In this issue

Production Team

Ian Pawson G8IQU Trevor Brown G8CJS
Terry Mowles VK5TM

Contributing Authors

Trevor Brown G8CJS Richard Carden VK4XRL
Guido Giorgini IW6ATU Ken Konechy W6HHC
Klaus Kramer DL4KCK Mike Stevens G7GTN

All issues of CQ-DATV magazine are available for free download at *https://cq-datv.mobi/ebooks.php*

Editorial

Welcome to CQ-DATV 65 we are all fingers crossed for the launch of Es,hail 2, there has been a couple of hiccups both in the launch of this satellite and in the space programme in general with Astronauts having to make an emergency escape from a Russian rocket.

Just keep your fingers crossed for this launch and deployment that should enable amongst other things, DATV contacts via satellite.

Trevor has taken us a little further into the development of a video recorder, that was developed in Germany as a rival to the Ampex quardruplex machine that set the world on fire back in the late 50's early 60's.

This was called "B format" and has a lot of the features developed by the Ampex team, but with a different slant, if you will pardon the pun, as it is a format that came to be known as slant track. Trevor also has an interesting story about an engineer using lawn mower parts to repair one. I won't spoil it we have the full story in this issue.

Richard VK4XRL and Mike G7GTN have been hard at work with Digital World, where they have been using Mikes code to control Richards hardware at the other side of the world. Again I won't spoil it. We have the diagrams and the code. There will be a project for this in next months issue - stay tuned.

We have also been looking at the ATV scene in Italy, well they did win the Region 1 Contest back in June.

The results are in CQ-DATV 63 and as yet we only have the pictures from Guido IW6ATU, but they show the effort that went into this event.

Klaus has translated some of the latest TV-AMATEUR and in this issue it's an audio level meter for ATV designed by Karl Skuthan, DM2BMB and also a look at some problems with PL259 connectors and more news on Es,hail 2 which, fingers crossed, will soon be in orbit.

So as we always say sit back and enjoy CQ-DATV 65

CQ-DATV Production team

Write an article for CQ-DATV Magazine

The single rule for an article is that it must somehow be linked to ATV or one of its many derivatives, CCTV, repeaters, aerials/dishes, test equipment etc. Write your article in whichever software you choose. I would recommend LibreOffice (this is cross platform). But please spell and grammar-check it!

There is no word limit for articles, but we may split long articles across several issues. In your article, please indicate where you would like a particular image to be placed. We will try to adhere to this, but page layout may require us to move them around a bit. Please do not use any formatting in your document.

Images should be the best resolution possible and in PNG format (preferred), or JPG with low compression. Images can be embedded in the document to show their position, but must also be included as separate image files.

Please attribute anyone else involved in the article and seek their permission for us to publish it. Copyright remains with you and if anyone else wishes to reprint any of our copy they should seek your permission to do so.

Sorry, we do not pay for articles. CQ-DATV is a free magazine and distributed around the world. The library of back issues is open to all as a free ATV resource.

If your native language is not English, don't worry. We will translate your copy using online translation software and then one of the proofreaders will smooth it into English and correct any grammatical or spelling errors that these translation services sometimes create.

When you are ready to submit your article, please email it to: *editor@cq-datv.mobi*

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/*

Nick Gregory G0HIK reports:-

Myself Nick G0HIK and Chrs M0KPW, worked newcomers to 6cms (but experienced ATV's) Dave G3ZGZ, Ted G4MXR and Bob G1EPL.

It was great to work some new stations, P5 signals both ways with all stations,over the 40km path from Blackpool to Ulverston Cumbria.

We are always happy to work new stations and try new paths.

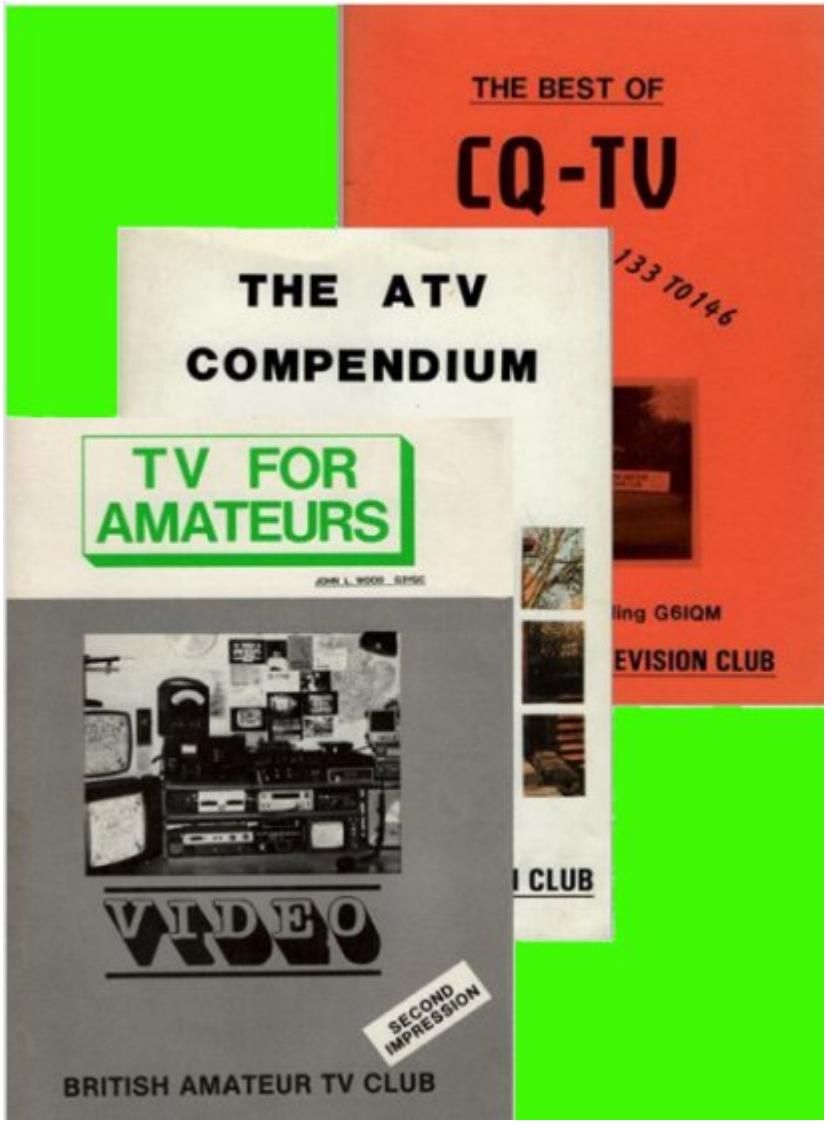
Source: British Amateur Television Club (BATC) facebook page.

DATV-Express Project

If anyone is using a LimeSDR-USB on any frequency or a LimeSDR-Mini above 2 GHz you need this:-
https://www.dropbox.com/s/u8irxtjz5j3qj39/setup_datvexpress_transmitter1.25lp11.zip?dl=0

Thanks to John G4BAO for reporting the problem and testing it for me. **Charles G4GUO**

All our yesterdays



Thanks to all the people who have loand us copies of old ATV books, they have now been scanned and converted into PDF files. These are available for download from our web site *https://cq-datv.mobi/ebooks.php#vintage*. They are also available on the ISSUU site for online reading. They are old and the chips may be obsolete, and any PCB's long gone, but they are part of the spirit of ATV.

Contest

Starting on Boxing Day (26th December) and running through to 2359 UTC on New Year's Day we are organising the BATC Winter ATV Repeater Contest.

This will run over the 7 days when most people are able to get in the shack and will have a simplified structure with scoring based solely on distance from the transmitting station to the repeater at one point per kilometre. This system will also allow receiving via a stream feed to be a valid contact that will generate points for the transmitting station.

You are allowed to claim one QSO on each band with every station per day worked, so if your repeater has two inputs on different bands you can work the same station twice on the same day if you use both bands. And you can get valid points from working the same stations every day!

A certificate will be awarded for the station with most points and the runner up plus we will be awarding a £50 prize to the repeater group who saw the most claimed contacts through their repeater. The contest rules and more details which be posted on here and on the activity web page *https://batc.org.uk/contests/*.

Clive G3GJA BATC contest manager.

Do you have some news we can put in this column?

If you have a news item or club news/information that you would like to present in his column, please email it to the editor at *editor@cq-datv.mobi*

Remember, we publish the last Friday of the month before the month of publication, so get it in early.

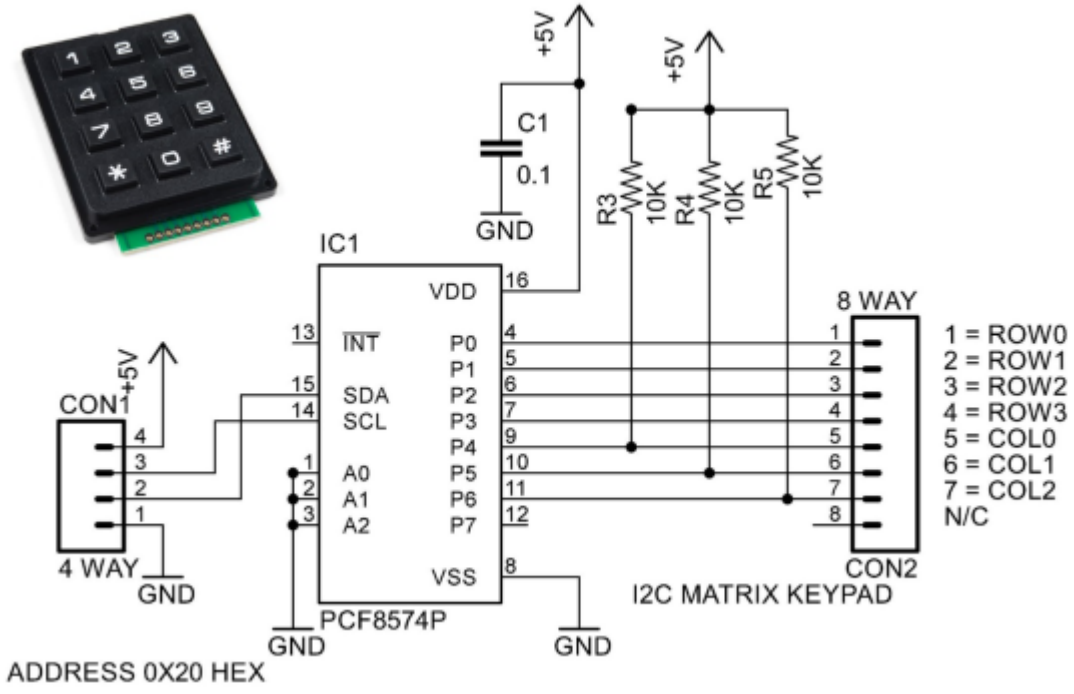
Check out the DKARS website at:-
http://dkars.nl/

Digital World - Switcher Key Pad Interfacing

Richard Carden VK4XRL & Mike Stevens G7GTN

Introduction

In this article we have moved on from the control methods we have used so far and have removed the remote contol operation and If your like me I prefer to use push buttons to do the job. Some of this has been looked at in recent articles but this time we are going to use I2C serial data to perform the function.



As we already have serial operation with the LCD and clock its very easy to add another fuction to the SDA and SCL contol lines. To do this we could use a PCF8574P as per the circuit shown.

However we decided on using an I2C add on board as used for a piggyback board for the control of an LCD.
Looking on the internet for information re the configuration required to use this already made board was not easily forth coming.

The first issue turned out to be that port (P3) on the PCF8574T backpack is used to drive the backlight control transistor. We got over this port issue by changing the call to the keypad library. This is depicted in Figure 2

```
// Matrix keypad, bit numbers of PCF8574 I/O port
byte rowPins[ROWS] = {0, 1, 2, 4};      // Connect to the Row pinouts of the keypad
byte colPins[COLS] = {5, 6, 7};         // Connect to the Column pinouts of the keypad

Keypad_I2C kpd( makeKeymap(keys), rowPins, colPins, ROWS, COLS, I2CADDR, PCF8574 );
```

FIGURE 2

So we can dictate what port pins on the device are used for our available hardware implimentation. So the physical connections on the LCD Modules 16 pin header are as depicted in Figure 3 - You may also need three 10K resistors to pull-up the column pins to +5V – Note I have had totally reliable operation without using these.

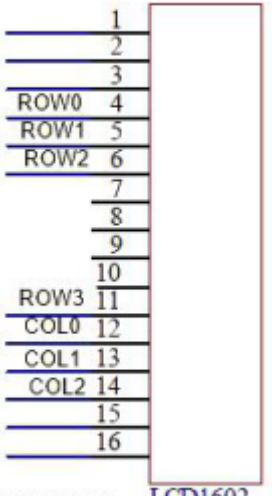
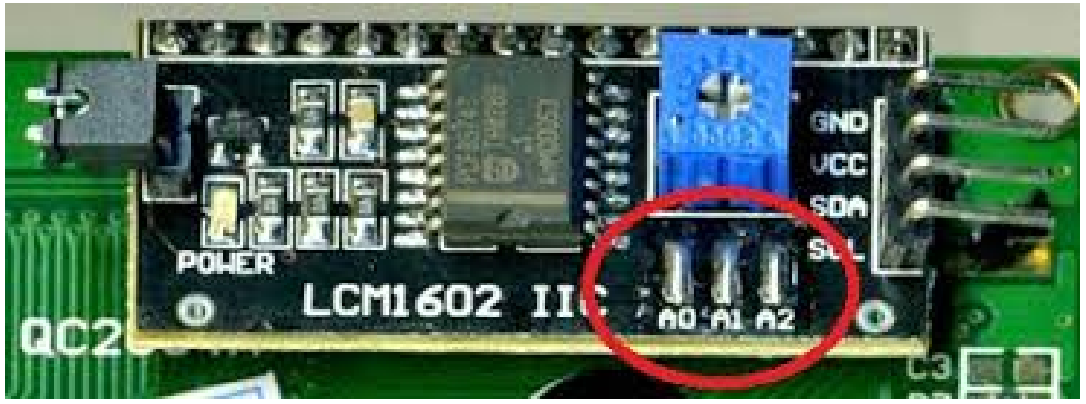
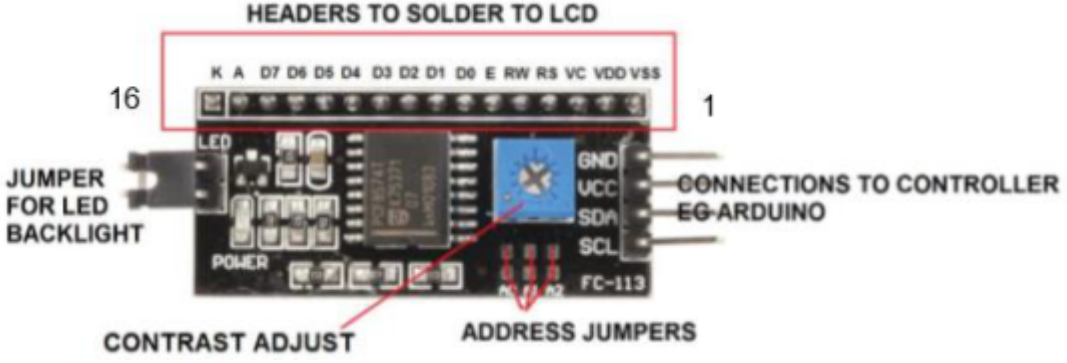


FIGURE 3



The hex code for it was made (0x20) by shorting the (A0-A2) solder pads found near the potentiometer. In our application the pot has no actual control function.

To get the units operation checked out a simple (4x3) matrix switchpad and with some software quickly written for testing before moving on to the actual video multiplexer control project.



As a footnote to this it has been noted that dedicated I/O expansion boards are now available to just do what the above LCD board can do. These might make for an easier addition with one of the flex based female keypads attached directly on to the male pin header. If you get in-correct keypress results you have connected the pad the wrong way around, reversing will fix this quickly.

In the test code a note is made of the different port pin layout if you wish to go this route.

Test Software

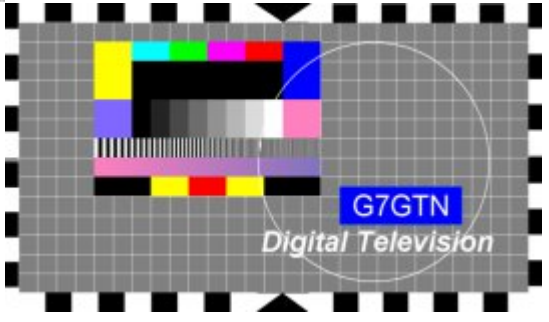
We need to download and correctly install an additional Library for our Ardunio IDE, the main being for the Matrix Keypad. The Liquid Crystal I2C Library should already be installed by default in your IDE.

You can go directly to the gitHub source for the keypad library by following the link provided. Once installed re-start the Ardunio IDE and load our simple test code from kpdtest.zip from the *CQ-DATV downloads page*.

With this uploaded each separate button press will now display the reqresite character on the connected I2C display.

References

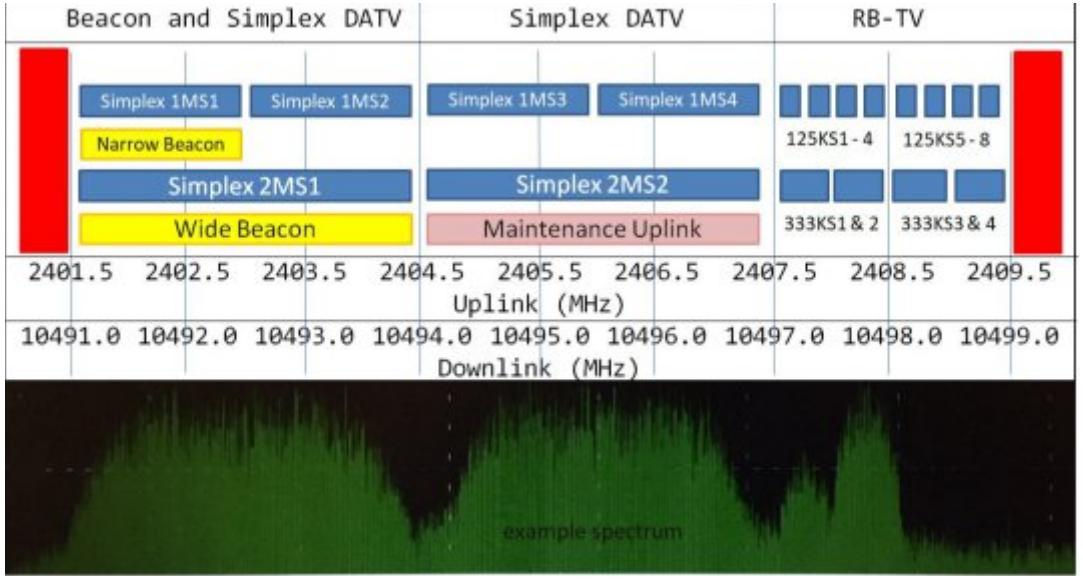
https://github.com/Chris--A/Keypad



P4-A WB Transponder Bandplan and Operating Guidelines

AMSAT-DL
Satelliten für Kommunikation, Wissenschaft und Bildung
Satellites for Communication, Science and Education

The following operating guidelines and proposed bandplan are designed to enable the most efficient use of the 8MHz wide transponder for all users. It is expected that these initial guidelines will be further developed after commissioning.



Coordination

Due to the very large number of variations of transmission parameters, it is essential that all users notify their transmission parameters on the co-ordination chat room page that has been established by AMSAT-DL and the BATC at << soon >>

Transponder Usage

As a general principle, the transponder should be only be used for short-duration tests and contacts.
The only long duration (more than 10 minute) transmissions should be:

- *The TV beacon channel uplinked from Qatar or Bochum.*
- *Video of the live proceedings of AMSAT and Amateur TV Lectures and Conferences of wide interest. Examples might include:*
  - *National AMSAT Conferences*
  - *National Amateur TV Conventions*

The following content is unacceptable:

- *Recordings of events, or broadcast of events not explicitly concerned with Amateur Satellites or Amateur TV*
- *Transmission of any copyright material (such as movies or TV channels)*
- *The relaying of terrestrial Amateur TV Repeaters is discouraged unless the content is of exceptional amateur radio interest.*

Transmission Power

All uplink transmissions should use the minimum power possible. No transmissions should have a downlink signal with a higher power density than the Beacon – the web-based spectrum monitor will enable users to set their uplink power to achieve this.

Transmission Modes

Transmissions should use DVB-S2 where possible. For normal standard definition transmissions, 2 MS is the maximum symbol rate that should be used.

To enable easy decoding PIDs should be set as: Video 256, Audio, 257, PMT 32 or 4095, PCR 256 or 258. Service Name should be set to CallSign. PMT PIDs 4000 – 4010 should not be used. Users are encouraged to experiment with higher-order DVB-S2 modes at lower symbol rates (for example 333 KS 32APSK) to conserve bandwidth for other users.

On Wednesdays (UTC time), experimenters are encouraged to try other modes – perhaps 6 MS using the whole transponder for brief (less than 10 minute) periods. It is essential that users to announce their plans on the chat room page, and to always monitor it.

Beacon

The beacon will initially run 24/7, but it is anticipated that, as more users become active, this will be reduced to a shorter period every hour.

Initial bandplan

1. The maintenance uplink will only be used very occasionally, but users are requested to give it absolute priority when notified.

2. DVB-S2 users are requested to use the steepest roll-off that their equipment is capable of to reduce the possibility of adjacent channel interference.

3. Recommended spot frequencies for various usages and symbol rates are listed in the table opposite.

4. Uplink 2401.5 – 2409.5 RHCP, Downlink 10491 – 10499 Horizontal.

Role	Symbol Rate	Uplink Freq	Downlink Freq	Designator	Notes
Beacon Wide	2MS	2403	10492.5	2MS1	Initial Beacon Mode
Beacon Narrow	1MS	2402.25	10491.75	1MS1	Possible future beacon mode
Simplex	2MS	2403	10492.5	2MS1	Only available outside beacon hours
Simplex	2MS	2406	10495.5	2MS2	
Simplex	1MS	2402.25	10491.75	1MS1	Only available outside beacon hours
Simplex	1MS	2403.75	10493.25	1MS2	Only available outside beacon hours or when beacon is in narrow mode
Simplex	1MS	2405.25	10494.75	1MS3	Only available if 2MS2 not in use
Simplex	1MS	2406.75	10496.25	1MS4	Only available if 2MS2 not in use
Simplex	333KS	2407.75	10497.25	333KS1	
Simplex	333KS	2408.25	10497.75	333KS2	
Simplex	333KS	2408.75	10498.25	333KS3	
Simplex	333KS	2409.25	10498.75	333KS4	
Simplex	125KS	2407.625	10497.125	125KS1	Only available if 333KS1 not in use
Simplex	125KS	2407.875	10497.375	125KS2	Only available if 333KS1 not in use
Simplex	125KS	2408.125	10497.625	125KS3	Only available if 333KS2 not in use
Simplex	125KS	2408.375	10497.875	125KS4	Only available if 333KS2 not in use
Simplex	125KS	2408.625	10498.125	125KS5	Only available if 333KS3 not in use
Simplex	125KS	2408.875	10498.375	125KS6	Only available if 333KS3 not in use
Simplex	125KS	2409.125	10498.625	125KS7	Only available if 333KS4 not in use
Simplex	125KS	2409.375	10498.875	125KS8	Only available if 333KS4 not in use

Source: *https://amsat-dl.org/p4-a-wb-transponder-bandplan-and-operating-guidelines*

Es'hail 2 Launch

SpaceX's eighteenth mission of 2018 will be the launch of Es'hail 2 to a Geostationary Transfer Orbit for Es'hailSat, the Qatar Satellite Company. It will also feature an amateur radio payload.

The new satellite will be positioned at the 26° East hotspot position for TV broadcasting and significantly adds to the company's ability to provide high quality, premium DTH television content across the Middle East and North Africa. It will feature Ku-band and Ka-band transponders to provide TV distribution and government services to strategic stakeholders and commercial customers who value broadcasting and communications independence, interference resilience, quality of service and wide geographical coverage.

Es'hail 2 will also 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 third of the earth's surface.

The Qatar Amateur Radio Society and Qatar Satellite Company are cooperating on the amateur radio project. AMSAT-DL is providing technical support to the project.

In September 2014, a contract with MELCO was signed to build the satellite based on the DS-2000 bus. In December 2014, a launch contract was signed with SpaceX to launch the satellite on a Falcon-9 v1.2 booster in late 2016, but was delayed to the 3rd quarter of 2017 and then to 2018. (img,, alt: 2018-10-20_1442 src: ../Images/2018-10-20_1442.png)

Liftoff currently scheduled for: November 14th 2018, TBA UTC (November 14th 2018, TBA PDT) - Payload: Es'hail 2

Source:
https://www.reddit.com/r/spacex/comments/9p82jt/eshail_2_launch_campaign_thread/

Spark Plugs to Video Tape the BOSCH Way

Written by Trevor Brown G8CJS

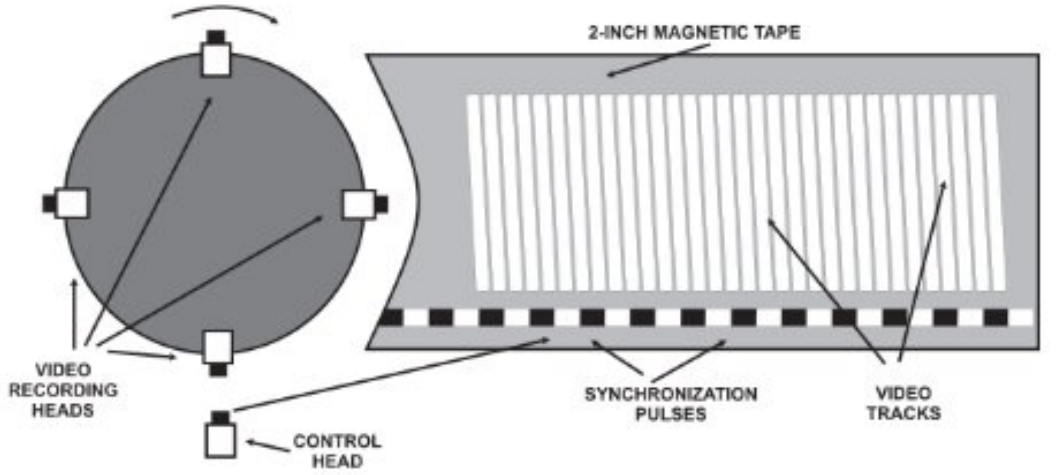
In the last issue I explained Ampex's contribution to Television, in that they were the pioneering force behind video recording, they had proved it could be done and some of their building blocks stood the testament of time. Video recording progressed, the external racks of the VR1000 disappeared, colour TV came along and was absorbed into the technology alongside editing, which progressed from physical splices to electronic editing.

The first being "Punch and Pray", where you had to press the record button 1/2 a second before the edit point. Not the best way to spend a Saturday night assembling a football match for transmission that same evening. Edit too early and you had to go back and remake the previous edit again, if not the one before that. This was known as working your way back to the line up (the colour bars recorded at the head of the tape).

One good thing that came out of electronic editing was the door it opened into a whole new industry of electronic edit controllers, such as CMX, EDS, and EECO all working under time code and allowing edits to be previewed before they were performed.

This changed the way video was shot, from complete one take recordings, to small individual scenes E.G. film style shooting. This bred a whole new level of confidence into production staff, with a frequent expression of "it's ok we will sort it out in VTR", often heard on the studio talkback.

The downside of this emerging industry was the cost of the VTR machines, they were not just time shifting programmes they could do so much more.



Quad format, stop the tape and you have a 17 line track in front of the head drum E.G. no freeze frame, no pictures in shuttle and no slo-mo before you ask

What Ampex had achieved was the video head, the use of FM modulation, a control track and proved the need for a head speed approaching 80 MPH, which was achieved with moving heads, fixed head machines like Vera were a non starter.

The downside was the format, it had a complex mechanical transport that needed to be precise in order for tapes to be interchanged between machines. This knocked on into the complex servos.

Let me explain the simple analogy of velocity and phase. Two cars on the motorway. If they have the same velocity (speed) they could or could not be side by side, lets assume not, the servo has achieved velocity lock, they are at the same speed.

Now we want phase (EG side by side) so we check their positions and create a velocity error, either the rear car is speeded up or the front car is slowed down.

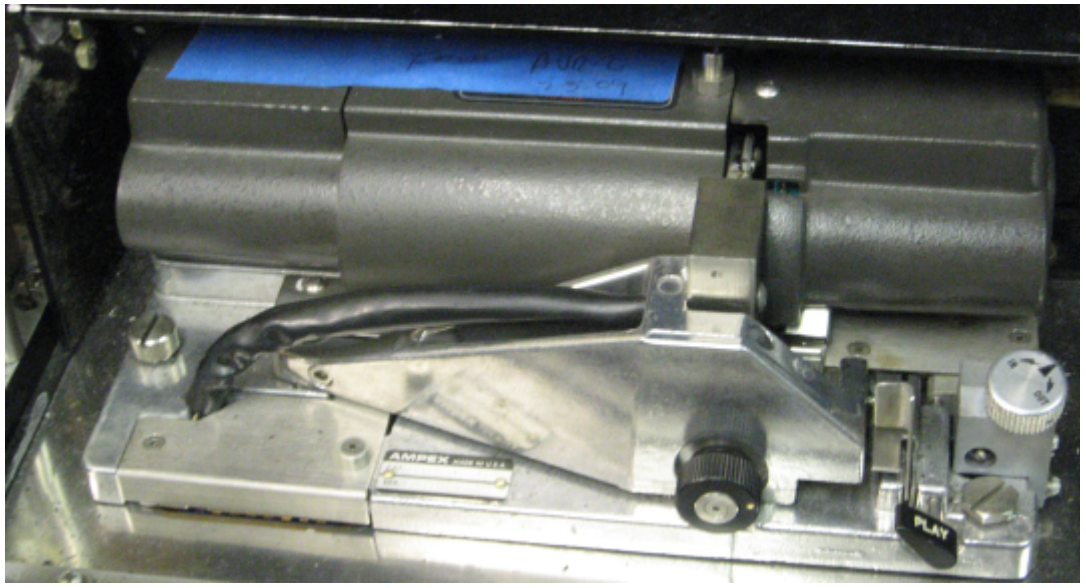
We check for phase until the two cars are detected side by side and switch to a phase servo in order to keep them there. If we have a small phase problem, then the phase servo corrects it, a big problem means we have to perform a velocity adjustment to get them side by side and then go back into phase lock.

This is a TV signal that needs first of all four field colour lock, to get the PAL sequence correct, so it matches the external reference along with all the studio cameras, this is done by looking at the control track and driving the capstan servo so the correct video band is in front of the head at the correct time, then switching to tape video signals, and speeding up or slowing down the head wheel to slide the line sync pulses into synchronisation with studio line sync. Pray it keeps lock or we get a large picture disturbance, particularly if it has to repeat from control track lock back up into full colour lock (Pixlock as RCA called it), the expression "never mind the levels VTR, just stop it rolling over" still stay with me and the last Quad I touched was 15 years back in Kuwait City.

Last but not least remember a servo only works by measuring the error, deciding on a speed up or slow down requirement, delivering the command and then checking to see where you are, so the video will always jitter around the correct position, this is due to mechanical inertia of the head wheel, amongst other things.

The jitter is removed by a variable delay line in the signal path to increase or decrease the delay electronically (Time Base Corrector). This smooths out the errors and produces a stable video signal that can be mixed with all the studio cameras (a real headache with the quad format).

The delay line was initially analogue and had a small window. Ampex progressed this to a digital TBC that was rather elegant and increased the window considerably (another first).



A Quad head assembly, needs a rework every 300 or so hours cost around £1000 depending on hours. Every machine needs at least two head panels as down time was never an option

RCA tried it for their TR600, but without much success, it was digital error detection, but analogue correction.

The Quad format also required compressed air for the head bearings and a vacuum pump to hold the tape into position in the female guide. A head wheel assembly that had to go away every three or four hundred hours for a rework.

Let's say it left some room for improvement, particularly the complex and expensive head wheel panels. The Bosch company in Germany, had been producing Ampex quad VTR machines under license for some time and thought they could design something better.

They harvested all that worked in the Ampex design, FM modulation, control track and moving heads to get the tape speed up, but designed a different transport that was given the recording format name "B format".

Both are B format machines, it's not fair to compare them with the VR1000 as they are of a much later period, but show what video recording evolve to, using the same basic building block that Ampex created back in the late 1950's

Bosch came up with a simple transport design that had all the advantages of Quad and removed a lot of the disadvantages. Like Quad it evolved from a humble machine to a rather sophisticated machine, it died along with quad when C format came along, but that's another story.

The B format head disc was a similar diameter to the quad, but there were only two heads on the disc, the tape wrap was 190 degrees, so one head was always in contact with the tape.

One head scan was 52 TV lines at an angle more along the tape. This head disc was removable and overcame head panels needing to go away for service. It could be replaced by the users, with no complex alignment procedure, there was no compressed air, or vacuum pumps required.

The tape was only 1", but had three longitudinal audio tracks, two audio and one Linear time code. The FM was better performing in PAL countries, (The quad chosen FM frequencies were fine for NTSC, but their PAL equivalents caused moiré).

We now have a machine that was developed in a country that invented magnetic recording and was the home of PAL, so it had a lot going for it. It never replaced Quad, it lived along side. It was a much simpler machine and was often favoured by countries moving late into television and was a pleasure to operate and proved very reliable.

Bosch engineering was very popular in broadcast television, total turnkey solutions were possible as they made everything from some very respected vision mixers right through to sync generators and everything in between, they had some design philosophies that other companies did not, they tried hard never to reinvent the wheel across their products.

This showed in the fact that camera's and VTR's had the same cards in places, so some camera modules could be used to isolate VTR problems and vice versa. This philosophy extended beyond modules to parts of modules E.G. the design of a sync separator, would be the same in any Bosch appliance, requiring this circuit configuration.

I always suspected they had a database library of modules and CAD as the PCB design was the also the same.

Can you take this too far?

There is a story that a Bosch field engineer working in a remote African country, trying to get a Bosch B VTR machine working, found the spool motor to be defective and when one was not available, he went to the local hardware store, bought three different Bosch electric lawnmowers, took them back to the TV station removed the motors and compared them with the faulty VTR motor and found that one was identical and fitted it, the machine worked.

Perhaps the best example of not reinventing the wheel. He probably saved a fortune as TV kit is expensive, as there is a lot of R&D costs to recover, three lawnmowers was probably a cost saving. I never found out if he got to keep the other two.

Yes I have spent many a happy hour in the Bosch factory in Darmstadt, mostly working on acceptance testing equipment prior to it going to the UK.

Happy days and some brilliant engineers, who were a pleasure to work with. I was there the day the BOSCH sign came down to be replaced with a BTS sign (Television Politics), no I do not have a picture, we could start a library, as RCA Jersey, in the channel Islands and then the HQ in Camden New Jersey, went the same way, not to mention Marconi and EMI in the UK.

B Format Transport, stop the tape and the head see 52 lines so no freeze frame, but the did have Slo-Mo on the later machines, you had to move the tape back and forth and fill in the gaps from a field store. One fifth speed only like it or leave it

https://www.youtube.com/watch?v=PTUdHncIbq8

https://www.youtube.com/watch?v=VUy--fz6zCA

https://www.youtube.com/watch?v=9bNmsKBqFPQ

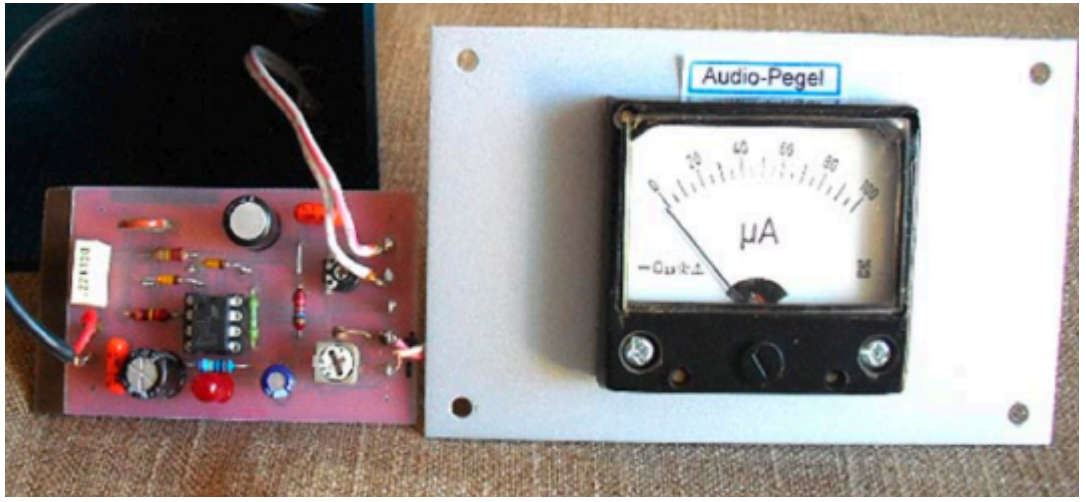
https://www.youtube.com/watch?v=fpBRuheelu4

B format scanner, no female guide, no compressed air, no vacuum required, user replaceable heads. I have fitted many without a problem. Note the tape path shown by it's polished path

Very Late model B format machine

Audio level meter for ATV stations

(Karl Skuthan, DM2BMB)



Anyone who is frequently qrv in an ATV net - like me - will notice that the audio signal strength of the participating stations is very different.

To get an even reception volume, you always have to adjust the audio signal level. The constant, often annoying readjustment when receiving different ATV stations could be eliminated if every QSO participant could easily control his audio level himself at any time.

Therefore, each ATV station should have such an audio level meter for transmitting level control. DC9MD and DH4ATV recognized the problem, developed an audio level meter together and published the circuit for self construction in 1998.

I built this audio level meter in 2008. Since then it is firmly integrated in my ATV system. Since the corresponding PCB layout was not available, I first had to draw and make a printed circuit board.

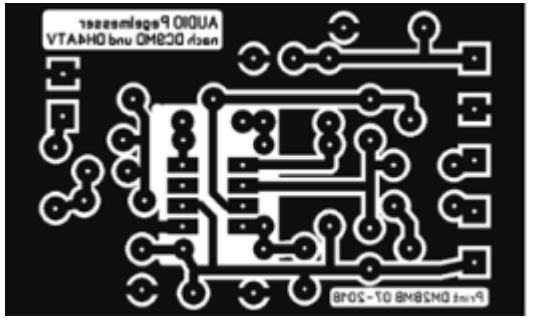
SMD components have been omitted to simplify the reproduction. All information necessary for the construction of this helpful device is provided in this article.

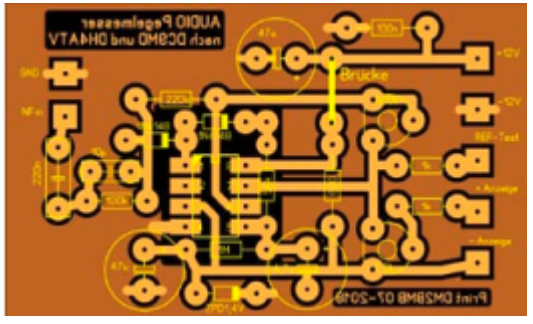
The used housing Teko P2 with the dimensions 110x70x40 mm is available at electronics dealers. The printed circuit board in the dimension of 39x66 mm has the suitable size for it.

The circuit input is designed with high impedance in order to not overload an additional Audio output on the satellite receiver connected in parallel. The modulation level can also be controlled on the received return signal of the ATV repeater. To one' s QSO partner one can now give back the exact audio level read off.

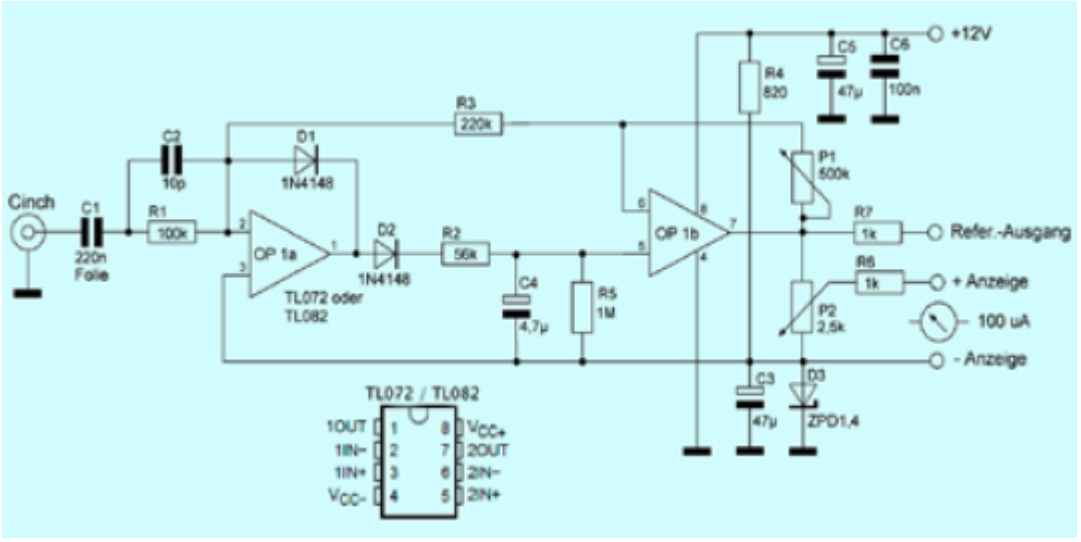
The circuit represents a full-fledged NF peak voltmeter with a frequency range from 20 Hz to 20 kHz with an adequate accuracy of ±3%.

Audio signals from 50 mVpp to 5 Vpp sine are converted into an analog DC voltage, which can now be displayed with a suitable instrument. The calibration is carried out with the potentiometer P1. At 1 kHz / 500 mVss sine at the reference output with potentiometer P1 a DC voltage of 1 Volt is set.

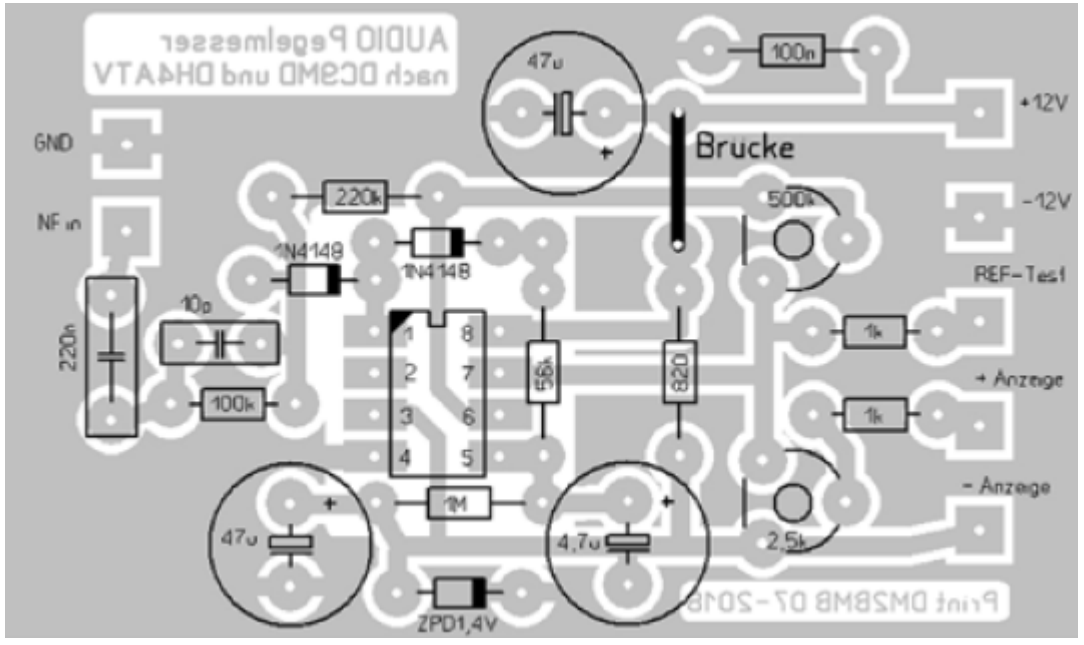




PCB and assembly layout. The illustrations are enlarged, the original is only 39 x 66 millimetres



Circuit diagram of the audio level meter at my ATV station



Arrangement of the components on the component side

In order to display speech and music levels with the indicator instrument, the peak value is stored for a period of time. The storage time can be set with C4 and R5 individually.

At the output for the display, the P2 potentiometer and possibly R6 can be used to set a suitable instrument to any deflection required for full scale output.

Here is another note: for the ZPD1,4 (D3) diode, two 1N4148 can be connected in series as replacements. In general, the full audio volume must be set on the satellite TV receiver.

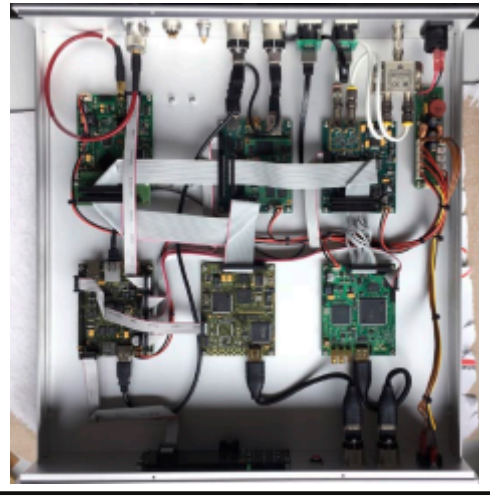
Es'hail-2 (P4-A) current status

(Jens Schoon, DH6BB)

For a long time the radio amateurs had to wait for official news about the current state of Es'hail-2 with the amateur radio payload P4-A. In the past months there were rumors and (wrong) announcements about the start date, official sources but held back. Nevertheless the signs for a start in 2018 evolved. On 31.07.18 Es'hailSat then reported on the news service Twitter short and sweet: "Es'hail-2 will be launched in Q4 2018".

Shortly before, from 23. to 25.7.18, some members of AMSAT-DL met for the integration workshop for the control ground stations, which will be built up in Qatar and Bochum, Germany.

Among other things, the 19" plug-in units for "LEILA-2" (LEIstungs Limit Display, 2nd generation) together with the Up- and Downconverters are now ready for shipment.



The 19"-rack "DATV" for the control ground stations could already be admired for a short time at this year's HAMRADIO.

Last hardware works have also been completed in the meantime.

A band plan for the broadband transponder is currently in coordination between the project members. This should at first provide for a little order on the satellite. So there will be a beacon at the low end of the band with continuous loops of information videos. For the rest of the band there will be "preferred operating parameters". As there is no experience so far with such a transponder in orbit, it may happen that this band plan will be adapted after initial findings have been collected.

Even if the launch of Es'hail-2 should take place shortly, some patience is still needed. After the launch the satellite has to be positioned to its final geostationary position of 26° East. This will take several weeks up to a few months. During this time the ground station in the SCC (Satellite Control Center) carries out various tests with the satellite, the so-called "InOrbit Verifcation". Only when all systems, including the amateur radio transponder, have been tested, P4-A will also be activated.

Before an official release any transmission attempts in the direction of Es'hail-2 must be avoided! Only Es'hailSat (Quatar) or AMSAT-DL can be regarded as official sources. Before the beginning of the winter season your antenna system should be made fit for the reception of (or the transmission via) P4-A. If you are interested in the latest informations at first hand: the AMSAT-Symposium on Saturday, 29.9.2018, will be held in the Radome of the IUZ (Institute for Environmental and Future Research) in Bochum.

The event is also free for non-members.
The sight of the 20 m parabolic dish in the radome alone is already worth a visit. Find more info on the AMSAT-DL website at *http://www.amsat-dl.org*. There is a menu item "Es'hail-2 (P4-A)" with a presentation of a lot of information.

Quality of angle adapters
(Klaus Welter, DH6MAV)

Who has ever thought about what it might look like inside coaxial angle adapters or angle plugs? It's easiest with angle plugs that have a bonnet at the knee which has to be removable anyway. Below, inside, the coax soul is soldered by the radio amateur to the pin of the plug or socket. But also with angle adapters (also angled connectors), especially for BNC, a cover can be seen at the knee. There the coax pins of socket and plug were soldered or welded in the factory.

If one attends to the HAMRADIO, here the flea market of the fair, angle adapters are noticeable, who do not have any opening at the knee. You should not trust it as my subsequent experience shows.

I ordered at the German mail-order distributor Reichelt two angle adapters; in this case for UHF (PL). The pin of the socket leans inside only with pressure against the pin of the connector, that was easy to find out. Everybody can try it for himself: You take a screwdriver and insert the slender blade into the feathering (in the fine slits) of the socket. Now you can turn the pin around easily. How might the damping over the frequency range look like and how does that sloppy contact behave at higher transmitter powers?

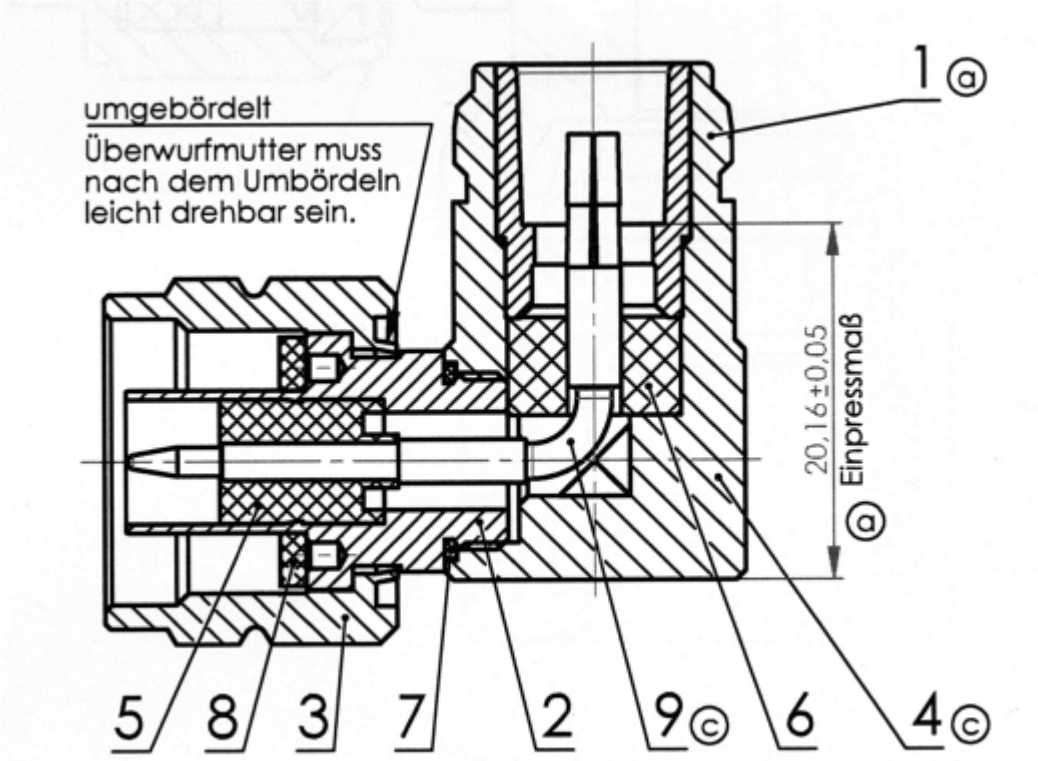
I wrote the facts to Reichelt and asked for a replacement. I also recommended the "Screwdriver Test" before shipping. The reader estimates properly: I got the same trash.

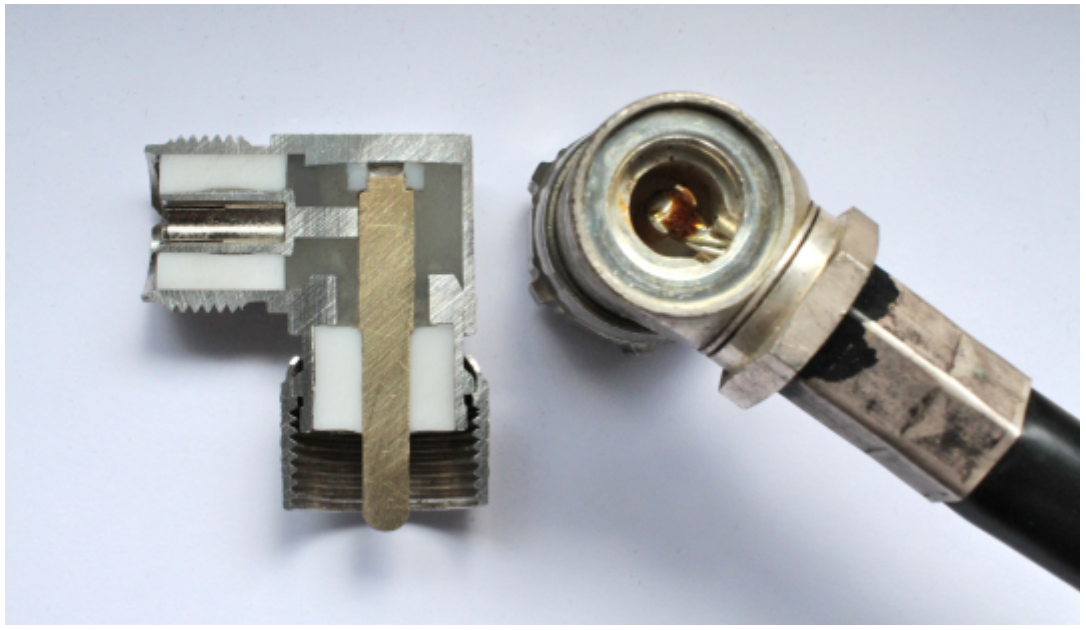
Off to the rubbish bin with it! The parts were as cheap as dirt that it should not surprise. It's not that there aren't also correct factory solutions, for example from the Telegärtner company
https://www.telegaertner.com/en/info/catalogue/coax/?IdTreeGroup=3000203762

I described the matter to this company together with a photo of my mechanical cross section. Telegärtner suspects the Reichelt angle adapter as of China origin.

The German manufacturer showed me in writing, how important the high-frequency technical compensation in the 90° bend is in order to obtain the 50 Ohm impedance. Furthermore, I was given a diagram for an N angle connector that shows the care and attention in the production process. Not an easy undertaking and yet: Even at 5 GHz Telegärner produces a backflow damping of approx. -30 dB. Telegärtner even succeeds in making a 90° connection with N angle connectors as a clean bridge without soldering from outside.

Thank you to Karl Gärtner GmbH for information and drawings.





A cut with the mitre saw reveals the scrap content of the estimated China UHF contra-angle handpiece on the left. (For taking the pic the adaptor was filled by rasin compound.) The commercial cable soldering on the right, here shown on an older angular connector, is fine.

Left: Excerpt from Telegärtner's technical drawing. The safe bridge between the m- and f-pin is clearly visible in the N angle connector.

Translation by Klaus, DL4KCK *www.agaf.de*

How to win an ATV Contest the Italian Way

Guido Giorgini IW6ATU has supplied some pictures from the June 2018 IARU Region 1 contest in Italy.

Guido commented that he would like to thank all those who participated in the contest and hopes that they will send in their logs.


IARU –R1 ATV contest
09-10 Giugno
2018

DATV-Express Project

Written by Ken W6HHC

Art WA8RMC is preparing for a production build of a new version of MiniTiouner-Express units called "Rev B". The small design change allows a push-on jumper to select either (a) allow external power supply to feed voltage to the board and any LNB or (b) to have the hardware unit powered by the 5V on the USB-3 cable.

The shipment of 100ea Serit tuners is expected to arrive around October 10. The world-wide inventory of remaining "Rev A" units is quite low…and might run out before the newer units are assembled and fully tested.

Charles G4GUO has fixed one bug for PLUTO units with the v1.25LP10 software release. One user of the v1.25LP10 software (John G4BAO) discovered that there is a coding design problem with the LimeSDR-USB and LimeSDR-mini units.

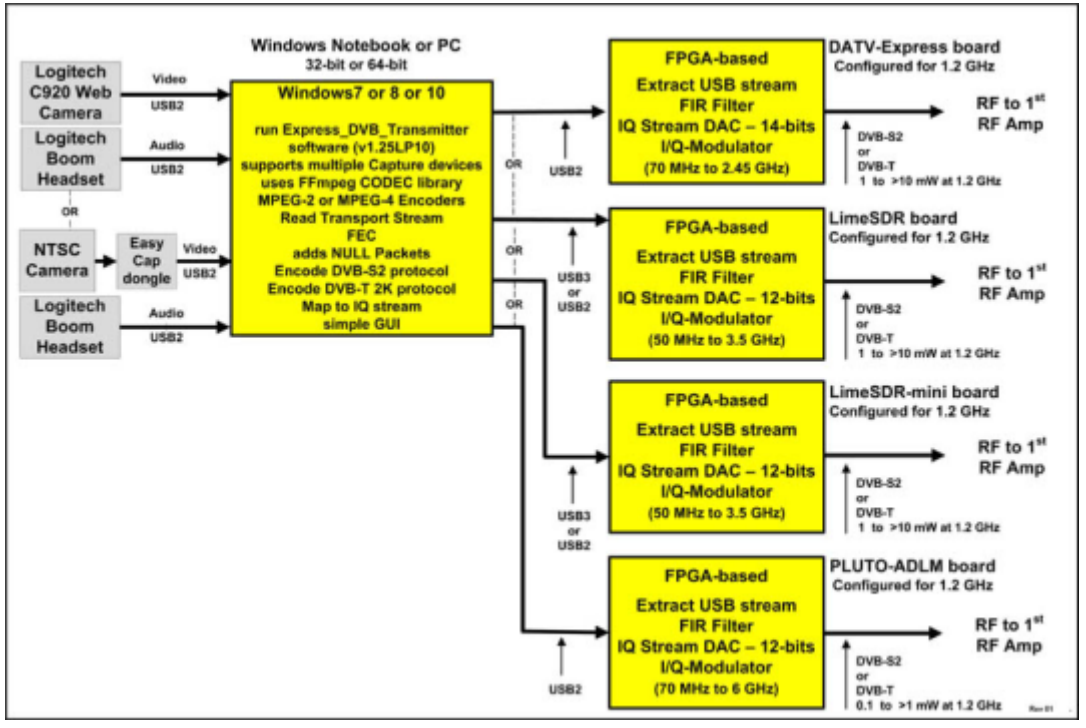
With LimeSDR-USB units, if frequency selected is <2.0 GHz, then then code did not select the correct output port and the RF power output was too low. With LimeSDR-mini units, if frequency selected is >2.0 GHz, then the code did not select the correct output port and the RF power output was too low.

Charles has prepared a new v1.25LP11 of the software and Ken is getting ready to re-test at his lab and then prepare for this new release to be uploaded to the *www.DATV-Express.com* web-site.

Ken W6HHC has prepared a new Block Diagram that illustrates that the DATV-Express software now supports four different hardware boards.

Ken plans to update the DATV-Express User Guide to emphasize that DATV-Express has transitioned to become solely a software product for the future.

During September, Tom WB6P completed the gerber artwork for "Rev B" of the MiniTiouner-Express printed circuit board. The artwork and other PCB files have been sent to the PCB-house for fabrication. .



Block Diagram of DATV-Express software supporting four different boards

Project Speed is set to slow….de Ken W6HHC

This is your free ATV magazine.
Please consider contributing an article!

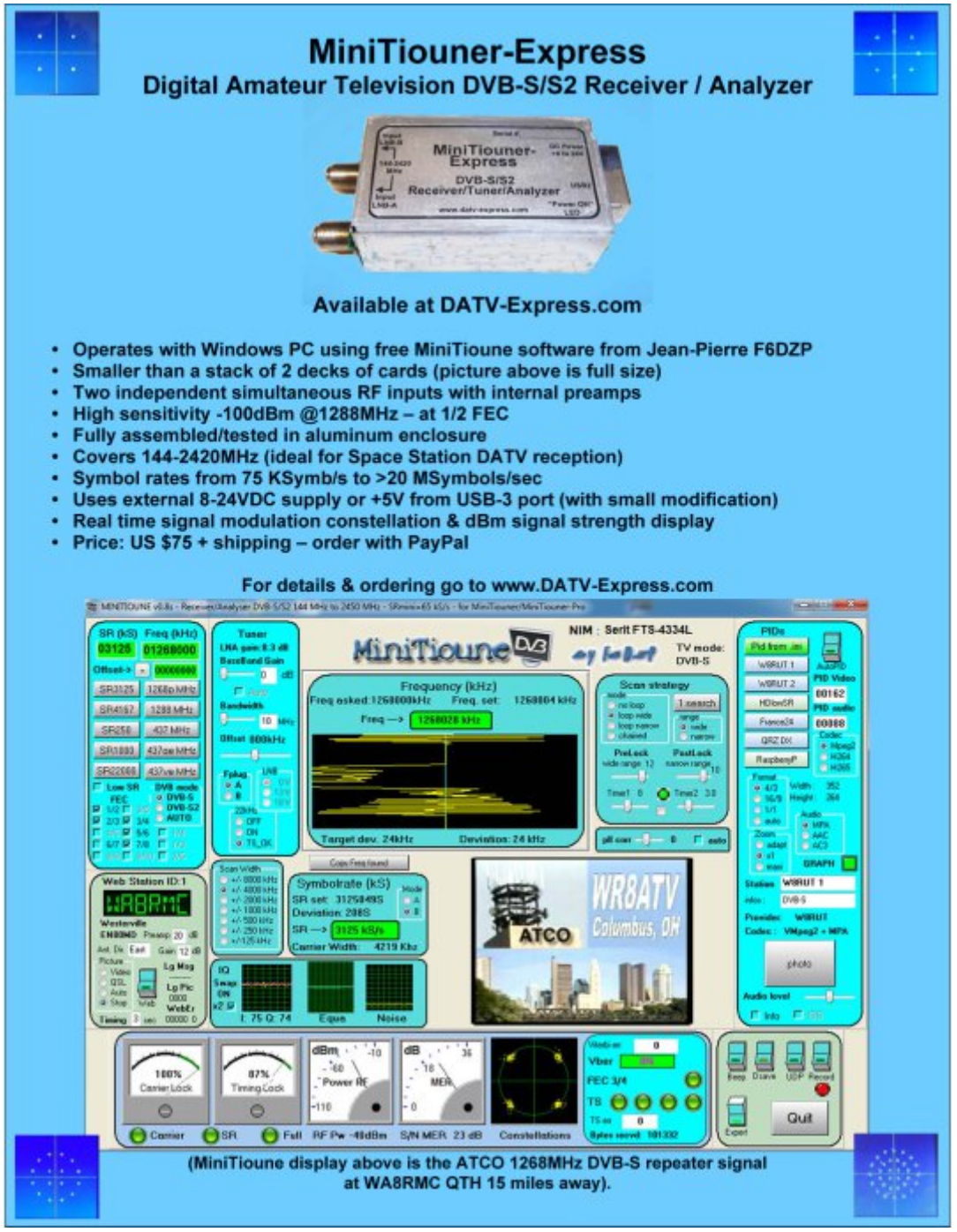
Update - Thu Oct 11, 2018 6:49 pm

Just a note that the DatvExpress v1.25LP11 software for selecting and controlling the four different exciter board models has now been successfully uploaded as a zip file to the DOWNLOADS page on the *www.DATV-Express.com* website.

As a side note: while testing the v1.25LP11 software I came to realize that I did not have test equipment in my home lab to measure RF power (easily) at >2.0 GHz. My trusty Rigol DSA815 spectrum analyzer only measures up to 1.5 GHz. So I had to rely on the v1,25LP11 testing performed by Charles G4GUO and John G4BAO with the LimeSDR-USB and LimeSDR-mini boards at >2.0 GHz.

Download the NOTES_v1.25LP11.txt file to understand the details on the power-out-level issues when running with the LimeSDR-USB and LimeSDR-mini boards.

73...de Ken W6HHC



External links

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

Legal Niceties (the small print)

E&OE. Whilst every care is taken in the production of this publication, dotMOBI accepts no legal responsibility for the advice, data and opinions expressed. dotMOBI neither endorses nor is it responsible for the content of advertisements or the activities of those advertisers. No guarantee of accuracy is implied or given for the material herein. dotMOBI expressly disclaims all liability to any person in respect of anything and in respect of the consequences of anything done or omitted to be done wholly or partly in reliance upon the whole or any part of this publication.
As the regulations for the operation of radio frequency equipment vary in different countries, readers are advised to check that building or operating any piece of equipment described in dotMOBI will not contravene the rules that apply in their own country.
All copyrights and trademarks mentioned in this publication are acknowledged and no infringement of the intellectual copyright of others is intended.

Copyright

Notice to Contributors

Authors are alone responsible for the content of their articles, including factual and legal accuracy, and opinions expressed by them may not reflect the editorial stance of the publication. Material submitted to dotMOBI should not infringe the copyright of other writers or bodies. Contributions are accepted for publication on this basis alone.
dotMOBI publications - *http://cq-datv.mobi*

Author Guidelines

CQ-DATV welcomes contributions from our readers. It does not necessarily have to be on ATV, as long as it is of interest to our readers.

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

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

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

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

Coming up in CQ-DATV

Is this the latest issue of CQ-DATV? *Click here* to go to our web site to check to see if there is a later edition available.

CQ-DATV is published on the last Friday of the month. The cut-off day for submissions/corrections/alterations is 5 days before the Friday of publication.

Please note that this mailing list is only used to advise interested people about the availability of new issues of CQ-DATV magazine. The list is not, and never will be, shared with any other organisations.

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