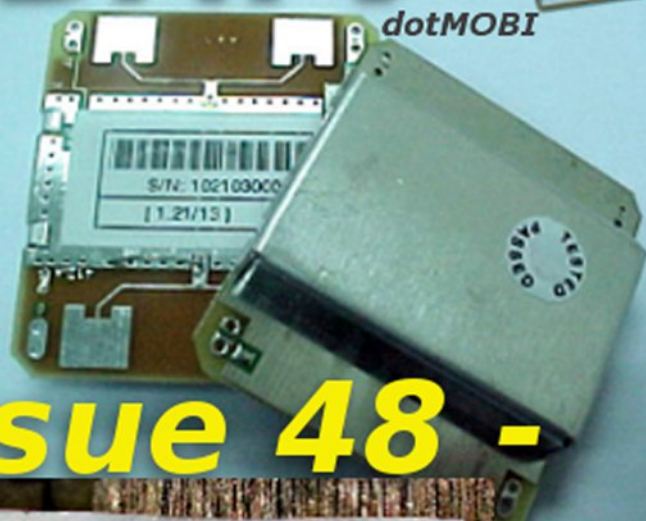


# CQ-DATV



dotMOBI



## Issue 48 - June 2017



<http://cq-datv.mobi>

ISSN 2059-2191

### *In this issue*

Editorial.....	2
DATV News.....	6
Micro Corner - VGA Pattern Generators for ATV..	7
Mysterious Aircraft.....	10
DATV-Express Project -	
April update report.....	12
Simple Cost Effective 3cm Frequency Counter..	13
Information.....	18
Coming up.....	19

What is it?

Check out the Editorial  
starting on page 2



### *Production Team*

Ian Pawson G8IQU      Trevor Brown G8CJS  
Terry Mowles VK5TM

### *Contributing Authors*

Trevor Brown G8CJS      John Hudson G3RFL  
Ken Konechy W6HHC      Mike Stevens G7GTN  
Dave Woodhall G3ZGZ

## Editorial

Can we start with the CQ ATV IARU Region One Contest. Yes I know it used to be September, but it moved in 2015 due to an RSGB proposal, so please try to keep up. It's now in June and it needs your support. It covers all ATV bands from 70cms, through to 10GHz and beyond, with some previous years logs showing 24GHz activity and this year who knows ! there maybe even 47 GHz entries, one thing is certain it will be all modes from various versions of digital through to good old fashioned FM ATV.

What about 2m where RB-DATV (Reduced Bandwidth Digital Amateur Television) is in operation. This is not yet in the contest, but please check for activity.

The contest opens at 12:00 UTC on the 10th of June and runs until 18:00 UTC on the following day (June 11). and involves transmitting and receiving by video only, a unique 4 digit code. This must not be transmitted any other way than via video and must remain the same for the entire contest, except when the station has been moved to another location. Please see the contest rules here:-

<http://www.qsl.net/g3zhi/iaru1.html>



Let's look at ways you can receive ATV signals during this period of high activity, starting with FM ATV which is present on all bands from 24cms through to 10Ghz.

Unfortunately FM TV receivers which used to be plentiful in the early days of satellite TV have now almost disappeared, if you are lucky enough to still have one, then my advice is to hang on to it and if you have a 10GHz LNB to go with it, then hang onto that too, both are becoming as rare as rocking horse droppings.

One unit that has proved itself in Australia is the Scientific Atlanta Bmac receiver which was fitted with a PAL board and works very well for receiving FM ATV.



Even if the Bmac function doesn't work the Down converter tuner is worthwhile as the output is PAL and requires only the De-emphasis and audio demodulators. See CQ-DATV No.6 <http://cq-datv.mobi/6.php>.

Another unit is from Agile Continental, it has dual audio demodulators and a range of adjustments for levels, a worthwhile receiver in any shack.





**FM Kit still to be found in Australia**

If you still have an AM TV, then it can slope detect an FM signal, not as good as an FM receiver, but you are only trying to read a four digit number.

Even some of the more modern flat screen TV sets still have an AM input, although they are a little difficult to tune and I am the first one to admit I do miss the old fashioned tuning knob and have not fully accepted the digital search command as a replacement.

The next problem is to frequency convert your TV to the required ATV band, in the UK they are all exclusively UHF, not guaranteed to tune down to 70cms and definitely not able to tune up to 24 cms and require some form of external converter, although DGOVE is always worth a look:-

<https://www.dg0ve.de/en/empfangskonverter.htm>

The alternative approach is move to the digital world and to use a laptop and a USB receiver stick, RTL stick's being the most popular using SDR sharp software, but could run TV Sharp instead <http://www.pi6ats.nl/tv.zip>.

The DVB-T software allows you to key in the required 70 cms frequency where ATV is to be found, but also to key in frequencies in the 23 cms band. There are on screen sliders to move the picture position and even cope with frame rolling.

These USB receivers are inexpensive:-

<http://www.ebay.com/itm/USB2-0-Digital-DVB-T-SDR-DAB-FM-HDTV-Tuner-Receiver-Stick-HE-RTL2832U-R820T-B-LC-/162299248600?var=&hash=item25c9c9ffd8:m:mWa5dvsGo5BiFdFUWnfOO4g>



### USB Receivers

They come highly recommended and there are reports of one station using one with a small double quad antenna on 24 cms without additional pre-amplifiers and receiving excellent results

However, the drivers that come with these products are not ideal, but the ones that work with SDR sharp can be found at ZADIG drivers <http://zadig.akeo.ie/>, along with how to install them. These are again DVB-T, so as I said you have moved into the digital world, but there is lots of digital ATV around, just not DVB-T unfortunately here in the UK.



### Laptop and USB stick in a portable operation

If you already own a USB stick, try it and see how easy it is to receive DATV signals.

Portable on 6 cm is also interesting and adapters for android telephone are now to be found.

[https://www.banggood.com/Eachine-ROTG01-UVC-OTG-5\\_8G-150CH-Full-Channel-FPV-Receiver-For-Android-Mobile-Phone-Smartphone-p-1147692.html?rmmds=search](https://www.banggood.com/Eachine-ROTG01-UVC-OTG-5_8G-150CH-Full-Channel-FPV-Receiver-For-Android-Mobile-Phone-Smartphone-p-1147692.html?rmmds=search)



### ATV On An Android phone



The transmitters are also starting to appear and won't break the bank either.

<https://www.banggood.com/search/video-transmitter-5.8.html>



### DATV transmitters for the 6cms Band

Just check that the frequency they operate on, is in the in the amateur band. Reports from the Netherlands using 5780Mhz are encouraging distances of 60 km using small dishes have been achieved.

The contest logs are straightforward. They contain an instruction sheet that explains how to use them. For the UK the logs can be found here

[http://www.batc.org.uk/contests/ATV\\_contest\\_log\\_%20\\_ATV\\_yourcall\\_YYYYMMDD.xls](http://www.batc.org.uk/contests/ATV_contest_log_%20_ATV_yourcall_YYYYMMDD.xls)

The log templates can only be used in Microsoft Excel. Open, accept the question about use of macros and read the included instruction sheet.

The UK address to send log to within 2 weeks is:-  
[contests@batc.org.uk](mailto:contests@batc.org.uk)

By the way: it is not compulsory to send in a log sheet, it is all about fun with ATV and increasing ATV activity!

"I switched on the 2m FM monitoring on 144.750, not a moment too soon there was activity, but alas devoid of any call signs and with a distinctive aeronautical mobile content." It's the story of a mysterious aircraft transmitting ATV", Dave Woodhall has all the details.

Slightly less mysterious is Kens DATV express report, in that Art WA8RMC reported that shipping of DATV-Express boards to Europe is finally running smoothly, again and Art was able to finally relax, all the detail are in Kens April report.

John has come to the end of his domestic, to-do list and ventured back into his workshop, where he gave in to an eBay temptation to use HB100 RADAR unit as a 3cm frequency counter. John has produced a PCB and software download to make this an easy home construction project.

Mike is back in his Micro Corner and this time it's an eBay test pattern generator.

What did we do before the days of eBay, don't even go there just sit back and enjoy CQ-DATV 48, every ATV enthusiasts favourite read.

### CQ-DATV Production team

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

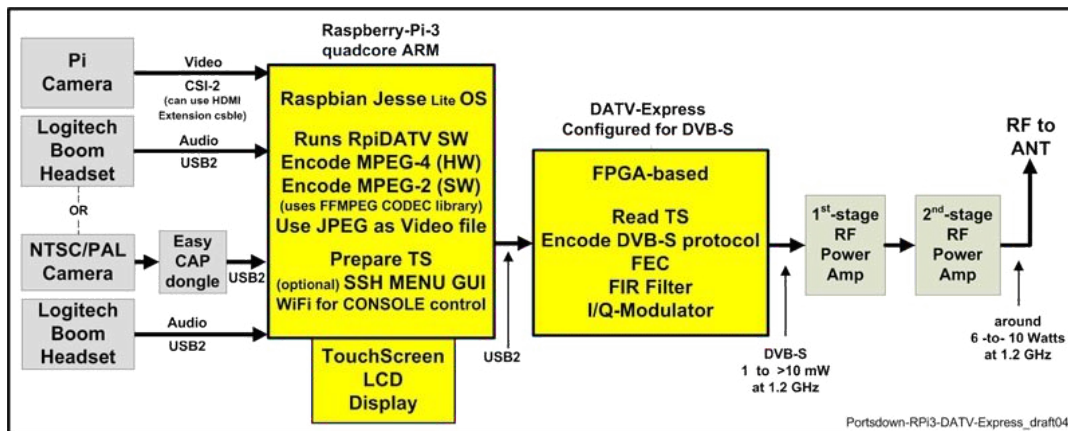
### A Portsdown Project Success Story

By Ken W6HHC

Just an update that I now have all three camera video modes on Portsdown working correctly using my Portsdown/RPi-3/DATV-Express test set-up.

The Pi-CAM and an NTSC home video camera via EasyCAP (BATC VideoDVR unit) all work well.

- Mpeg-2 - video displays correctly
- H264 - now video displays correctly
- EasyCAP - now displays H.264 video correctly



Block Diagram of Portsdown/RPi-3/DATV-Express using either Pi-CAM or EasyCAP or even JPEG file as video source

So a Portsdown newbie can succeed.

Time to start testing audio inputs for Portsdown and creating the extension-cable for my Pi-CAM. **73...de Ken W6HHC**

### AGAF ATV meeting in May 2017

About 60 guests came to hear and see lectures at the Northern Germany ATV Meeting in Gloevzin between Hamburg and Berlin.

Jens, DH6BB, showed on the big screen projects of AMSAT-DL and some devices for the 2 planned amateur radio transponders on the geostationary TV satellite "Es?hail-2" from Qatar. The 8 MHz wide broadband transponder shall allow several RB-ATV channels at the same time. For a 2 MHz QPSK signal the TV amateur on earth needs a 120 cm dish with circular feed and 100 Watt RF on 2405 MHz. For reception of DVB-S2 amateur TV signals from Es?hail-2 you need a special LNB for 10491 to 10499 MHz and a good DVB-S2 receiver.



Instead of the ill DG1XT our young sound mixer for several years now, Dan from a high school in Tangermuende, presented his self-built LED array with Arduino control. Then Hartmut, DM2CFL, showed many pictures of the most eastern ATV repeater in Germany, DB0LAU on the Zittau mountains, which has to be replaced soon at another site. After lunch in "Dahses Erbhof" the AGAF general meeting made some important decisions and confirmed in a voting the five committee members.

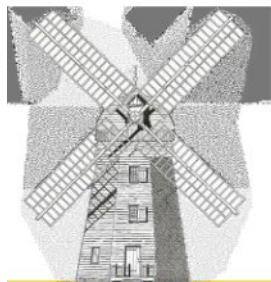
**Klaus, DL4KCK** [www.agaf.de](http://www.agaf.de)





## In dit nummer:

- ◊ Red Pitaya – Hamlab
- ◊ Zelfbouw FH-2 – Remote control voor YAESU
- ◊ Een FUN-stukje door PA9JOO/P
- ◊ De nieuwe 'Syncsmurf 2'!
- ◊ En nog heel veel meer, totaal 65 pagina's



Kingdom of the Netherlands



DKARS



Prijs / Price € 0,00 / \$ 0,00

Dutch Kingdom Amateur Radio Society

April 2017 editie 32

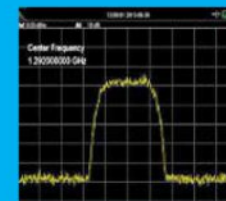
Check out the DKARS website at:-  
<http://www.dkars.nl/>



## Digital Amateur TeleVision Exciter/Transmitter

Now available from

# DATV-Express

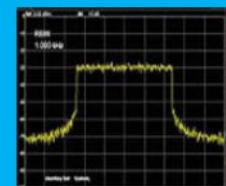


- A more affordable DATV exciter can now be ordered
- Fully assembled and tested PCBA
- DVB-S protocol and DVB-S2 protocol for DATV transmissions
- Can operate all ham bands from 70 MHz-to-2450 MHz
- RF output level up to 10 dBm (min) all bands (DVB-S)
- Software Defined Radio (SDR) architecture allows many variations of IQ modulations
- "Software-Defined" allows new features to be added over the next few years, without changing the hardware board
- Symbol Rates from 100K to 8000K Symb/sec allows RB-DATV
- Requires PC running Windows or Ubuntu Linux (see User Guide)
- Price is US\$300 + shipping – order using PayPal



For more details and ordering  
[www.DATV-Express.com](http://www.DATV-Express.com)

Register on the web site  
to be able to see  
the PURCHASE page

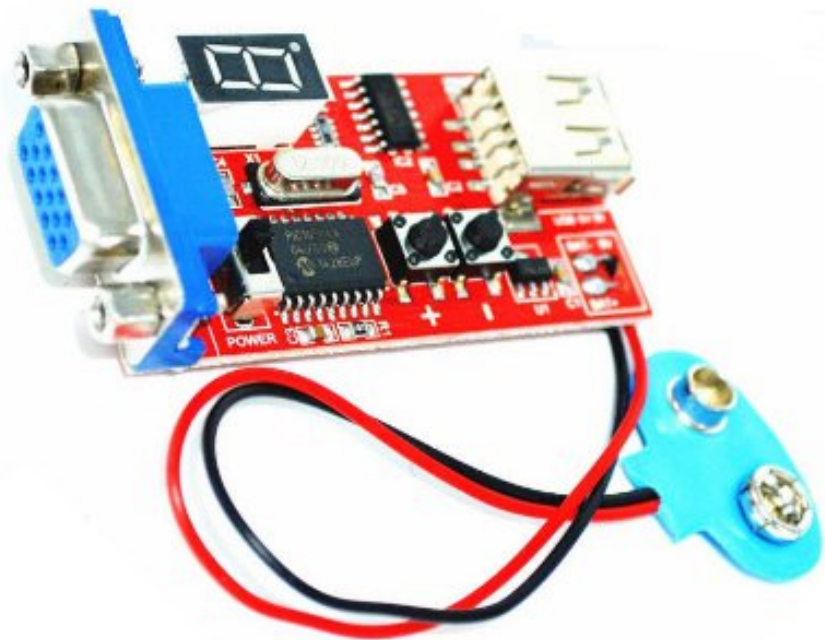


## Micro Corner - VGA Pattern Generators for ATV

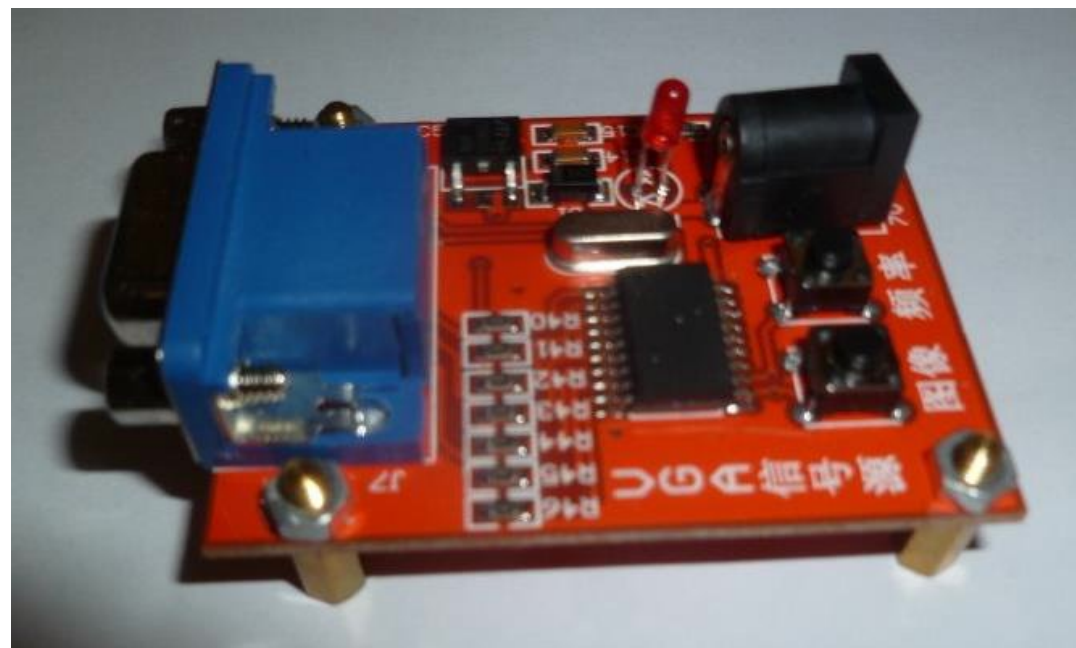
By Mike G7GTN

### Introduction

Following on from the last Micro Column I decided to investigate some of the eBay VGA test signal generators with the idea these could provide a test signal that we could use on our own television transmissions. Of course we would have to convert these from VGA to either composite or HDMI output to be of any actual value to us. So I ordered the two units as shown, both being commonly available for less than £5 each.



The first has the addition of a 7 segment display that shows which pattern you have currently selected. Both modules have 15 patterns available in various VGA resolutions, possibly the most useful to us is the Colour Bar pattern.

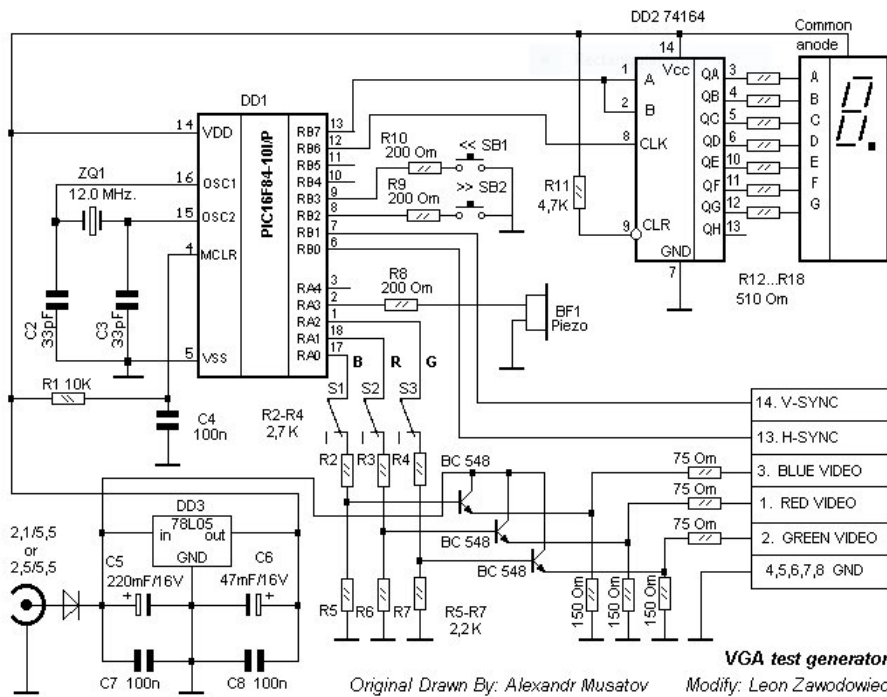


### Video converters

Also from eBay are a range of converters that allow us to take the VGA signal and convert this in to an HDMI Video source. It is also possible using a second converter to take this HDMI signal and convert back to Analog PAL video if required.

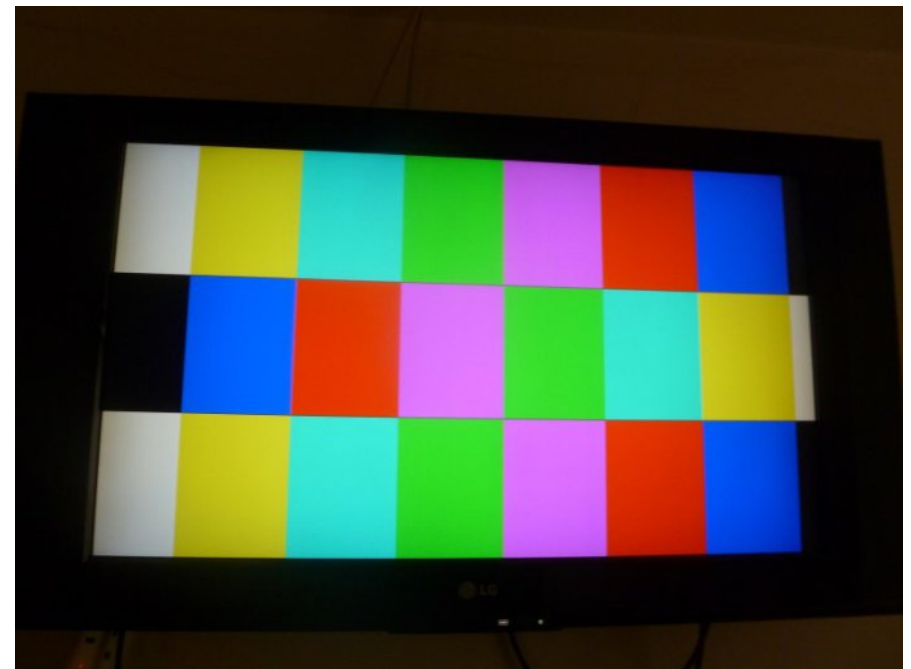
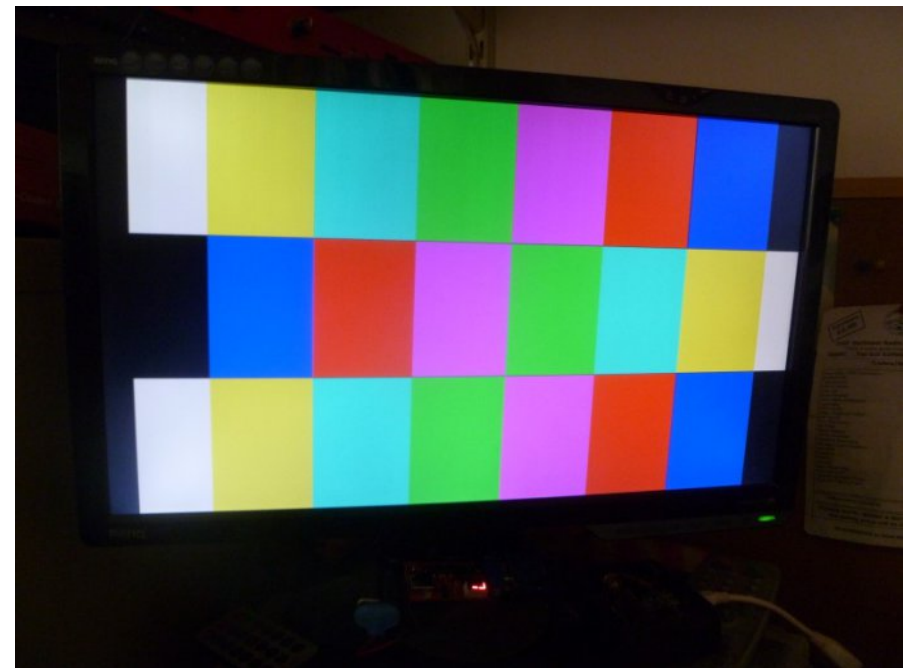






### PIC 16F84 VGA Generator – Original Circuit Diagram

The test modules are based on a design that originates from Russia, the circuit of this being shown. This was subsequently modified to add three drive transistors on the RED, GREEN & BLUE signals. The Chinese modules have left these out, so it seems they used the original diagram for the clone.



**The output from the generator, firstly on a standard VGA monitor (top) and then via the VGA to HDMI converter box (bottom).**

## Mysterious Aircraft

**By Dave Woodhall G3ZGZ**

It was the Activity weekend and in the hope for some exotic ATV contacts both John and I switched on the 2m FM monitoring on 144.750. Not a moment too soon there was activity, but alas devoid of any call signs and with a distinctive aeronautical mobile content.

The chatter persisted and both John and I put it down to coincidence, that it was on 144.750 and on an activity weekend. These things do appear often with kit bought on eBay where little attention is paid to if the purchaser has a valid Amateur Radio Licence.

But then the plot thickened and GB3FT, analogue FM TV RX was opened up by a TV transmission, on 1232MHz which in turn opened up the 23cm digital TX and got our attention the picture content was from an airborne source, and local land marks were visible.



Looks like things were starting to liven up, John and I exchanged comments on the source, was it a Drone, Micro light or something larger? Not always possible to tell from pictures alone. Had the frequency and mode been deliberately chosen to open up GB3FY, the AFC on the 24CMS input has a range of + or - 5MHz and the signal was just in the capture window.

The signal was noisy on the FT Omni directional antenna, but improving, I had a scan around with my 24 CMS aerial and RX in the hope of seeing better pictures other than were being relayed via the our repeater GB3FY and was rewarded with a stronger signal that also had some on screen display data, that was very readable now I had direct contact, this showed an altitude at around 70m AGL, a speed of 60kph, some GPS co-ordinates and distance from origin at up to 3km.

It also showed battery voltage and currents plus time from launch.

The camera was being controlled from the ground and several shots revealed parts of the aircraft, which was obviously not a drone, but a small light aircraft. This was unexpected given the on-screen displayed speed, which is below at stall speed for light aircraft.

Some more pictures, some more head scratching, and the option of the aircraft being a model aircraft was soon ruled out in favour of a drone plane as opposed to the quadcopters which provide a much more stable platform for aerial photography.

Another interesting fact was the TV Transmitter was vertically polarised, this was evident as when the aircraft banked there was a remarkable improvement in signal strength. So perhaps access to GB3FY or even contact with the ATV community was unintentional.



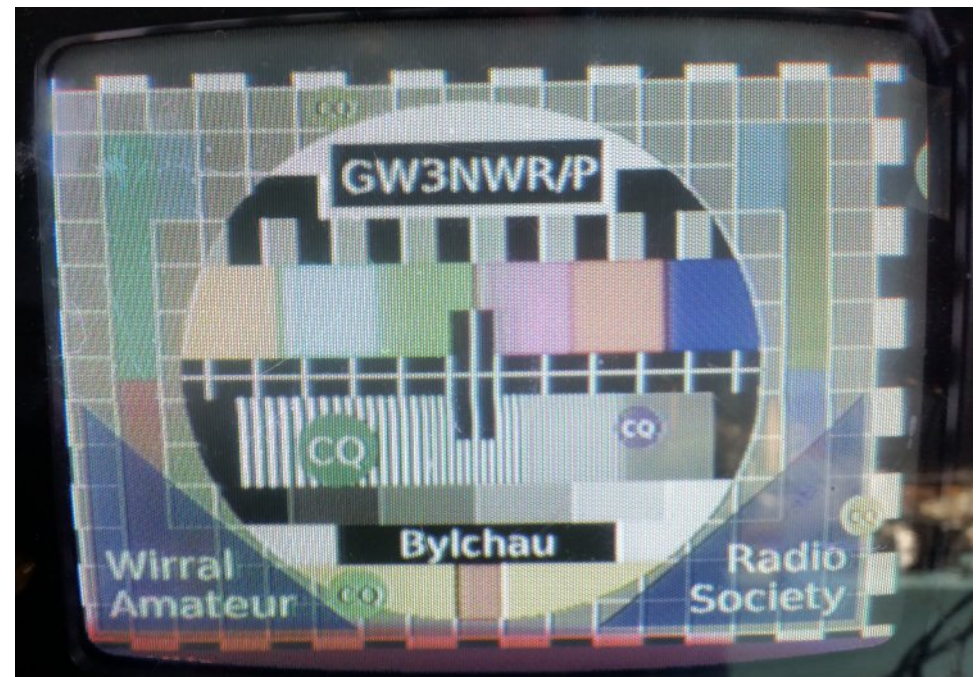


Again referring to the On Screen data the flight lasted just over one hour and the rather poor quality pictures that I snapped with the only thing to hand my smart phone clearly revealed the wing and tail parts of a plane.

The plane returned to its take off point and this was clearly displayed on the on-screen GPS data just before contact was lost as it came into land. The landing and take-off field could then be located on Google Earth.

I know the area well - I have flown my quad in the next but one field. OK the reception not exactly P5, but receiving vertically polarised transmissions on horizontal aerials did not help, but I must say that my quad pictures are MUCH clearer, but of course there may have been on board recording and the transmitted video was just for framing purposes.

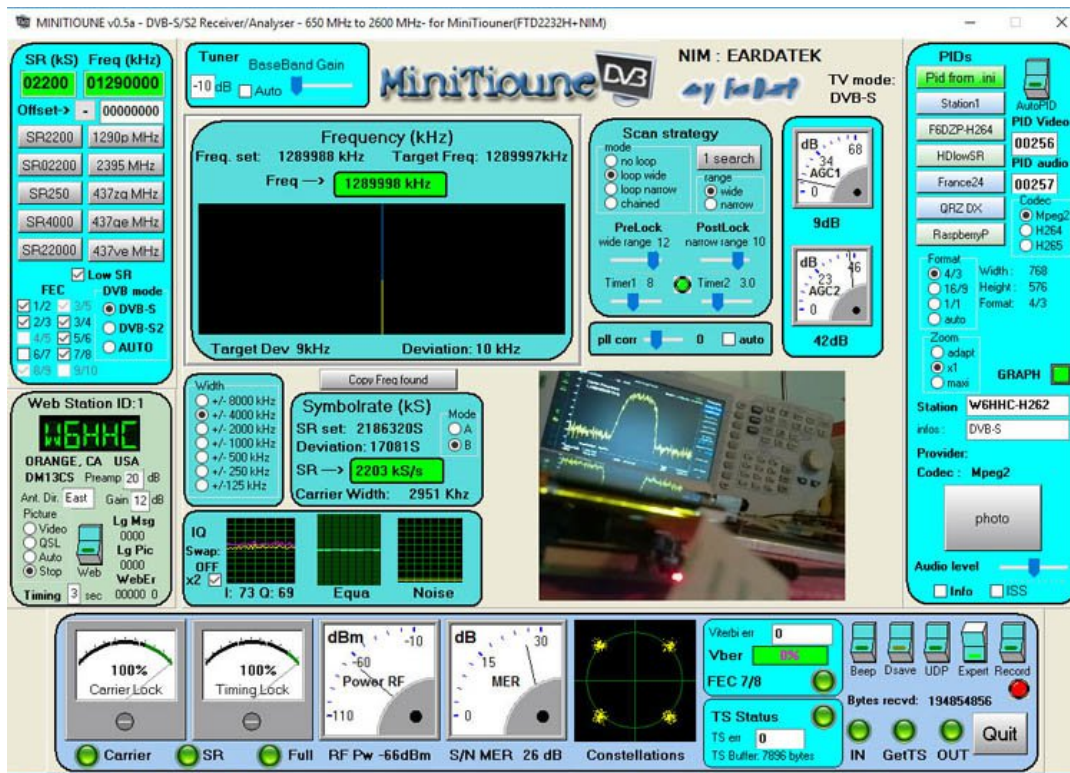
All in all an interesting diversion from working Wales on 3cm.





# DATV-Express Project - April update report

By Ken W6HHC



Art WA8RMC reported that shipping of DATV-Express boards to Europe is finally running smoothly, again. Art finally was able to relax and have some time to get vMix software working with his home DATV-Express station on Windows.

Ken W6HHC has spent time to get the Portsdown Project software working on an RPi-3 with his DATV-Express board.

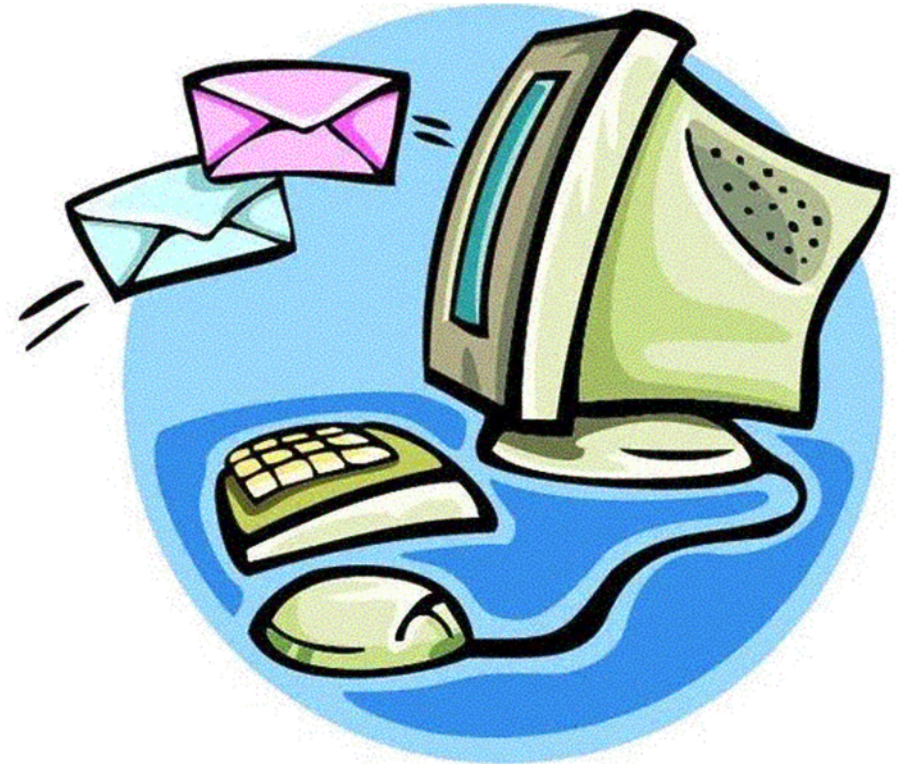
Set-up using Portsdown software on RPi-3 with DATV-Express as modulator using MPEG-2 protocol

Receiver is MiniTiouner. Video source is a Pi-Cam.

The BATC online shop now offers a known compatible model of video-capture EasyCap called the VideoDVR (USB-TV007) for older video cameras (NTSC/PAL). The new low-cost USB-video-capture dongle came in although Ken has not been able to get it to work properly with his Portsdown\_RPi-3\_DATV-Express set-up, just yet.

Charles is taking a break from the DATV-Express efforts and continues some efforts with the team working on the USA Phase 4B geosync satellite project that will use DVB-S2X protocol primarily for data transmission of voice, JPEGs, and TCP-IP.

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



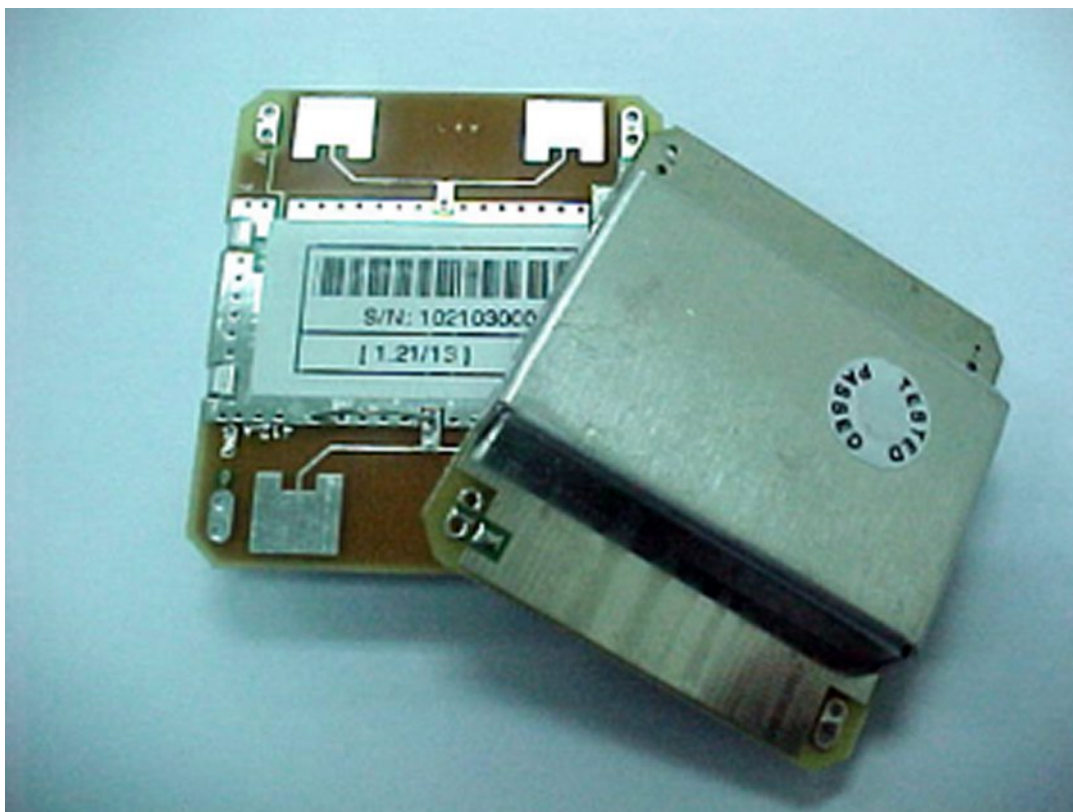
Want to be notified when issues of CQ-DATV are published? Then join our [mailing list](#).



## Simple Cost Effective 3cm Frequency Counter

By G3RFL

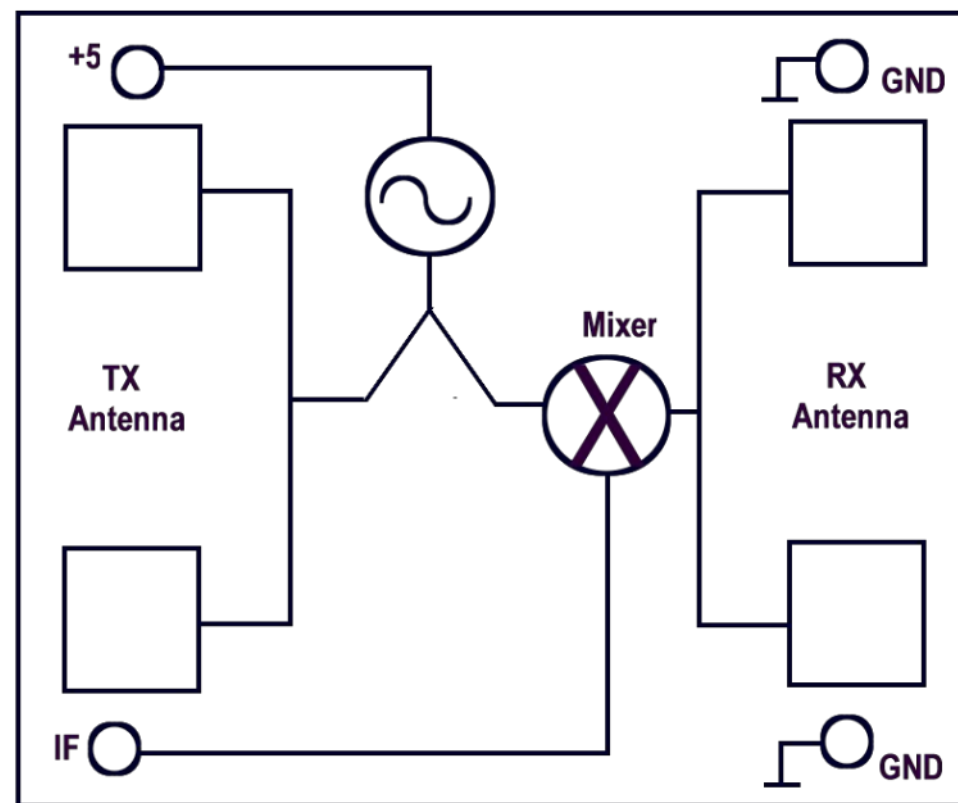
And it came to pass that eBay tempted me to try and use a HB100 RADAR unit as a 3cm frequency counter. These microwave units send and receive on the 10GHz band and are used to detect motion, via Doppler shift for automatic door opening. The devices are very cheap about £2.70 post free from China. There, I have said it, China, if they ever find out how to get their goods to the UK before their warranty expires, they will rule the world.



The HB 100 unit

I ordered two units well you cannot be too sure and as it subsequently turned out this was a wise decision, during the interim period, I thought about working my way down the wife's to do list, but with only a hundred items on it, hardly worth the effort, perhaps just curl up with a good book to pass the time (War and Peace).

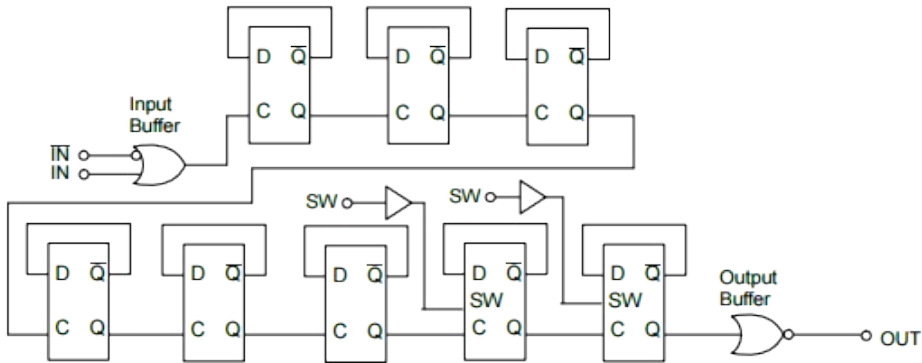
In the end I set about making a test PCB that would measure the IF frequency. In the HB100 is a PUCK oscillator. The data sheet informs me it will tune over a large range and that should open up some options for the applications I had in mind.



Schematic of HB100

For those of you not familiar with the HB 100 radar unit, let me enlighten you, the unit has 4 antenna connections, 2 for RX and 2 for TX . These feed a mixer driven by a puck local oscillator set to 10.525MHz this is a specification for UK security radar and will produce an IF out in the range of DC to 500MHz or so.

However both units were set to the wrong frequency. There is an adjustment via a rather poor grub screw arrangement which mechanically adjusts the puck. I found these to be poorly constructed and changed it for a small nut and bolt, which improved the puck stability.

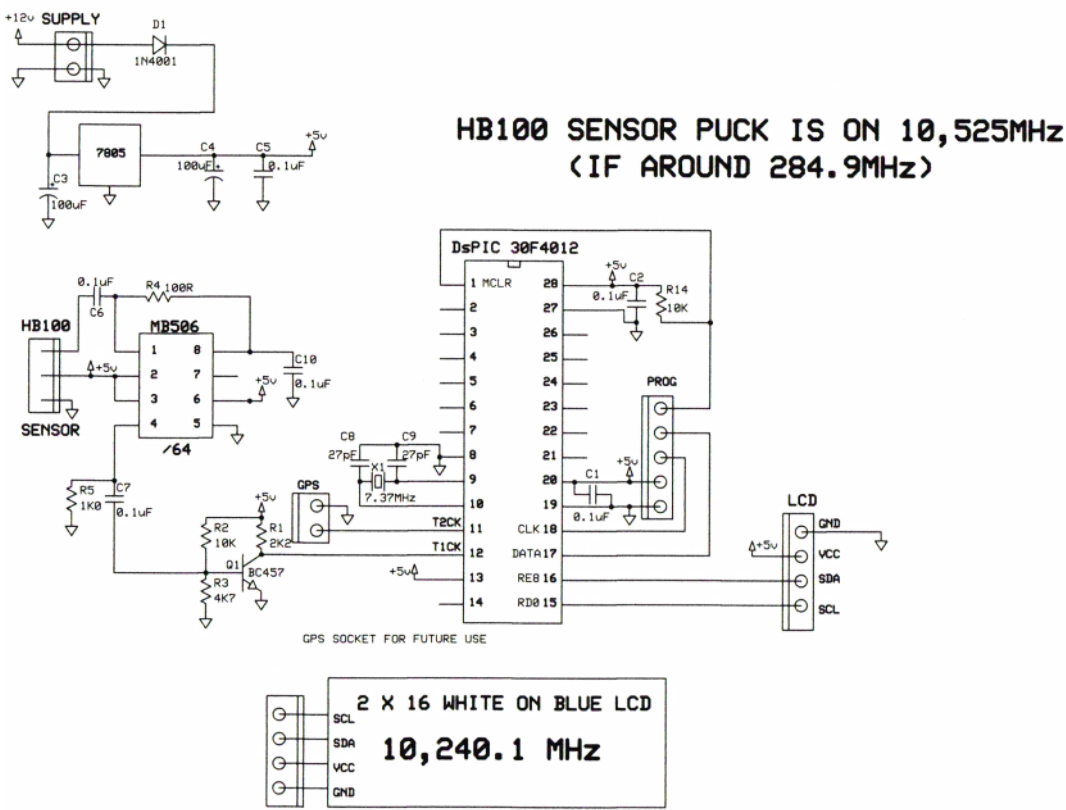


SW1	SW2	Divide Ratio
H	H	1/64
L	H	1/128
H	L	1/128
L	L	1/256

Note: H = V<sub>CC</sub>, L = open

**MB506 pre scaler**

The IF output was sufficient to drive an MB506 ultra high frequency prescaler (1.6V P-P) set to DIV by 64 which then delivered a 5v signal for the PIC, then to up the level from 1.6V P-P to a 5V level for the PIC I added transistor Q1 just to be sure.



**Main Circuit**

Ok, so how does it work. The HB100 mixes down the frequency we want to measure, so it is vital the puck is generating the correct local Oscillator frequency 10.525MHz remember FO-FC (FO = Frequency of the Oscillator and FC = Frequency of the carrier) to produce the IF (Intermediate Frequency) which is divided by 64 by the pre-scaler and the resultant frequency is fed via amplifier Q1 to our PIC programmed counter.

Here the software takes over and counts the input cycles for a given period of time dictated by X1 7.37 MHz xtal and then the magical science of mathematics takes over and creates the correct data to illuminate an LCD display with the correct frequency.



This data is piped to the display down the two wire I2C bus. This only works if FO (the puck, is on frequency) and to a lesser extent X1 is on frequency at 10MHz.

Everything has to be spot on because the frequency we want to measure is reduced by the hardware so the errors get smaller.

E.G. TX 10,240MHz near the HB100 (only needs a few m/W) do not connect direct, a near coupling will do, so the IF is 285MHz.

Divide this by 64 (pre scaler). Then divide by 256 in the software. Then count 61 and each time the counter has an interrupt, we decrement then DEC OFFSET (which was 525) and it will give you the correct answer ( $525 - 285 = 240$ ).

The PIC is an dsPIC30F2010, I have a ready supply, they get used and reused, as I develop projects, but sometimes they have a limited life in this mode and refuse to be reprogrammed with new software.

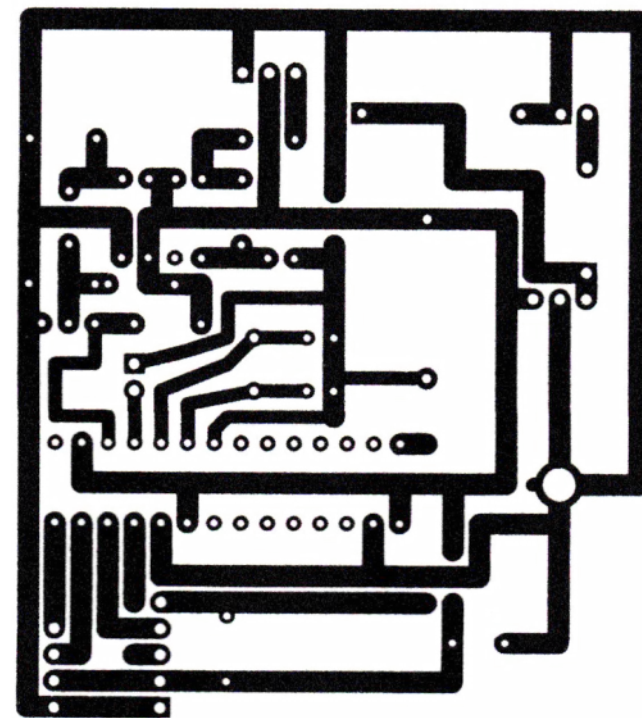
The HB100 requires just 3 wires, one being the IF out, the other being power (5V) and ground. The PIC, pre-scaler and amplifier Q1 all require a +5 supply which is provided by a 7805 so the completed unit can be powered by a +12 supply.

The software for the PIC is supplied on the [CQ-DATV download site](#) in both HEX file and in source code for the inquisitive.

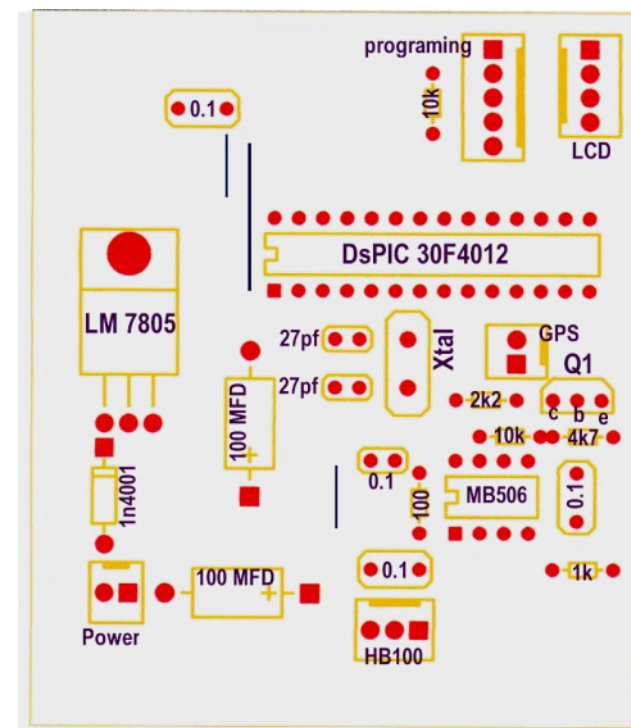
Construction was via a home-made single sided PCB, which we have reproduced here for those of you into home photo etching.

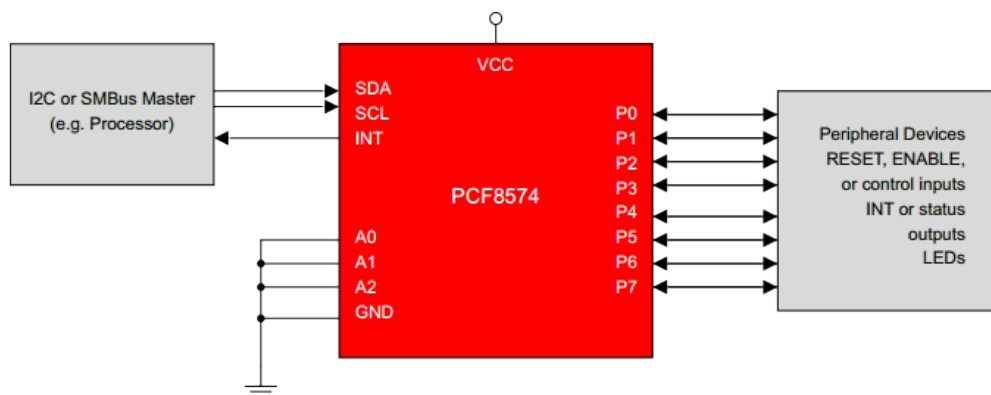
I have at this point a confession to make in that my junk box is now devoid of 28 pin sockets for the PIC.

**PCB Copper View  
(Not to scale)**



**PCB Component  
Layout**





When building it I ran out of 28pin DIL sockets so I used an 8pin at the top and an 16 pin at the bottom the other pins are not used.

The LCD is a cheap Blue 2 line by 16 digits display that uses a PCF8574 I2C to parallel interface chip.

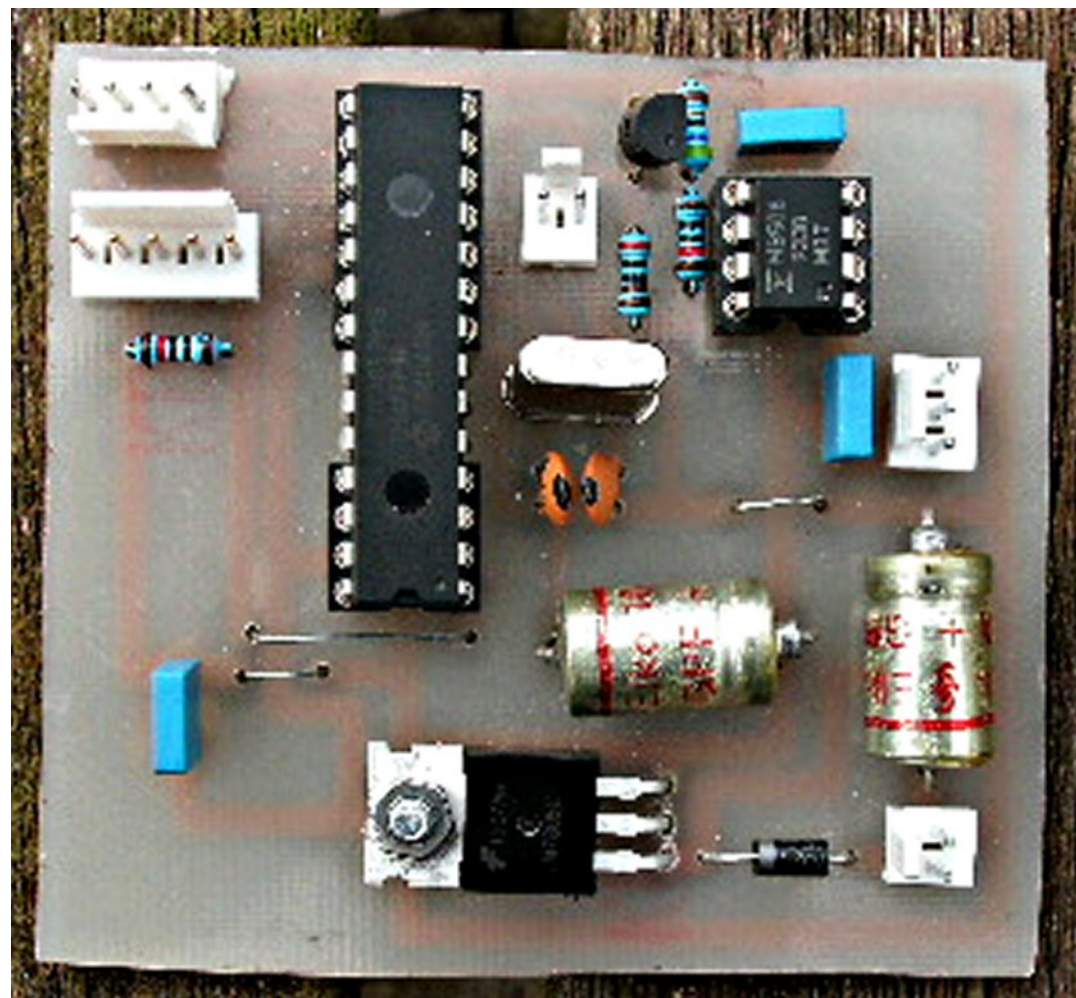
This generates a I2C bus required for the display, and in true I2c it has an I2C address which, like Trevor's rotator in CQ-DATV 46, can be pre-set by the wiring of A0, A1, A2.

My display has A0 A1 A2 floating so 1,1,1, so it is located on the I2C bus at hex address 4e (none of this micro corner Basic decimal - I used Hex addressing)

The unit draws in total 90mA @ 12V so the REG is cool. The display is driven by a software I2C protocol generated in assembler, not the PIC I2C outputs. I find it easier to do my own thing.

I was able to tune the PUCK from 10,300 to 10,700MHz before it died. The next step is to bring in the 100kHz digit by using a bigger counter.

Please ignore the GPS input on the circuit diagram and PCB, just thinking ahead, but it is not required at this time.



**The completed unit**

**CQ-DATV**

dotMOBI



**Like us on Facebook**



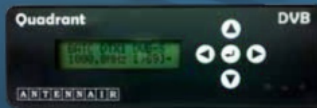
BATC

## British Amateur Television Club

### The club provides the following for its members:

- ▶ A **colour magazine**, CQ-TV, produced for members in paper or .pdf (cyber membership) formats.
- ▶ **Web site** – where you can find our online shop stocking hard to get components, software downloads for published projects and much more.
- ▶ A **members forum** at [www.batc.org.uk/forum/](http://www.batc.org.uk/forum/) for help, information and the interchange of ideas.
- ▶ A **video streaming** facility at [www.batc.tv](http://www.batc.tv) which enables repeaters and individual members to be seen worldwide.
- ▶ An **annual Convention** held in the UK where you can meet other members, visit demonstrations and listen to lectures.
- ▶ **Meet other club members** at the BATC stand at local rallies across the country.

[www.batc.org.uk](http://www.batc.org.uk)



# Read CQ-DATV

## For all the missing Pieces of Television

# TV-AMATEUR

[agaf-ev.org](http://agaf-ev.org) • [www.agaf.de](http://www.agaf.de)

Nr. 184

49. Jahrgang  
1. Quartal 2017

EUR 6,- SFR 6,50 US\$ 6,-

Zeitschrift für Bild- und digitale Daten-Übertragung im Amateurfunk

Im Heft: Einladung und aktuelle Informationen zur AGAF-Jahreshauptversammlung am 6. Mai in Glövizin



ATV-Treffen am 6. Mai in Glövizin • Ort der AGAF-Jahreshauptversammlung 2017

Aus dem Inhalt: Einladung und Tagesordnung zur AGAF-JHV 2017 in Glövizin • EDITORIAL: »Warum es jetzt wieder... • miniVNA-Tiny Antennen-Analysator • ATV-Chronik München • ATV-Empfang mit HamNet und Raspberry Pi3 • Besuch im ÖVSV-Hauptquartier in Wien • Das BATC-Portsdown-Projekt • HackRF-One unter der Lupe



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/> **NOTE new URL**

### 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

The articles contained in this publication remain the copyright of their respective authors and NOT dotMOBI. Any reproduction of such articles must be approved by the author of that article.

### 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



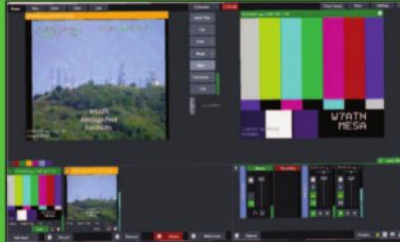

Is this the latest issue of CQ-DATV? [Click here](#) to go to our web site to check to see if there is a later edition available.



Spring 2017  
Volume 30-No 2  
ISSN 1042-198X  
USPS 003-353  
SINGLE ISSUE  
\$7.00 USA  
\$8.00 CANADA  
\$10.00 ELSEWHERE

# Amateur Television Quarterly

Dayton Hamvention 2017 Planned Events  
Microwave ATV Transmitters & Receivers  
ATN-CA Winter meeting  
HackRF One SDR Equipment review Part 2  
Getting Started with Mesh Video  
ATCO Pizza Party / Ottobain Tour



WWW.ATVQUARTERLY.COM

**ATV Quarterly - Don't miss another issue! Subscribe Today**

USA \$24.00 year, Canada/Mexico \$27.00 year DX  
\$37.00 year (US \$) Cyber: \$15/yr. Visa, M/C, AMEX,  
PayPal via Internet: [www.atvquarterly.com](http://www.atvquarterly.com)  
Cheques or Money Orders to P.O.Box 1594 Crestline  
CA 92325

Published by ATV Quarterly tel (909) 338-6887  
email: [wa6svt@atvquarterly.com](mailto:wa6svt@atvquarterly.com)