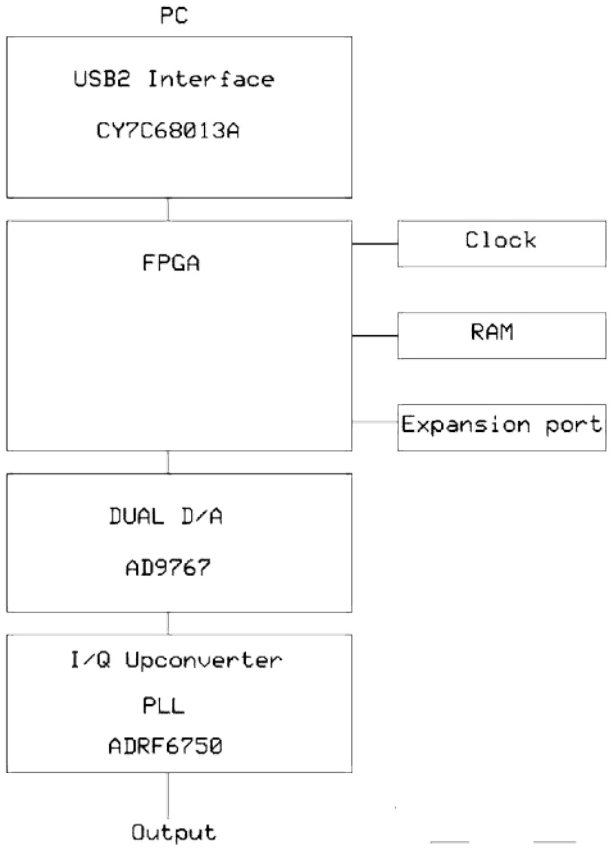

Figure01-Original DVB-S DATV-Express concept from G4GUO in 2010

transmitter project, but put out a request for a Printed Circuit Board designer. Tom WB6P responded he could help with PCB layout and files for manufacturing.

- *2010-September – first DATV-Express draft schematic (AutoCAD) was reviewed by the project team.*
- *2011- October – first prototype DATV-Express board files released to manufacturing to allow prototype testing of hardware and software to begin.*
- *2013-October – first batch of production PCBAs assembled and tested.*
- *2014-February – first software v2.01 for ubuntu O/S production-released…first DATV-Express board sold.*

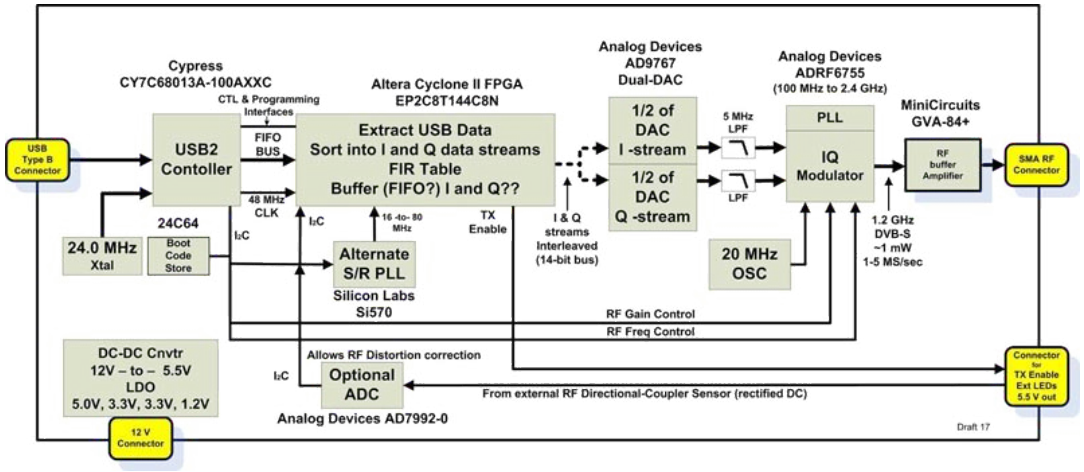

Figure02 – Final Block-Diagram of DATV-Express Exciter Board

- *2014-April – experimental software for ARM-based RaspberryPi-1 and ODROID*
- *2015-January – G4GUO was able to demonstrate power of SDR technology by adding ReducedBandwidth-DATV (RB-DATV), same hardware board...just SW changes. Not only DATV signals were reduced to <0.5 MHz, but other users demonstrated the improved S/N with narrow-BW.*
- *2016-November – first experimental software v1.19 for Windows O/S released and eliminates need for the Hauppauge video-capture dongle.*
- *2017-November – END-OF-SALES is announced. Support will continue.*

Charles G4GUO continues working on RECEIVING DVB-S2 protocol with the PLUTO-ADALM unit in Linux software. So far, Charles can now decode 1.5 MSymb/sec using an expensive CUDA graphics card from nVidia to provide hardware acceleration of the LDPC algorithm.

Note that this need for a GPU accelerator does not exist if receiving DVB-S protocol.

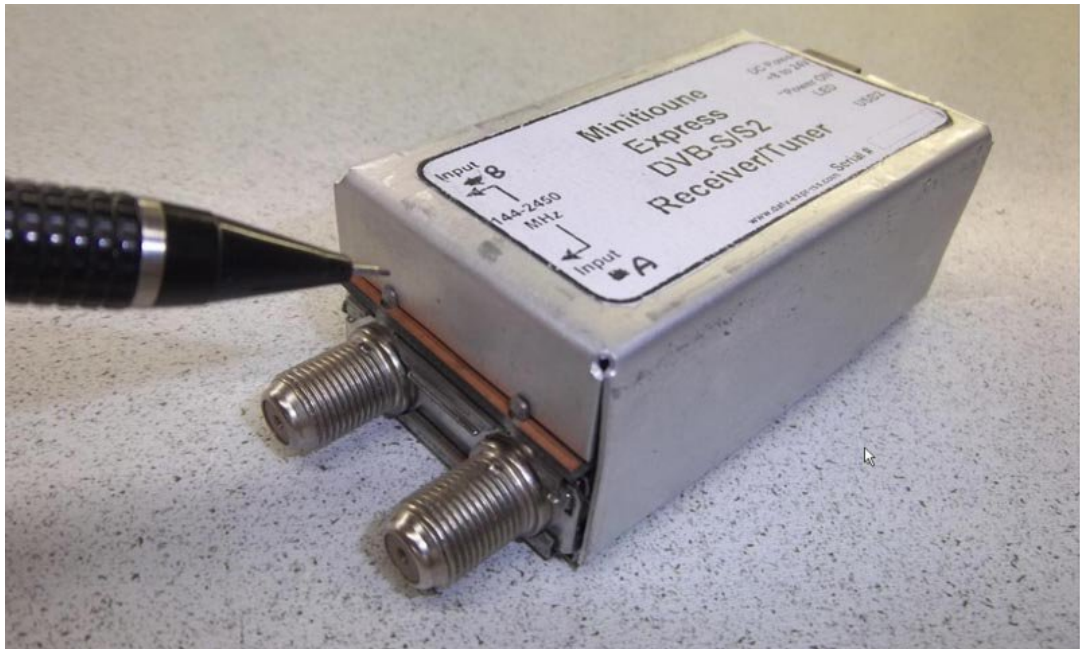

Figure03 – Mock-up of MiniTioune-Express hardware with cover

Finally, Art WA8RMC reports that the first prototype PCB blank boards have been ordered for the MiniTiouner-Express version of the MiniTiouneV2 board design have order and will be available in mid-December. The hardware is intended to use the DVB-S/S2 analyzer/receiver MiniTioune software developed by Jean Pierre F6DZP. The intent is to produce a smaller and assembled and tested version of the Serit NIM PCBA design at an affordable price.

The DATV-Express team members feel proud of the small contribution of DATV-Express boards that they made to DATV and SDR technology and ham radio. Other hams and other teams will continue to improve these ideas forward. Thank you for your support over these many years.

"Project speed set to slow" …. de Ken W6HHC

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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.

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