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

Production Team

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CQ-DATV and the GPDR

On the 28th May 2018 the European Unions General Data Protection Regulation (GDPR) comes into being.

This has wide ranging consequences for the use of personal data privacy in the modern world.Fortunately here at CQ-DATV we do not ask for any information from our readers. Our web site does not require any registration to download our content. It does not use any cookies nor any tracking software. Thus we fully comply with the GDPR.

However, we do have a mailing list so that we can let readers know when a new issue of CQ-DATV has been published.
This is run for us by a company called MailChimp. Those of you who subscribe to this list will have recently received an email asking you to confirm that you are willing to receive emails from us. We will be sending out a reminder email in early May. This is so that the mailing list is compliant with the terms of the GDPR.

Welcome to CQ-DATV 59

Those of us living in the Northern hemisphere are starting to see the end of winter and the beginning of summer. If winter is when we build the ATV equipment then summer is perhaps when we venture out and try using it for portable working.

So diary's open.

June 9/10 is the IARU ATV contest, yes we know it used to be in September, but it's now in June from Saturday June 9th 1300 BST through to Sunday June 10th 1900 BST.

So plan ahead and chose your favourite hill and start working out how to get the kit there and back afterwards.

There is not much time before and after the contest for rigging and de-rigging, but we have discussed this before and yes if you have a fully equipped Land Rover, with pump up masts, it works for you.

If your chosen site does not have full road access or your aerials are a little less automated then yes rig/de-rig time is limited and we suspect this was not thought through when the times were revised.

We really need a better system for making changes. One that generates solutions for everyone, not just the few.

CQ-DATV has a Facebook page with 282 members and with new Data Protection legislation about to be introduced, we have been looking at how we handle your data.

The login into Facebook is beyond our control and we have to balance its use with being a free service. CQ-DATV does not charge readers.

The production team fund our website from our own pockets and wherever possible we use free services and that has included Facebook (not 'free' as you pay for it with you and your friends private information).

We are building a backup store for past PDF issues of our magazine using the CQ-DATV Facebook site.

The main site is *https://cq-datv.mobi* and has all the copies of CQ-DATV, in all its formats, including the latest issue, along with software downloads past and present. This site does not require a login and we retain no personal information on you.

In light of Facebook's future assurances we have devoted space in this issue to explaining where we are with both the new legislation and Facebook's use.

In this issue Marco Geels PE1BR has been replacing his aerial rotator and was a little disappointed that none of the ones presently on the market are suitable for PC control or have memory channels.

So Marco has designed a new control panel and what a panel. His design offers the possibility to read out each type of potentiometer and to start and stop at any value. This should deliver a universal control panel that is suitable for all rotors with potentiometer control. Clever and also very smart. Might look a little complex, but Marco is supporting his design with a PCB so you can order your own PCB and start populating what we think might be the aerial rotator controller to end all aerial rotator controllers, unless you know something we don't!

In CQ-DATV 50 Trevor looked at some of the problems putting a colour TV system together in the UK. It's no secret we chose P.A.L, but in this issue Trevor looks at the alternatives and asks with hindsight did we get it right ?

Mike G7GTN is also in a reflective mood looking back at the Cropedy electronic test card and some of the solutions to designing your own test card using modern PC software.

Hopefully something for everyone so please sit back and enjoy CQ-DATV 59

CQ-DATV Production Team

News and World Round-up

Ultra HD

The Ultra HD Forum has published its first "Phase B" guidelines detailing what companies should aim for with future 4K broadcast tech. Not surprisingly, high frame rates should play a major role – the group is hoping for 100FPS and 120FPS video (depending on the region) with a fallback for 60FPS. It's also pushing for dynamic HDR video through formats like Dolby Vision and SL-HDR, while Dolby AC-4 and MPEG-H would provide audio that could adapt from elaborate 3D sound setups to a plain set of headphones.

You can download release 1.0 of UHD Phase B Guidelines from this link: Ultra-HD-Forum-Phase-B-Guidelines-v1.0 *https://ultrahdforum.org/wp-content/uploads/Ultra-HD-Forum-Phase-B-Guidelines-v1.0.pdf*

Source: *https://ultrahdforum.org/resources/phaseb-guidelines-description/*

HAMNET history

In 1981 US radio amateurs founded in Tucson, Arizona, the "Tucson Amateur Packet Radio Corporation" (TAPR) in order to erect a digital data radio net and promote the applied research.

Only some years later the "Packet Radio Network" (PRN) surrounded developed areas world wide as first privately owned digital data radio net. It was based on an adapted X.25 protocol (AX.25), and so called "digipeaters" allowed radio hams an access to the network on VHF/UHF with 1200 or 9600 bit/s.

The digipeaters were linked on higher bands with higher bit rates, and intercontinental contacts were made on hf with 300 bit/s. Mails and messages as well as discussions got gathered in PRN mailboxes. Even web pages were displayed this way at a time, when private households only had expensive interactive videotext called "viewdata" or modems for internet access with 64 Kbit/s.

With developing DSL connections from 768 Kbit/s and more the AR PRN reached a climax in the mid nineties. Now even isolated digipeaters in mountain valleys got contact to the PR network via commercial internet links. This was discussed controversially amoung radio amateurs, and with the expanding internet the AR PRN eroded quickly at the end of the first decade of this century. More and more digipeaters were closed and remaining radio links got replaced by internet connections.

At this time radio amateurs engaged in "Digital Voice" (DV) systems which needed to be linked.

The low bitrate PRN was not fast enough, so in Europe Austrian radio amateurs started in 2005 to test a new broadband IP-based data radio network using WLAN components at 5 to 10 Mbit/s on amateur bands (13 and 6 cm).

Via this "backbone" net the phone repeater sys-ops can connect their stations and provide additional digital services and access points for their users. This new "Highspeed Amateurradio Multimedia NETwork" (HAMNET) spread out quickly over the Alps to southern Germany.

In 2009 the official HAMNET inauguration for Germany was presented at the "Interradio" fair in Hannover. In mostly urban areas all over Germany the HAMNET development is performed by engaged radio amateurs (including ATV repeater sys-ops).

This is a consequent up-to-date advancement of the overaged PRN.

PS by DL4KCK: Radio links replaced by internet connections are still needed where direct line of sight to the access point is blocked by high buildings (in my case on 5,7 GHz) or when the distance between urban areas is too long: the Berlin-Brandenburg HAMNET was isolated from the rest of Germany for some time lately due to an update fault at a Mikrotik router in the central broadband internet connection from DB0OBS to DB0GW in western Germany. A redundant GHz link connection made by hams between Berlin and Wolfsburg would help, but is not in sight…

Translation from TV-AMATEUR 188 by Klaus, DL4KCK
www.agaf.de
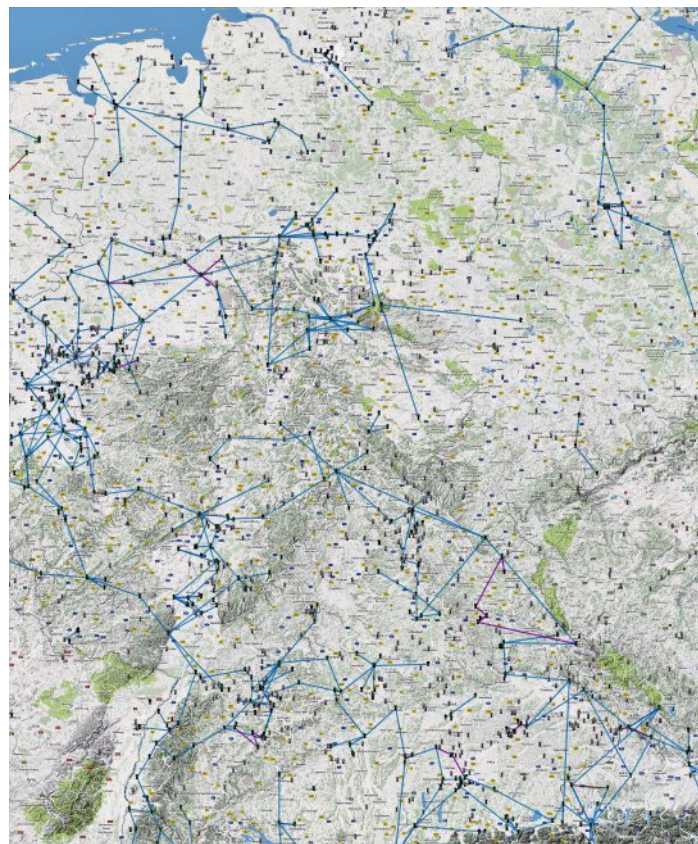
ON0SNW stream

You can watch our stream here: *https://www.datv.be/chat*

Please use chrome as it seems to be the only browser supporting the html5 <video> tag *(works fine with Firefox 59 under linux - ED)*.

You can even share your webcam with us thanks to the webRTC protocol which gives very low delay's but heavy CPU usage on the server

Hope to see you soon!

73's
ON4BHM, sysop ON0SNW & ON0BRU

Analog ATV - Slovenia to Italy

In order to not only make promises, which are not maintained, we have today made the promised connection in 24 GHz analog ATV.

Francesco IK3HHG went to Bibione - JN65MP. Its station has the power of 800 mW, and the dish is 48 cm in diameter.

I (Rudi S58RU) moved to Mount Taiano - Slavnik at 1028 m above sea level - JN65XM. My station has 300 mW of power and a similar parable like Francesco.

The connection is successful with the 55C / 55C reports We were in the company of Bibione also by Luciano I3CLZ and I3ZVN.

Graziano S50J and Mauro IV3WSJ are still working with me on the Taiano.

Today's QSO in 24 GHz analog ATV is not the first link between Slovenia and Italy but is already the second. With Francesco we made the first QSO in 24 GHz analogue ATV as early as 2012 (27.2.2012 - 59 km).

Re-publication of CQ-DATV magazine material is encouraged as long as source credit is properly given.

Exception: "Reprinted by permission" material must have the original publisher's/authors permission.

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*.

Facebook and CQ-DATV

Facebook has to be the story of the year! In March the internet exploded in anger over its actions. But now we have the news that it will now start doing things that we were previously assured it was doing all along!

CQ-DATV has a Facebook site and we are storing backup copies of CQ-DATV on the site along with our web providers site. You can never have too many backups, but now suddenly, the data security issue has raised its ugly head.

We try hard to collect the minimum data possible from you, in that you don't need a log in to download our magazine. We don't collect any details from you. Yes, you have to ask to become a member of our Facebook group *https://www.facebook.com/groups/285807174898375/* and we usually respond to requests the same day, but we need to keep it from being an advertising dumping site and ensure that everyone has a common interest. We will continue to store backup magazines on Facebook as it's free and every effort goes into keeping CQ-DATV running costs as low as possible and not pass on any of our costs on to you, the reader.

No we have not used your data to elect a US president, well if we did we would be looking for a Ham TV friendly candidate, offering more band space, higher power levels, easing planning permission on aerial farms and tax concessions on purchases of kit on the grounds it could be used in a national emergency along with lots more. As far as we are aware this was not in any candidates portfolio, but we live in hope!

So please do not be deterred and join our Facebook and lets use it for ATV information exchanges and pleas for help and to let you know when a new edition of CQ-DATV is available for you to read.

We aim for the last Friday of every month for publication and so far it is working well.

Facebook is a bit like Marmite (or Vegemite for those Downunder) - you either love it or you hate it!

The downside (sic) is some of us will never have a Facebook account, perhaps because we have too much respect for both our online privacy and more importantly, that of our friends and contacts. Facebook users are 'angry' that their digital history is being sold to third parties!

How they do they think that Facebook makes its money?

So, instead of Facebook providing you with a 'free' online service, you are, in fact, providing Facebook with 'free' data on yourself and your friends that they can, and do, sell on.

However, if you are using the CQ-DATV Facebook page then you are already a Facebook member, so you have decided that the benefits outweigh the disadvantages so please do make use of our Facebook page.

The CQ-DATV team does not and will not, ever, disclose any information to any other third party or organisation. There are no login or passwords required to download CQ-DATV from the main site, we do not have anything to sell or pass on! The team realise we are in this because we believe in the cause of ATV and do our best to promote it.

There is nobody claiming expenses and yes we are never going to be rich, not in monetary terms at least. The same cannot be said of Facebook.

Rotor controller

Written by Marco Geels PE1BR *http://pe1br.nl*

Design:

With the arrival of a new rotor, it was also time for a new rotor clock.

My old analog controller is not suitable to control from the PC and I also have a strong preference for memory channels so I do not have to keep a separate list of degrees and repeaters. Most projects that I find on the internet are either quite expensive or they are meant to be built into an existing rotor.

I wanted to do it differently and designed this controller according to my own ideas.

The controller has standard DC outputs with which a voltage of up to 50 volts can be switched, making it possible to switch any type of DC relay. Because the calibration offers the possibility to read out each type of potentiometer and to start and stop at any value, the controller is suitable for all rotors with potentiometer control.

Menu options:

This design has 4 push buttons and a 2 lines 16 character lcd display as user interface.

In addition, you have 40 LEDs for global direction reading. By default, the display shows the direction in degrees.

From the menu you have multiple options:

Memory, 50 memory channels that can be programmed from the menu and then called back.

Settings, for setting the backlight and the brake release.

Calibrate, for calibrating the rotor.

**Rotor start
0**

**Rotor end
450°**

Turn max left

Turn max right

Files (note that these files download directly from Marco's site)**:**

schematic (png)
PCB Board (png
PCB parts (png)
eagle print file
Eagle schedule file

The software will be available later.
Keep a check on my website for updates *http://pe1br.nl*.

I'm working on a new design as a construction project for the Veron VRZA Twente, the possibilities will be comparable.

The adjustments will mainly focus on ordering and building for a large group of users.

Copyrights:

All software is distributed under the GNU/GPL licence. All hardware and designs are distributed under a Creative Commons license Attribution-ShareAlike 2.5.

Marco has indeed come up with a construction project for a rotor version two and it will be covered in an upcoming issue - Ed.

DATV-Express Project

Written by Ken W6HHC

The project team has decided to begin sales of the MiniTiouner-Express hardware as soon as the web site can be updated (some team vacations may impact?).

During March, Art WA8RMC determined that the power supply switching regulator was on the verge of causing a small 100mV glitch just as the Serit tuner was being programmed.

The glitch coincided with the time the software was communicating with the tuner over the I2C lines. A resister value change eliminated the glitch. The symptom had been occasional "fuzzy constellation and low MER" at power-up. Also Jean Pierre F6DZP reported no problems were found on the unit that was shipped to him for his review..

Charles G4GUO reports that:

- *He is waiting for MiniTiouner-Express hardware to arrive (for additional testing)*
- *He can't get LimeSDR / Lime Mini to produce a good MER. Using DATV-Express software*
- *Not getting very far with running MiniTiouner-Express hardware on Linux.*

Ken W6HHC has updated the MiniTiouner-Express User Guide to draft13 with new updates by the project team and a new front cover. Again, the User Guide will be available for download from the *WWW.DATV-Express.com* web site as soon as the web site can be updated. (A special thanks to Ian G8IQU…for his recommendations and some work on the new cover design.)

New Cover for Draft13 of MiniTiouner-Express User Guide

Finally Charles G4GUO further reports that he:

- *Has been preparing a Spectrian amplifier for 2.4 GHz Es'hail 2 uplink (this has taken most of my time).*
- *Is trying to figure out how best to attach a 65 cm dish to a tripod for 6 cms DATV operation.*
- *Cleaned the dust out of his main computer (it is now running noticeably faster).*

Project Speed is set to moderate….de Ken W6HHC

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An Important MiniTiouner-Express update

The MiniTiouner-Express Receiver/Analyzer unit can NOW be ordered from the *www.DATV-Express.com* website. You need to first logon to the website (or REGISTER on the website if you have never logged in before). Use the PURCHASE A PRODUCT tab to order the product via PayPal.

- *The price for the MiniTiouner-Express unit (with Serit) is US$75 + shipping*
- *Shipping for USA is US$7.00*
- *Shipping to the European Union is US$24.00 including the VAT.*
- *Shipping anywhere international is US$35.00*

The MiniTiouner-Express User Guide (draft13) can now be downloaded as a PDF from the *www.DATV-Express.com* website. Use the DOWNLOADS tab to download the PDF file.

Let me know if you have any questions…de Ken W6HHC

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

50 Years of Colour Television

**Written by Trevor Brown**

Choosing the system

In CQ-DATV 50 we looked at some of the problems of getting a colour TV service operating in the UK. It's 50 years ago now and worth looking at why P.A.L was chosen along with a short overview of the choices available at the time.

Carole Hersee is a costume designer who is best known for appearing in the centrepiece of the United Kingdom television Test Card F, which aired on BBC Television from 1967 to 1998. You could say she was the face of P.A.L or at least the face of its test transmissions

There were three choices SECAM, NTSC and P.A.L. All three systems met the criteria of compatibility with B/W, so viewers were not frog marched into a replacement TV they could keep watching in B/W on their existing receivers. The process was to add a subcarrier to the B/W picture that a colour receiver could use detect decode and display as a colour picture.
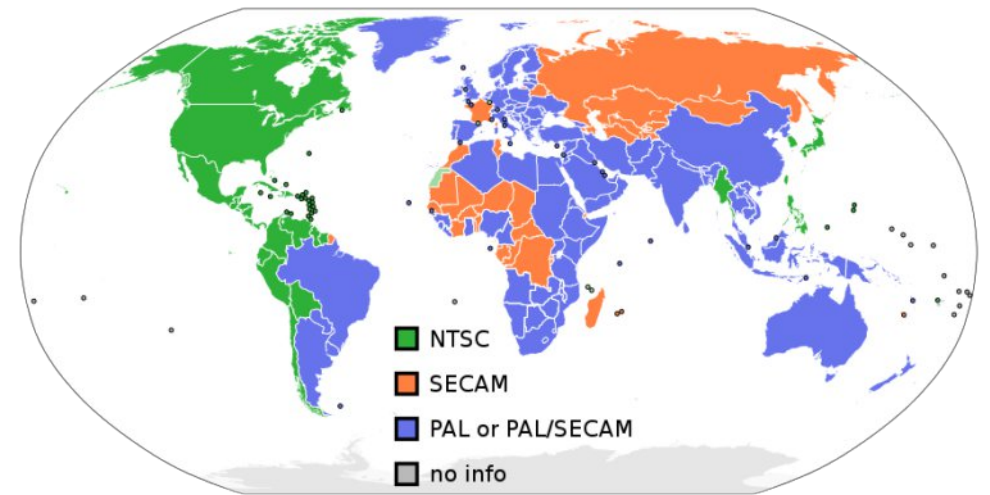
Easy with hindsight to see the counties that chose P.A.L, but not so easy to see at the time

The problem was there were three ways of doing this. Let's look at all three.

SECAM

Development began in 1956 by a team led by Henri de France working at Compagnie Française de Télévision (later bought by Thomson, now Technicolor). In common with all the three systems it uses two colour difference signals. In SECAM they are separately frequency modulated on two subcarriers 4.406,25 MHz ±2kHz and 4.250,0 MHz ±2kHz and transmitted on alternate lines. The signals are called D'R and D'B

So instead of transmitting the red and blue information together, it only sends one of them at a time and uses a one line delay line to combine the colour from the current line with the colour from the previous line.

SECAM decoders require identification, as to which line is carrying which signal so that the D'R and D'B signals may be sent to the appropriate demodulators.

There were two options, one was a colour burst on the back porch, but there were concerns about this, so there was also a second field identification signal called bottles on lines 7 to 15, in the odd frames and lines 320 to 328 in the even frames.

Waveforms of ident signals in field blanking period (lines 7-15 and 320-328)
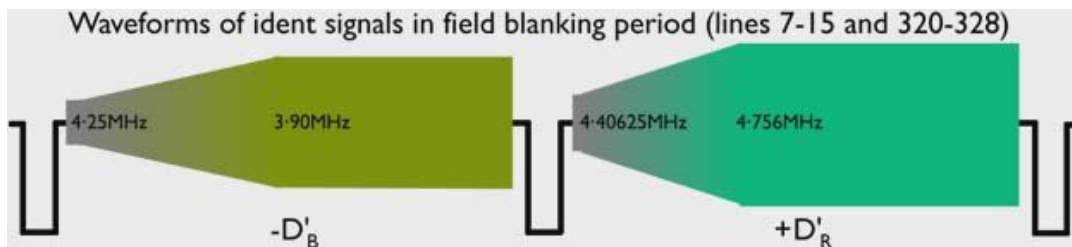
Caption

Line identification became the preferred identification and in France all receivers manufactured after 1 December 1979 had to be able to use this method of synchronisation, so the bottles could be withdrawn.

Frequency modulation of the subcarriers inhibits TV production switching, so coding the output of the camera's and then feeding a production switcher for mixing and caption inlaying is not possible.

Post production had exactly the same problem and there is a lot of speculation that SECAM was partly developed for reasons of national pride and to protect the French Television equipment manufacturers.

Not unheard of if you look at the logic behind the SCART connector, but you could argue that this was added later on because text from VCR's could not be overlaid on a SECAM picture.

The FM modulation also required the subcarrier to be present on all of the TV line not just the part of the picture displaying colour information, so it was perhaps the poorest performer.

The colour did not have both colour signals present on every line, the FM subcarriers were difficult in production and post production transcoding to P.A.L was the best solution for, production and post production with the end product being coded back into SECAM for transmission.

Transcoding analogue signals is not a transparent process. The other killer of this FM system was the subcarrier component which present on parts of the image, even if did not have a colour content. It did have however a reasonable performance in difficult transmission paths.

It went live in France in on October 1 1967. The Russian version added a few tweaks and followed suit, as did some of the French dependencies in Africa, but the feeling was always that a political decisions had overridden any engineering decisions.

The BBC had looked at and abandoned SECAM in the UK 1963, so it was in third place when the UK started to make its choice.

NTSC

What the UK wanted was the NTSC style system, where production switching with all its mixes wipes and inlays could be easily implemented on a coded signal and post production was possible without any transcoding.

Both colour signals present on every line, subcarrier patterning was limited to coloured parts of the picture, NTSC delivered all this but, hue errors could be created in the transmission path and was the downside.

NTSC again used two colour difference signals (I and Q) and this time the modulation mode of the colour subcarrier is suppressed-carrier amplitude-modulation of two subcarriers in quadrature (QAM).
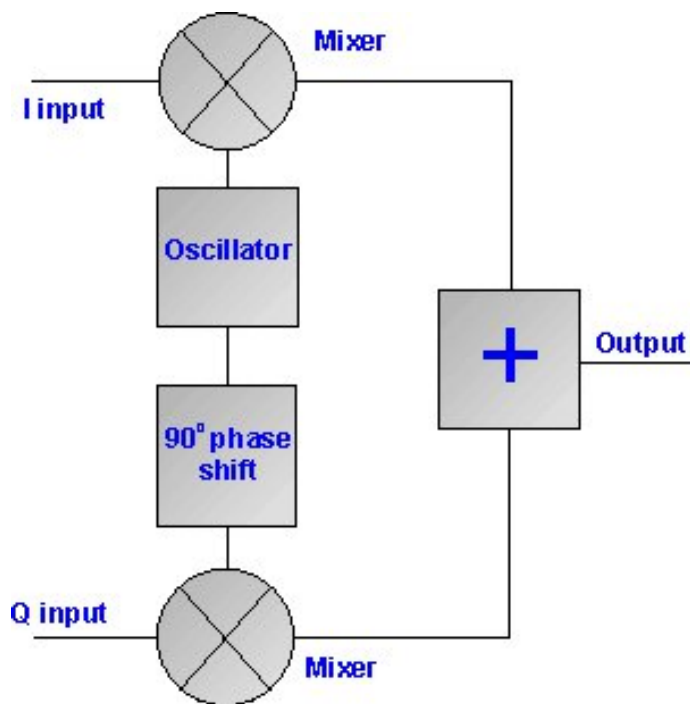
NTSC Colour Modulator (Interesting if you think this was new to QPSK DATV)

NTSC TV Line

Colour difference signals using quadrature modulation meant that there was only subcarrier when a colour is present and it is proportional to the colour saturation so pale colours have less subcarrier than heavily saturated colours and both colour signals are available on every line.

The original carrier is needed in the receiver to decode the signals and this is delivered by an xtal oscillator, phase locked to the original carrier by a burst sent during back porch period.

The subcarrier frequency is 3.579545 MHz, this is chosen so that the positive peaks on one line sit above the negative peaks on the next line, so as to provide some degree of optical subcarrier cancellation, remember that NTSC was 525 lines.
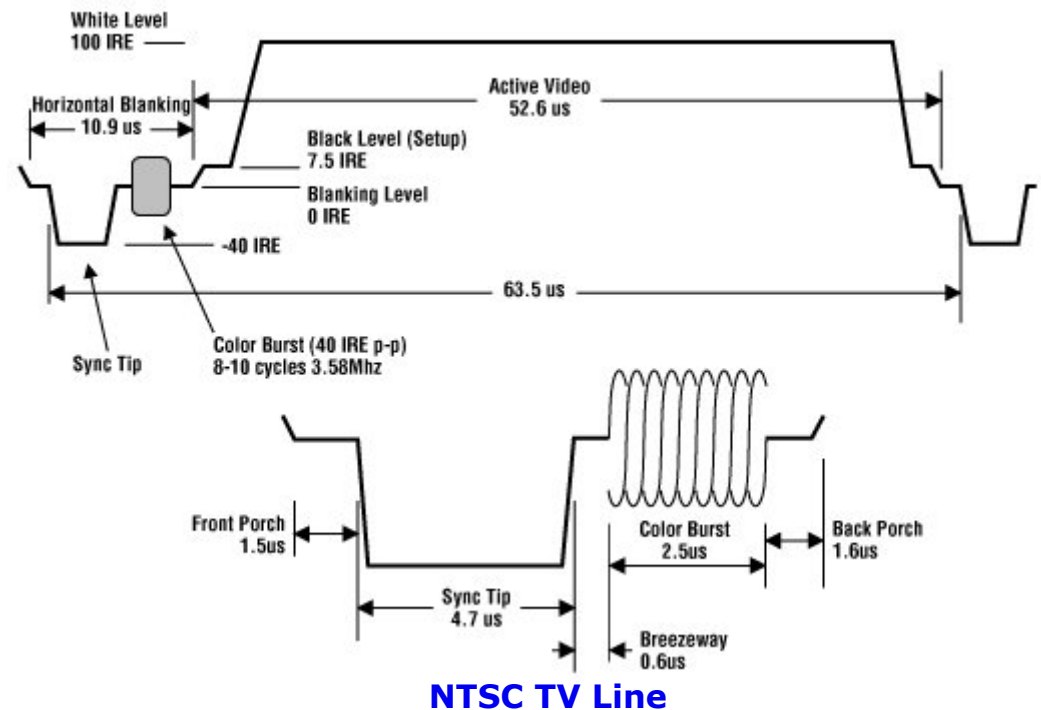
So to adapt the system to the UK the numbers would need re crunching, but nothing that would be too demanding. The problem was the hue changes over transmission paths, to this end NTSC TV sets were fitted with a hue control so this could be adjusted at the receiver by the viewer.

P.A.L

Easy to be wise after the event and as the UK TV system had not yet launched, investigations were made in a system based on NTSC which would have a degree of hue error cancellation. This came from Dr Walter Bruch (pronounced Brook) of Telefunken in West Germany.

The QAM subcarrier frequency for 625 PAL Dr Bruch chose was 4.433618,75, he also reversed the phase of the V axis every alternate line, hence the name P.A.L (**P**hase **A**lternating **L**ine).
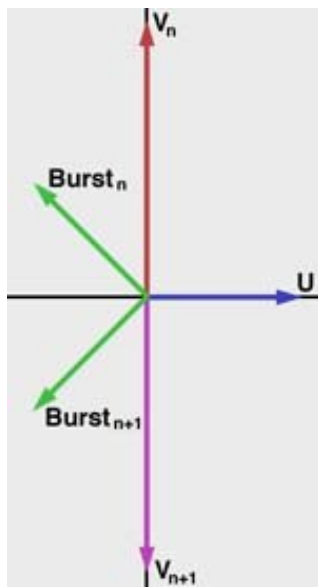
PAL Vector showing the bursts from two lines and the V axis alternating

The theory behind this was hue errors would suffer phase error changes in opposite directions on alternate lines and cancel out. Subcarrier frequency was a choice to help reduce subcarrier patterning, but also to help interweave the luminance and Chrominance sidebands.

There needed to be a way to identify which lines had the reversed V signal and how to flag them. In P.A.L this was done by shifting the phase of the colour burst by 90° on alternate lines.

There is a very precise delay line in the P.A.L decoder that averages out each line with the previous line. There were one or two teething problems, but in general I would say it was the right move.
Working in a department that often encountered NTSC video tapes to replay, if you miss adjusted the burst to chroma phase to simulate an error, the hue definitely changed, do the same thing on a P.A.L replay and the colour de-saturates, but the effect is nowhere near as bad.

Its analogue TV, nothing is perfect in the analogue world but I would like to think we chose the best system from those available at the time.

Many of the South American countries that were running 525 line B/W, chose to add a PAL subcarrier (PAL M) (525 line P.A.L). So we end, what is in a subcarrier, a lot of engineering and some politics, they were inevitable, but P.A.L delivered Colour Television to the UK and a large part of the world.

P.A.L colour started with out-of-hours test transmissions on BBC2 in London in uhf Band IV (24 May 1965).

March 1966 the United Kingdom, officially adopted P.A.L as UK colour system
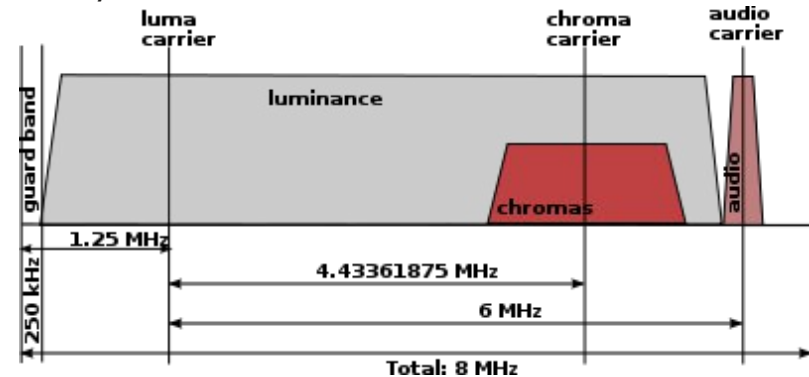
A view of the spectrum used for a PAL Colour TV transmission

So P.A.L is over 50 years old in the UK, well not quite as broadcasts ceased in 2012. It has been succeeded in the modern digital world, but that's another story and another map with more interesting colours, but every time you find a TV set still equipped with those yellow phono sockets, then strictly speaking the set has a P.A.L. decoder and P.A.L. is alive and well but for how much longer?

https://en.wikipedia.org/wiki/Timeline_of_the_introduction_of_color_television_in_countries

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Zeitschrift für Bild- und digitale Daten-Übertragung im Amateurfunk

G8GKQ/p sendete mit 2 MS/s auf 10 GHz mit dem Portsdown-DATV-Sender des BATC (siehe Seite 6) und wurde über 130 Kilometer Entfernung von G8GTZ mit dem MiniTiouner (F6DZP) empfangen.

AGAF auf der HAM RADIO Halle A1 · Stand 246

Aus dem Inhalt: EDITORIAL · Einladung zu den AGAF-Mitgliederversammlungen in Glövzin und Friedrichshafen · Eine preisgünstige Antenne für das 13-cm-Band · Testbericht zur Dia-Digitalisierung · SHF-Baken bei DBØKK in Berlin · DBØHEX auf dem Brocken wieder QRV · HAMNET-Ausbau in Deutschland · 50 Jahre AGAF – Die Anfänge

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/*

Running the Cropedit Editing Software on Windows 7 or 10

Mike G7GTN

On reading the PCB Gerber file article by Fabrizio Bianchi IW5BDJ published back in CQ-DATV issue number 24. I was drawn to the Windows application that he had used DOSBOX.

Wanting to design some new Cropedy testcard screens on my normal Windows 7 64 bit desktop it was apparent immediately that some type of DOS emulator was going to be required to enable me to do so.

Fabrizio came up with the perfect solution albeit on a totally different project, most articles seem to have little segments that can be reused for other things; this is one example that very quickly solved a problem and became the solution for me.
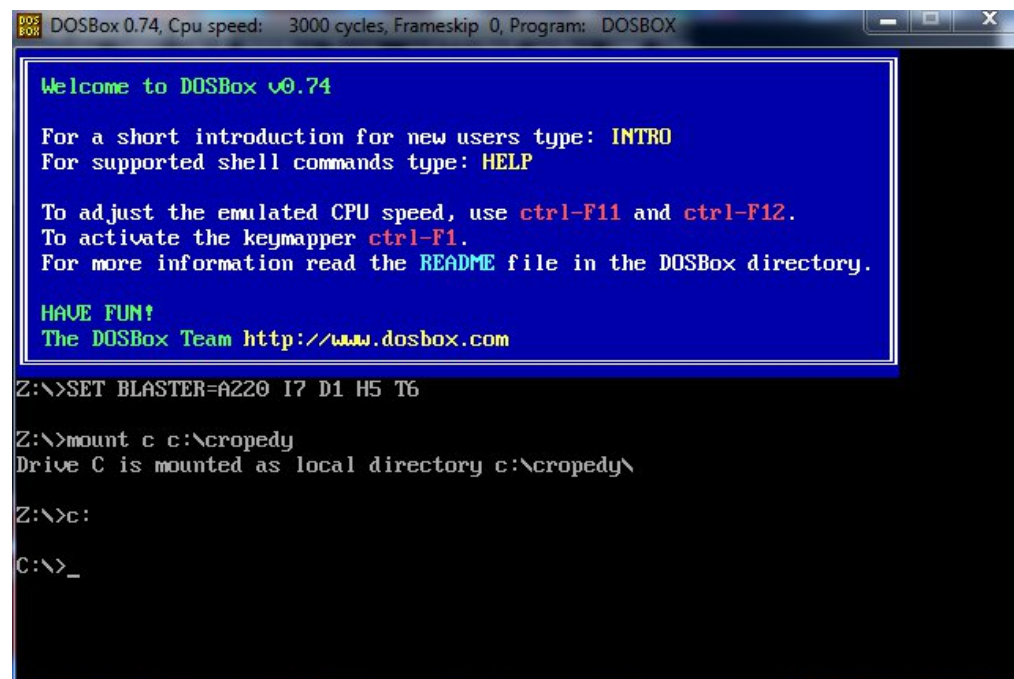
Installation

Firstly you need to download and install the DOSBOX emulator; this can be located at the following website

http://www.dosbox.com/download.php?main=1

Once installed you need a directory for Cropedit and all your associated testcard files.

To save traversing large or complex directory structures within DOS I created a directory directly on my systems main C:> drive. This directory was simply named Cropedy.

Now click the DOSBOX icon to launch the software.

Next you need to mount the drive. This is done by typing the following at the displayed DOS prompt

mount c c:\cropedy <return> <- as in press return key
**c:** <return>

To get a directory listing we use the DIR command.

To refresh your memory on available DOS commands you may like to quickly check out the following

http://en.wikipedia.org/wiki/List_of_DOS_commands

Remember though that as we are running within an emulator we only have a limited subset of these commands. Typing help at the displayed prompt will show you the commands actually available to us.

When you are finished, typing **exit** and pressing **return** will simply close the DOSBOX application.
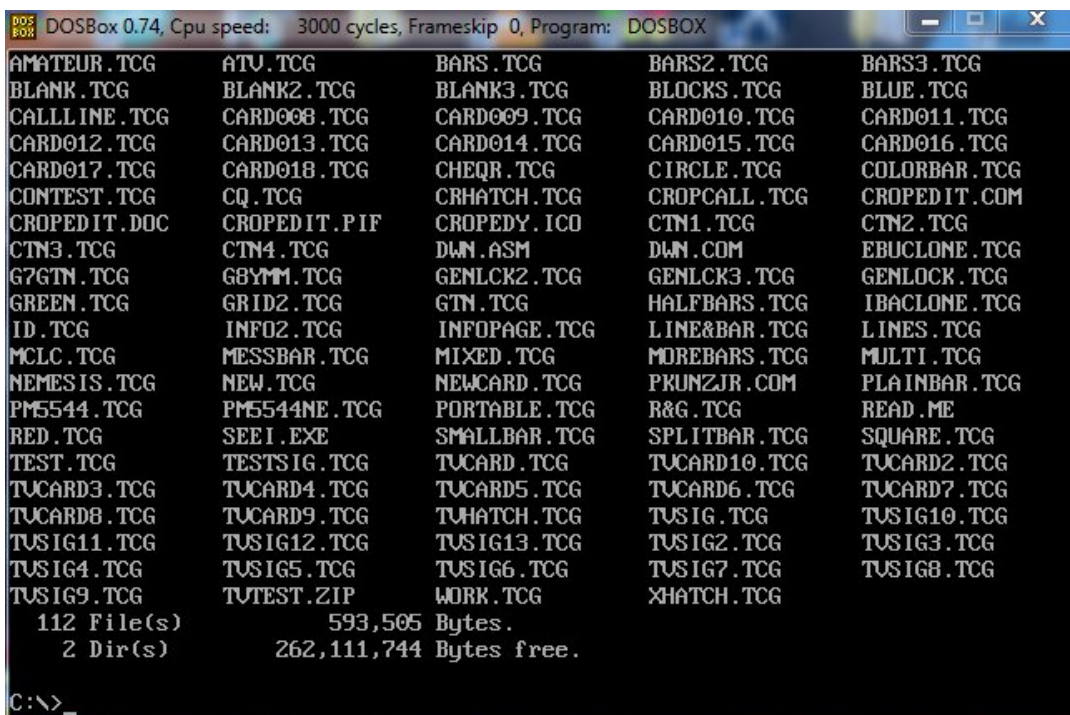
Pick a card – any card and then just edit away using the Cropedit software

Cropedit – Testcard Creation Software

You obviously need to have a copy of Cropedit which was written by Brian GW6BWX. This can still be obtained from the software section of the BATC website

http://www.batc.org.uk/cq-tv/software/index.html

this will be unzipped in to the directory where you have your Testcards.

The cards should have the file extension of .TCG and remember we are working to the DOS Naming convention of 8 characters maximum for the file and 3 for the file extension.

So we can still use some software that is 25 years old even on our more modern Windows operating systems.

External links

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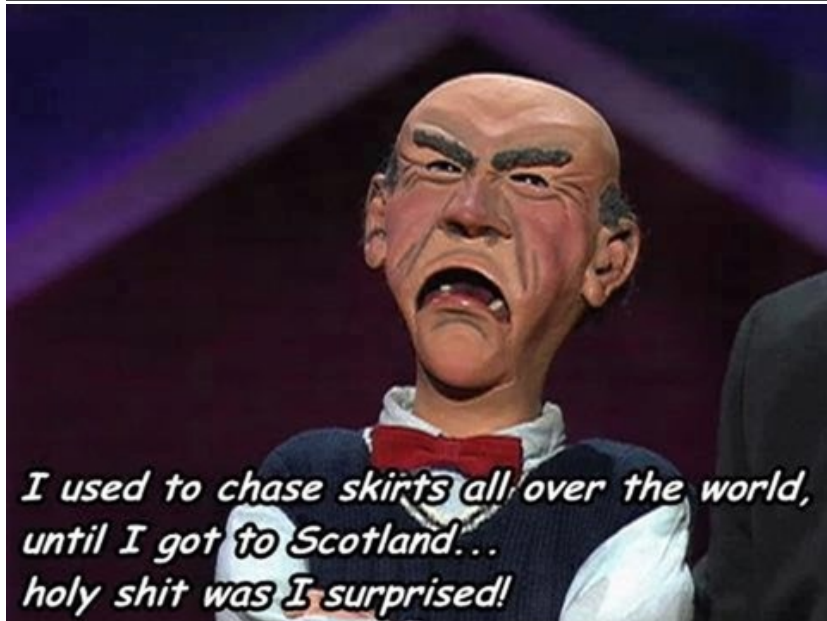
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