



The British Amateur Television Club

CQ-TV

No. 284 – Summer 2024

The BATC gets shipshape to help celebrate RNLI 200

The Portsdown Newsletter

CQ-TV back issues

ATV Contest activity

Activity and Contests

ATEM Update v9.5

The LimeNET Micro 2.0 developer edition

A brief adventure with /MM DATV

Portsdown 5: under development

What force to tighten a SMA connector?

Fitting my PA in a case with a fan

QO100 from V01 Newfoundland

A method for remote off-air status monitoring for DATV repeaters

Mr Whippy serves up another seven-band Sundae

My Portable Set-up – Dave, G8GKQ

Modification of Nokia type PA

Out and about for a contest...

... and much more inside!



CQ-TV 284



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Contributions

Contributions for publication or for constructive comment are welcome. The preferred method of communication is by email; all relevant committee email addresses are published in CQ-TV.

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Contributing authors should note that we aim to publish CQ-TV quarterly in March, June, September and December.

The deadlines for each issue are:
Spring - Please submit by February 28th
Summer - Please submit by May 31st
Autumn - Please submit by August 31st
Winter - Please submit by November 30th

Please submit your contribution as soon as you can before the deadline date. Do not wait for the deadline if you have something to publish as it is easier to prepare page layouts where we have contributions in advance.

Contributions can be in almost any file format - except Microsoft Publisher! MS Word is preferred. Pictures should be submitted in high quality as separate files. Pictures embedded in a file are difficult to extract for publication however if you do wish to demonstrate your completed layout, a sample of your finalised work should be submitted at the same time.

Please note the implications of submitting an article detailed in the 'Legal Niceties'

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From the Chairman...

Martin Charman G4FKK

It doesn't feel as though over ten months have gone by since CAT23 last August, but here we are with just a few weeks to go until CAT24 Part 1 so make sure you block out the 4th of August in your diaries and, if you possibly can, make your way to the Midland Air Museum in Baginton near Coventry. It would be great to see as many BATC members there as we can muster. A few salient points to note are...

- ▶ Entrance tickets, which are free to BATC members, will be available soon in the BATC shop. Please reserve your tickets in advance so that we can plan for numbers and prepare badges.
- ▶ Doors open at 10 am and the venue is available until 4 pm. You will be able to pre-order lunch from the café early in the day, and we are arranging for extra seating to be available in the venue for relaxed discussions. Overflow car parking will also be available to ease the problems that we had last year.
- ▶ There will be the usual test and fix-it, QO-100 and portable station demonstrations. If you are having trouble setting anything up (including laptops), bring it along and the experts will try to help you.
- ▶ The bring and buy is always popular and we are encouraging members to bring their surplus items to help others join and progress in the hobby. If you have particularly heavy items, please contact one of the Committee to gain easier access to the venue.

- ▶ The General Meeting will be at 2 pm. Please attend this meeting to have your say in what the Club does for the next 2 years.
- ▶ There will be an informal dinner at the Old Mill Hotel in Baginton on the Saturday evening. Please pre-book on the forum as places are limited.
- ▶ Full details of the event will be published on the BATC forum <https://forum.batc.org.uk/viewforum.php?f=144>.

Two members of the committee will be standing down this year; Rob, G8NXG and Tim, G4WIM. Rob, as I'm sure you'll all know, took over as Membership Secretary when Dave, G8ADM, relinquished that post eight years ago and has done a sterling job keeping the records in order and keeping us all up to date with membership renewals and new joiners since then. He also managed the smooth transition of the job to Tony, G3UIS. I'd like, on behalf of all the members, publicly to thank Rob and Tim for giving up their time and effort towards the running of the BATC. We're all extremely grateful.

This does of course mean that there will be two positions on the committee vacant at the General meeting and we'll be inviting nominations for new committee members from the floor during the proceedings. So, if you feel you can add something to the furtherance of ATV, please let us know on the day and persuade someone to propose your nomination; we're a friendly bunch and will make you very welcome

In other news, there has been a good amount of portable operation going on in the last few weeks including John, G7JTT and Colin, G4KLB's very successful operation at Poole Harbour in support of the RNLI as well as DATV on the high seas carried out by Russ, G4SAQ. Reports on these and other interesting activities appear in the pages of this edition of CQTV.

That's it from me. I'm looking forward to seeing lots of you at CAT24 in August and let's hope the weather is a bit warmer and clement than currently (middle of June)! 🌤️

73, Martin G4FKK



The Listing

new members

This past three months has seen the initial burst of new members subside and a steadier flow of new members. Unfortunately, this is offset by an almost identical number of members who don't renew. Hence the total membership remains static. We do make a positive effort to encourage lapsed memberships to be reinstated, with a limited success.

The club is fantastic value, with memberships starting from only £8, probably one of the best value subscriptions in amateur radio. At the recent "Norbreck

Tony Stone G3UIS



Rally" I was enthused by the interest in DATV and ATV, that came from a couple of local demos on our stand, compared with the analogue TV of the 70s - it's really not difficult to become involved.

My thanks go to all our new members and a continued thanks to those who have recently rejoined.

My next report will be after CAT24 and our general meeting, I look forward to seeing everyone there at Coventry in August 🗨️

Australia		
Peter Ritchie		Ermington
Hayden Sims	VK4NU	Hillcrest
Jack Swart	VK2TRF	Northbridge
Carl Wright	VK5CFW	Portt Pirie
Nik Presser	VK3BA	Bannockburn
Brad Quayle	VK3BKQ	Rowville
Belgium		
Bernard Baekelant	ON4KBF	NAAST
Robert Robyn	ON5AF	Bruxelles
Willy Willems	ON1WW	Houthalen-Helchteren
Andre Adam	ON4AG	Brakel
Canada		
Sam Linton	VE6OWO	Calgary
France		
Edouard dziewiacien		Druyes les belles fontaines
Christophe Rouviere	F5IWN	Rueil Malmaison
Christian Lucuix	F4BEB	Bagneres de Bigorre
Stephane Helaïem	F4IRX	Generac
Pascal Ledieu		forges les bains
Baudoin Lefbvre	F4EIS	Villiers-sur-Marne
Germany		
Martin Muermans	DL1RF	Geisenhausen
Moritz KÄsler	DL1TMC	Landshut
Markus Koesler	DG1GAC	Landshut
Bernd Mueller	DM3BM	Levenhagen
Gunter Rickenstorf	DG3DXL	Dresden

Greece		
George Ioannu	SV8ARJ	Athens
India		
Maheir Kapadia	VU3IA	Mumbai
Ireland		
Dermot Madsen	EI4ESB	Dublin
Italy		
Andrea Fornarola	IU6DEV	Loreto Aprutino
Salvatore Gianni Schembari	IT9FGY	Mascalucia
Pakistan		
Arshian Sulaman		Islamabad
Poland		
Grzegorz Kaczmarek	SP6HFE	Siechnice
Zbigniew Kosidowski	SP2SGQ	Chojnice
Portugal		
Carlos Pinho	CT2GAM	Marinha Grande
Acacio Antunes	CT1EJC	Quinta do Conde
Radioamadores da Costa de Prata	CS5CP	Figueira da Foz
South Africa		
Hendrik Schoeman	ZS1HSC	Bellville
The Netherlands		
Richard Schulting	PA1RAM	Zeewolde
United Kingdom		
Alistair Meakin	G4HLU	Beverley
Phil Parry	M0DLZ	Nottingham
Chris Rees	GU3TUX	Alderney
Kassidy Fenton	M7KAS	Houghton Le Spring

Total paid memberships at 1st June 2024: 1396

Lee Wiltshire	G0IAY	Chippenham
Mike Browne	G3DIH	Cold Norton, Chelmsford
David Cope	G8JGO	Goole
Rex Hamilton		Farnborough
Nicholas Kett	G6ARM	Gorleston-on-sea
Nigel Hardie	GM7GRH	Selkirk
Christopher Williams		Walsall
Paul Wood	G1ELF	Cirencester
Keith Hotchkiss	G0FEA	Mendlesham

Philip Hurren		Truro
Charles Riley	G4JQX	Westbury
Russell Butt	G0RBG	Hereford
Mark Sweet	G1INU	Wigan
James Mould	2E0JML	Dunstable
United States		
Fred Piering	WD9HNU	Maitland
Pete Sias	N0OY	Salina
Everett Curry	W6ABM	McMinnville
Nathaniel Means		

Agenda for the BATC general meeting

Midland Air Museum – 2pm on Sunday 4 August 2022

- 1. Apologies for absence.**
- 2. Minutes of the 2022 general meeting and matters arising.**
These can be downloaded from
<https://batc.org.uk/wp-content/uploads/Minutes-of-BATC-General-Meeting-7th-August-2022-draft.pdf>
- 3. Report by the chairman on behalf of the committee.**
- 4. Report from the treasurer and presentation of the accounts.**
- 5. Presentation of BATC awards.**
- 6. Election of committee members.**

The following committee members are due for election in 2024 – all are willing to stand again:

- ▶ Brian Summers, G8GQS
- ▶ David Crump, G8GKQ
- ▶ Frank Heritage, M0AEU
- ▶ Clive Reynolds, G3GJA
- ▶ Phil Crump, M0DNY

The following committee members were re-elected in 2022 and do not need to stand again:

- ▶ Noel Matthews, G8GTZ
- ▶ Ian Parker, G8XZD
- ▶ Robert Burn, G8NXG
- ▶ Tim Forrester, G4WIM

However, Robert Burn and Tim Forrester have indicated they no longer wish to be on the BATC committee and so we will welcome nominations for new committee members from the floor during the meeting.

7. Close of meeting.

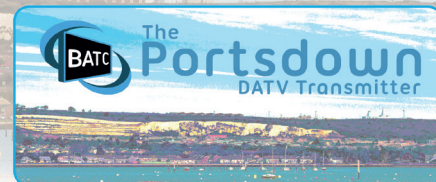
Notes:

- ▶ No items have been received from members for inclusion on the agenda
- ▶ The GM is open to all but only BATC members will be allowed to vote
- ▶ Members are identified by a BATC badge provided
- ▶ All questions will be addressed through the chairman
- ▶ Please respect the chairman's decision to ensure an orderly and timely meeting
- ▶ After the formal meeting closes there will be a general question and answer session.
- ▶ After the GM is over, the new committee shall select from its number a chairman, secretary and treasurer, together with additional committee posts as required 🗣️



The Portsdown Newsletter

Dave Crump, G8GKQ



Although I have started work on the Portsdown 5, development of the Portsdown 4 continues. I have quietly added a few new features recently.

Pluto SDR support

I have extended the waterfall facility to the Pluto BandViewer. This means that the waterfall is now available when using LimeSDR, Pluto or the SDRPlay RSPdx.

The noise figure meter is now available in a version that works with the Pluto, so it is not only LimeSDR users who can check their receiver sensitivity. The noise figure meter was originally described in CQ-TV 274; the noise source PSU PCBs are still available in the BATC shop.

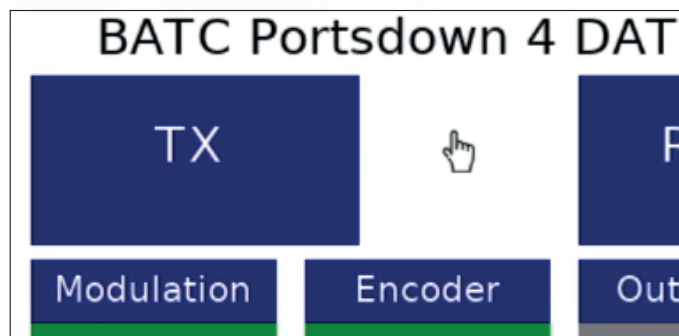
Web control

All the Portsdown applications now work with web control, so you can control them all from your iPhone or a computer in another room away from the shack. Received pictures and BandView spectrums are only updated once per second, but it is a very useful facility.

Simply point a browser at your Portsdown's IP address (which you can find on Menu 2, Info). Then type something like <http://192.168.0.129> into your browser. To prevent unauthorised access (from other members of your household) the facility needs to be enabled before use on the touchscreen from Menu 3, System Config, then touch "Web Control Disabled" and it will change to Web Control Enabled".

Mouse and HDMI control

I am experimenting with a new Portsdown 4 configuration. If you start up the latest version of a Portsdown 4 with no touchscreen connected, but with an HDMI display and a USB mouse, you can use the mouse to click on the touchscreen buttons. This facility currently only works with the core Portsdown application - so transmit and receive. One advantage is that received pictures are displayed at full resolution on the HDMI display; conversely, the Portsdown button screen is smaller in the top left corner. To date, this does not work with BandViewer or any of the other test equipment.

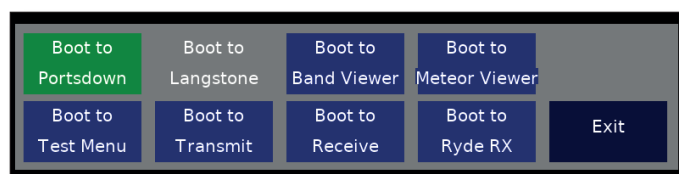


► The mouse icon on the Portsdown 4

With this HDMI configuration, I have also added a facility to co-install the Ryde software, which can either be controlled from an IR sensor (same GPIO pins as a proper Ryde) or from M0DTS's Quick tune. This is all very experimental at present, and alternative IR remote control models need to be selected by editing the config file using a text editor. You can exit back to Portsdown simply by clicking the mouse. The "Install Ryde" button is on the File Menu (access from Menu 2); once installed, the "Ryde Receiver" button becomes available on the top line of Menu 2.

Start-up options

New options have been added to the "Start-up App Menu" (available from Menu 3, System Config). These should be self-explanatory:



Bug fixes

I have fixed a problem with the "Save-to-USB" functionality, allowing the saving and restoring of Portsdown settings to a USB stick. You can also view the contents of a USB stick from Menu 2, File Menu.

Project overview

Portsdown 4 remains the primary in-use system, and will benefit from some of the new discoveries and features from the Portsdown 5 development. Portsdown 2020 will continue to be maintained (as I use it for my primary portable/contest system), but will not generally have new features implemented. 🗨️



CQ-TV back issues

Dave Crump, G8GKQ

The club currently holds more than 500 paper copies of back issues of CQ-TV. Issues prior to CQ-TV 241 (September 2013) do not contain much of current relevance and the committee have decided to dispose of them to reduce the amount of storage space needed.

All CQ-TVs from issue one (October 1949) until the present day are available on the BATC website, so no information is being lost; additionally, the BATC archivist Brian G8GQS holds paper copies of all issues that are available.

The plan is that all magazines in the series 100 - 240 are being offered, on an availability basis, to any members who want them. Not all issues are available, and there are none before issue 100.

If you have a particular request, please e-mail me (treasurer@batc.tv) with details of the issue number(s) and I will check availability. If in stock, I will ask you to make a specific online donation to the BATC (through the shop) to cover postage and packing costs and send you the issues.



I will bring all the remaining issues to CAT 24 in August for attendees to take away at no cost. Those that remain at the end of the day will go to recycling.

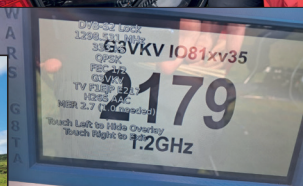
Issues from CQ-TV 241 onwards are available for purchase from the BATC shop; they will also be used as publicity material at rallies and events.



ATV Contest activity

David Holman, M0YDH

I went to Clee Hill Common IO82RJ again this year on the 8th June only. John M0XJA came to help and brought the Antenna drive on base and mast winch that suits my newer car. No visits from cattle were experienced this year. I made contacts on 2m, 70cm and 23 cm most being 2 way with Graham G3VKV at 65km, Steve G4NZV at 50km and 70cm only with Gareth G4XAT at 138km. My transmissions at the start to Dave G8GKQ were received P5 on 70 and 23cm at 172km away but my Portsdown 4 receiver decided to fail. With the G8TA Portsdown 3 hurriedly connected into Rx duty it was apparent that I needed a pre-amp to pull these signals in. There were no takers on 6cm FM ATV in the visible directions available. I'd bought a Syncsmurf unit specially for weak signals.



Activity and Contests

Clive Reynolds, G3GJA



IARU International Contest

The UK results of the June IARU Contest have been compiled. This year entries using multiple sites were entered into a separate section of the contest labelled 'Roving'. This was designed to give a more even playing field to fixed stations and your comments on the new format would be welcome via email

Thirteen entries were received of which four were Roving. For what might be a 'first' Russ G4SAQ operated maritime mobile from his yacht off Cowes in the Solent. Please do enter a log even if it is only for a couple of contacts as they all help to document our use of the bands.

My own efforts look better this year, partly due to the removal of Roving stations, but also due to the patience of Bob G7AVU in Gainsborough. The path back to the west of Hull is obstructed by high ground and the two-way QSOs on 23cm and 70cm took up to 40 minutes for each set of 4-digit numbers to appear via aircraft scatter. If there is a sniff on Bandviewer it's worth waiting for a plane to appear in the right spot to complete the contact.

The software used to adjudicate the entries continues to improve and now identifies problems with more detail. For the first time since taking on the role of Contest Manager, I have been able to submit the UK entry with zero errors. That said, I spent several hours sorting the various errors and exchanging emails with entrants to get the more problematic discrepancies resolved. If using Libre Office Calc to run the scoring spread sheet, you must ensure that the macros within the spread sheet are allowed to run. It can be done, although David M0YDH reported that it was a struggle.

UK Fixed Station leader Table

Nr	Call	Fixed
1	G4XAT/P	9030
2	M0DTS/P	3455
3	M0YDH/P	1080
4	G3GJA	728
5	G3VKV	540
6	G4YTV	356
7	G4BVK	272
8	M1ASR	180
9	G4SAQ/MM	138

UK Roving Station Leader Table

Nr	Call	IARU score
1	G8GTZ/P	15382
2	G4FRE/P	14296
3	G8GKQ/P	7337
4	G4EEV	302

There were two entries for the UK only 2M section. Dave, M0YDH claims 1st place and Graham G3VKV came 2nd. 📶

Best DX by band

Band	Calls	Distance (km)
2m	G3VKV – M0YDH	115
70cm	G8GKQ – M0DTS	398
23cm	M0YDH – G8GKQ	172
13cm	G4XAT – G8GKQ	41
9cm	G8GKQ – G4XAT	41
6cm	G4FRE – G8GTZ	136
3cm	G8GTZ – G4FRE	136
12mm	G8GTZ – G4FRE	136
6mm	G4FRE – G8GTZ	54
4mm	G4FRE – G8GTZ	54

► Dunkery Beacon - Noel, G8GTZ





ATEM Update v9.5

Justin D. Cockett G8YTZ

On 7 June, Blackmagic Design released a major new firmware update to their range of switchers. The update covers the following models:

- ▶ ATEM Mini Pro
- ▶ ATEM Mini Pro ISO
- ▶ ATEM Mini Extreme
- ▶ ATEM Mini Extreme ISO
- ▶ ATEM SDI Pro ISO
- ▶ ATEM SDI Extreme ISO

The update includes the following new features:

- ▶ Support for the open-source SRT (Secure Reliable Transport) streaming protocol. This is a big feature update and most impressive to see this added on existing hardware model that's now more than four years old. SRT offers more reliable streaming than rtmp can deliver, be it to YouTube (beta customers only right now) or a custom SRT destination. Find this in the streaming drop-down menu – select the “Custom URL H.264” or the “YouTube SRT Beta” option and add your SRT destination.
- ▶ The ability to change the routing option for the webcam output; you can now choose between the Multiview, Programme and Preview feeds for the ATEM Mini, and any source for the Extreme ISO version. Previously the webcam output was fixed to the programme output.
- ▶ If you have a USB Disk plugged into the ATEM, you can now access it using Windows file sharing. The drive will appear as a network drive on any network connected Windows PC, MAC or Linux machine (I've tested with Windows 10 Pro, Mac OS Sonoma 14.5 (Apple Silicon) and Ubuntu 24.04). You connect using the username and password guest/guest. Previously only FTP connections were supported. I have verified that both connection methods are simultaneously supported on the ATEM Mini Extreme ISO (I've not tested this with the ATEM Mini).
- ▶ What's even more interesting is that if you are also a user of Blackmagic's DaVinci Resolve editing software, you can use this network connection to do a “instant” replay of files being recorded to the disk that will show as “in progress” recordings.

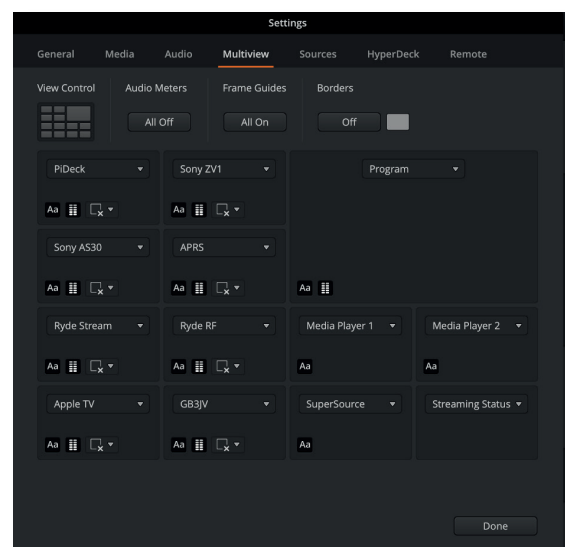
- ▶ More “Multiview” screen customisation options including customisation of borders (colours or no borders) and individually remove custom labels on a per source basis.
- ▶ You can now disable the FTB or “Fade to Black” button, which many people have hit by mistake during their production.

To install the update:

- ▶ Go to: <https://www.blackmagicdesign.com>
- ▶ Select the “Support” Tab
- ▶ Select “ATEM Live Production” Switchers”
- ▶ Scroll down to “Latest Downloads” and install the ATEM Switchers Update (9.5 as I write this)

A Breaking Change to be aware of before you update:

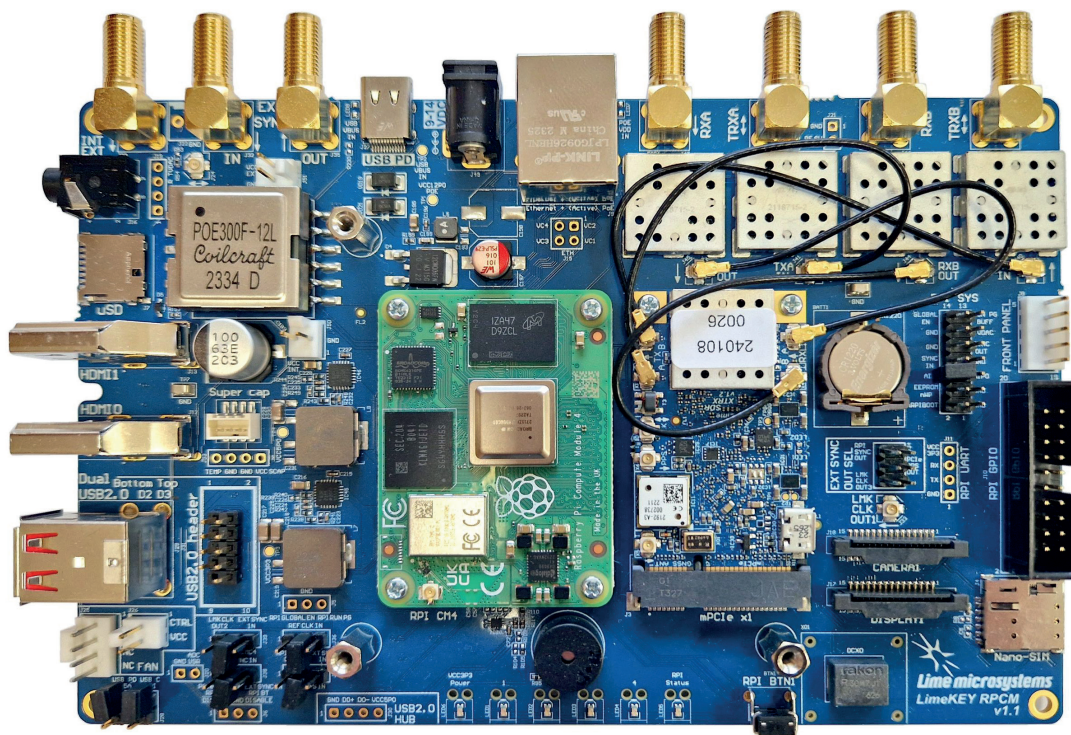
Unfortunately, the updated Webcam output no longer seems to work with the Portsdown or the Jetson Nano. I also had some issues when I tested with VLC (Media (or File on a MAC) => Open Capture Device => Sound & Vision device => then adjust the requires resolution and aspect ratio). I found flipping the USB-C connector resolved this. I tried using a USB Hub and a pair of back-to-back dongles, but so far, no joy. Other people have reported issues like this with the Apple iPad, so it might be that Blackmagic have a some more work to do, or it might be that an update is required for the Portsdown and Jetson. 🗨️



▶ Figure 1 New “multiview settings”

The LimeNET Micro 2.0 developer edition

Dave Crump G8GKQ



Lime Microsystems have announced an updated version of the LimeNET Micro, which is an integrated Raspberry Pi 4 and LimeSDR with on-board preamps and power amplifiers for two inputs and two outputs.

The unit is designed as a carrier board for a Raspberry Pi Compute Module 4, and for the Lime XTRX SDR.

The board can be powered from 12v, from PoE or from USB-C. There are two HDMI outputs, two USB-2 type A sockets, a gigabit network connection and an audio output port. A number of the Raspberry Pi GPIOs are exposed on the black 20-pin socket at the right-hand side of the board; numerous other interfaces (including one for a front-panel display) are positioned around the board. There are also connectors for a Raspberry Pi camera and a touchscreen.

The LimeSDR XTRX module connects to the carrier board through a PCIe connection. The RF connections are through UFL connectors. The carrier board includes LNAs that should be capable of sub-2dB noise figure, and power amplifiers that should achieve 100 mW anywhere below 2 GHz. The RF inputs and outputs (two channels each) are on the SMA connections at the top right of the board.

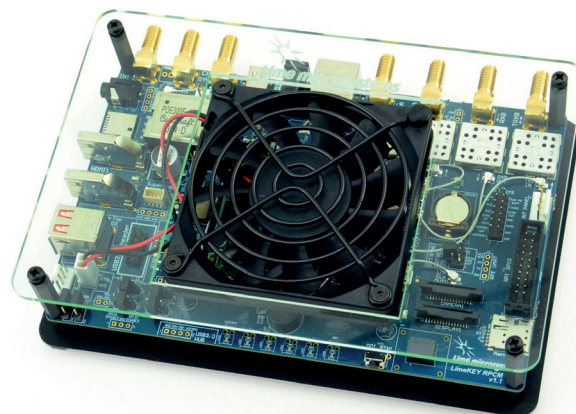
► The LimeNET Micro 2.0 developer edition

The XTRX module includes a GPS receiver. There is an on-board TCXO for the LimeSDR reference and there are extensive options available for clock synchronisation between multiple LimeNET Micro assemblies.

The software library requires the latest 64-bit version of the Raspberry Pi operating system, so is not compatible with Portsdown 4 however, the Portsdown 5 should be compatible with the system, and early testing on a loaned example is giving promising results.

The supplied units will have an acrylic housing with a built-in fan. The quoted price is \$1699 each.

<https://www.crowdsupply.com/lime-micro/limenet-micro-2>





A brief adventure with /MM DATV

Russ Tribe, G4SAQ

Having recently completed my first DATV construction project, the IARU Region 1 ATV contest on 8 and 9 June seemed to offer a good opportunity to try it out. My gear comprises the ubiquitous Portsdown 4 transceiver together with filters, drivers, PAs etc for 2m, 70cms and 23cms.

The contest clashed with the start of a sailing trip that my wife and I had planned on our sailing yacht, 'lo' (a Westerly Oceanlord). The solution was obvious: try /MM. However, sailing a yacht while dealing with the complexities of a DATV QSO was a daunting prospect so I decided on a more sedate solution.

the guard wire stanchions on the side on the boat and pointed it north. The Portsdown 4 (in its recycled Gould oscilloscope case), PAs etc were placed below on the chart table. I had previously connected a heavy cable to the main battery switch, through a 20A fuse, to the equipment.

Initially, I found it difficult to communicate with Dave on 144.75MHz as I was using a 5W hand-held. I tried the Langstone with my 30W PA, which worked very well indeed. We agreed that I should send DATV on 437MHz at 333ks. I set about re-booting into PD mode and swapping over the numerous cables.

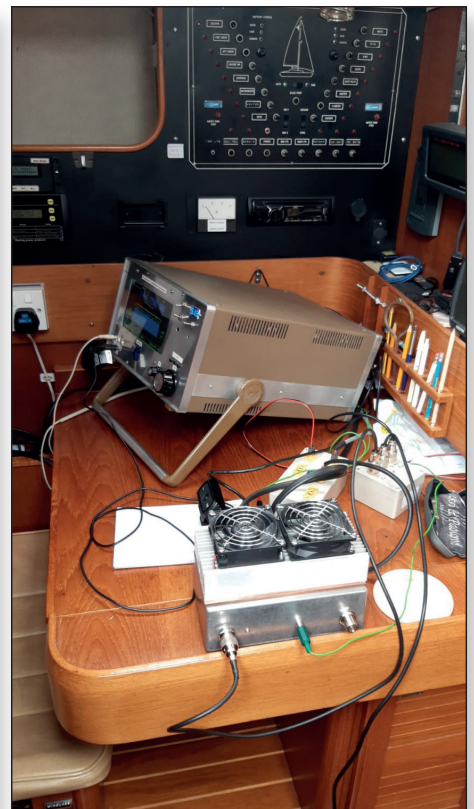
Initially I had no success but that was soon resolved when I realised that I had not swapped the power cable to the 70cms PA. Dave reported P5 pictures and I then received P5 from him. During this time, the wind became fluky and the boat was swinging up to 40 degrees. I had to keep going on deck to turn the antenna.

During my QSO with Dave, we were joined, on air, by Mike, G8LES, from his home QTH near Alton. I was also able to exchange P5 pictures with Mike, which was a bonus. 📷



On Saturday 8 June, the first day of our voyage, the sea conditions were not conducive to any radio operation so we stayed in harbour at Cowes, Isle of Wight. On the morning of Sunday 9th, we moved out to anchor in Osborne Bay, just east of Cowes. From there we had a good take-off to the north.

I had arranged a sched. with Dave, G8GKQ, who was operating /P from Lane End, near Winchester. I set up an 'Elk' log periodic antenna for 2m/70cms on a plastic plumbing tube lashed to



The BATC gets shipshape to help celebrate RNLI 200

John, G7JTT



Over the weekend of the 18 and 19 May, the Royal National Lifeboat Institute at Poole celebrated their 200th years of existence. As part of the event Poole Amateur Radio Society were asked if they could provide a demo of amateur radio, and they in turn asked the BATC if they would be able to attend too.



So Colin was delegated to attend on behalf of the BATC, I just volunteered to help Colin out. Anyway, Colin set about making sure the KLB van was fit and ready to provide QO100 and possibly GB3SQ as part of a demo of ATV. Colin also put out a plea for help to provide content on QO100 over the weekend too.



Eventually the weekend arrived and we arrived on site. The weather wasn't brilliant, a bit drizzly at times, but next to no wind which allowed us to put up an umbrella to cover the outside monitor and speakers. Throughout Saturday we had a steady stream of interested members of the public and we were able to demonstrate QO100 very well - more on the content of QO100 later.



Sunday was a much earlier start (on site by 6am) as there was a motorcycle event taking part as well. The weather started off lovely but then turned cold and the wind picked up this meant no umbrella but thankfully no rain was forecast. Soon after the motorcycles left the weather improved and the rest of the day was very warm with many more people walking along the quayside. Again we had plenty of interest from the public and I was kept busy talking to them while Colin kept the QSO's going.



Now as to QO100 – both Colin and I were blown away with the support we received from fellow hams and the extent some had gone to get content for us to help promote the RNLI and ATV in general. Notable was EA7KIR, Michael's video that he made onboard a Spanish lifeboat which proved very popular with members of the RNLI and the public.



The Selsey Sea Shantymen also proved just as popular too as did all the other lifeboat-related videos and live feeds from other RNLI stations. The number of hams who went out of their way to provide content on QO100 just blew us away on both days.



We took part in the QO-100 worldwide net on Sunday and this was also impressive as we worked Brazil and South Africa as well as the UK and parts of Europe.

All in all a good number of stations were worked and as there was the remnants of a solar storm knocking out most of the HF bands we were still able to work plenty of different countries via QO100. It was a brilliant weekend and showed off ATV at its best.

Thanks to everyone who helped out and make the event the success it was.



Colin adds: "I would only reiterate the amazing support we received from the ATV community.

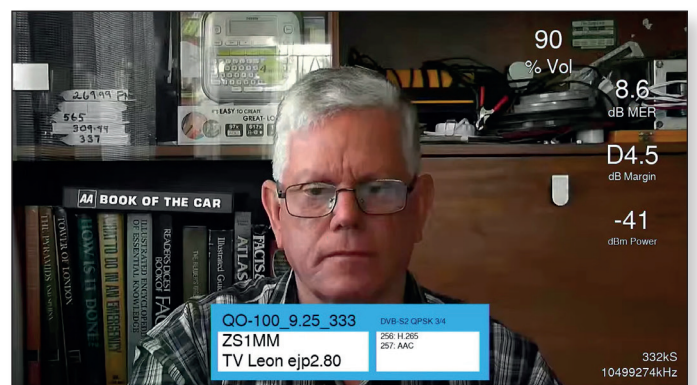
In addition to the excellent video by Michael EA7KIR, Brian G4EWJ took two trailers of equipment from the Wirral Amateur Radio Society to run GB2HLS at Hoylake Lifeboat Station.



Keith GU6EFB went to Guernsey Lifeboat station and recorded video and used the call GB0GLB (Guernsey Lifeboats)

Miguel CT3FM showed us a RNLI video, as well as many other stations getting into the spirit of the event."

Stations contacted included: G0MJW, EA7KIR, G0DQH, G8HKN, G4SAQ, HB9DUG, G4XAT, M0PIT, G4FKK, GB0GLB, G3IUZ, G8GKQ, CT3FM, G8KOE, GW7BZY, G8PQH, CT3FM, GB2HLS, G6HFS, G7AVU, ZS6YI, PY2RN, ZS1MM, PE1AVP, CT7ABD 📶





Portstown 5: under development

Dave Crump, G8GKQ

Since the launch of the Raspberry Pi 5, I have been asked many times whether there will be a “Portstown 5”. Some see this as a logical progression as the Portstown 2020 supports the Raspberry Pi 3, and the Portstown 4 works on the Raspberry Pi 4 and so on.

Eight months after the release of the Raspberry Pi 5, I have come to the conclusion that a new version of the Portstown would be a good idea, but not only for the Raspberry Pi 5. What is more important is to be compatible with the current software being recommended for the Raspberry Pi 4 and the Raspberry Pi 5.

The Portstown 4 (and 2020) are now two major software versions behind the current recommended software (think Windows 7 vs Windows 11) and it is getting more difficult to add new features as broad support fades into the past.

So, I have started working on Portstown 5 within the following guidelines:

- ▶ It will use the 64-bit version of the latest “Bookworm” software recommended by Raspberry Pi for the RPi 4 and 5
- ▶ It will run on a Raspberry Pi 4 and a Raspberry Pi 5, but some features will perform a lot better on the Raspberry Pi 5.
- ▶ Three hardware configurations will be supported:
 - ▶ Use with the seven-inch touchscreen, allowing direct upgrade of Portstown 4 hardware
 - ▶ Use with an external HDMI display and a USB mouse. The “touchscreen buttons” will appear in the top right corner of the display, but received video will playback full-screen, potentially at 720p or 1080p resolution. Use of an HDMI display and mouse in this mode is not compatible with connection of the seven-inch touchscreen
 - ▶ Web control, with or without either of the screen options
- ▶ Nearly all of the software will be re-written from scratch to take account of the “if I’d known then what I know now, I wouldn’t have done it this way” factor
- ▶ It will not be possible to use F5OEO’s custom H264 hardware encoder-based software as this is not supported by “Bookworm”. The Raspberry Pi 5 will be able to undertake this role using software encoding; performance using a Raspberry Pi 4 has yet to be assessed

- ▶ The menus will look familiar, but will have an extra row of buttons to add flexibility

Portstown 5 DATV Transceiver Main Menu

Transmit Select	Receive Menu	DATV Tools Menu	Config Menu	File Menu
Modulation DVB-S2 QPSK	Encoding H264	Output to Lime Mini	Format 4:3	Source Pi Cam
Freq 437 MHz	Sym Rate 333	FEC 2/3	Band/Tvtr 70cm	Lime Gain 88
EasyCap Comp Vid	Caption On	Audio Auto	Atten None	Att Level -10.00
Preset 1 146_333	Preset 2 437_Lime	Preset 3 1255_HD	Preset 4 437-Pluto	Store Preset
Shutdown System	Band Viewer	Test Equipment	Locator Calculator	Stream Viewer

- ▶ Possible Portstown 5 main menu

- ▶ It is hoped to include all of the Portstown 4 functionality eventually

Development has started, but I have so far only written about 2,000 lines of code and there are more than 28,000 lines of code in the Portstown 4. The project is published on my GitHub site, but only as development version. There is no “update” functionality yet, and there will not be any until the project is formally released.

Raspberry Pi 5 enhancements

Raspberry Pi have just released an AI Kit which works with the Raspberry Pi 5. <https://www.raspberrypi.com/news/raspberrypi-ai-kit-available-now-at-70/>. There is clearly potential for it to be repurposed as a very capable H265 (or even H266) video encoder for ATV transmissions. However, I would be totally out of my depth trying to write the code from scratch.

If someone else was able to write the video encoding software (it might use a port of ffmpeg or gstreamer), I would be very pleased to integrate it into the Portstown 5.

The Raspberry Pi 5 also supports the use of large solid state disk drives connected through PCIe. These do not bring many advantages to the Portstown system, but should work without any modifications to the Portstown 5 code.

Timescales

While limited capabilities might be released during 2024, I am aiming for a full release date sometime in 2025. 🐼



What force to tighten a SMA connector?

Chris van den Berg PA3CRX

At higher frequencies, more stringent requirements are applicable for the connectors in question.

If the wrong connector is used or it is not mounted correctly, signals are easily lost and strange effects could occur due to impedance changes.

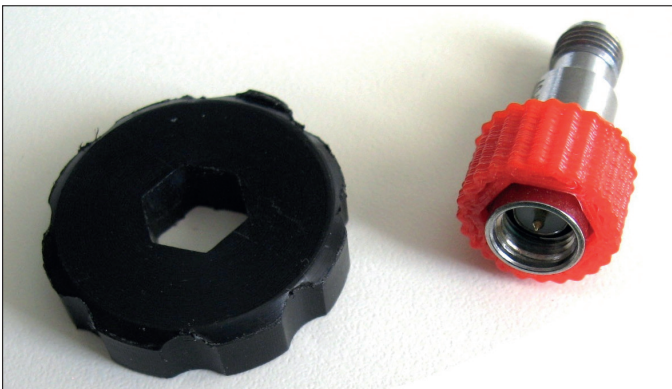
If the right connector is used and it is mounted correctly, it can also go wrong when the connector is not tightened correctly.

Using an open-end wrench and tightening it “as tight as possible” (“until it breaks and then a quarter turn back”) is not necessary and even undesirable.

However, a poorly tightened connector can also cause the above mentioned problems.

Incorrect torque will also reduce the number of times that the connector can be disconnected/connected. Amphenol states that an SMA connector may be connected 500 times.

What I came across are useful tools in various sizes to get more grip on the connector with your fingers and easy to make with a 3D printer.



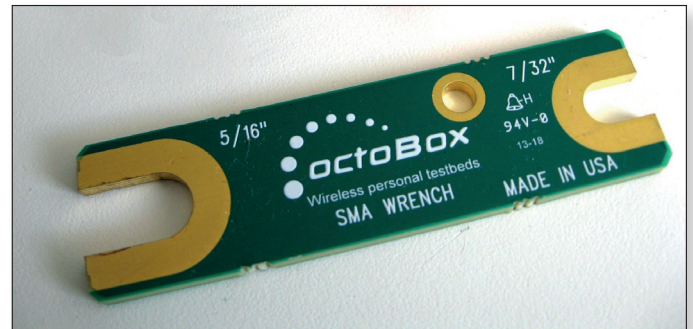
► Two examples of useful tools to get more grip with your fingers

I got a handy key from a fellow amateur, which he took from a trade fair.

It is made of a 2.5 mm thick epoxy board and prevents a lot of force being exerted on the connector, while it is tightened ‘firmly’, by hand.

Torques.

For the individual connectors, ‘torques’ (force times lever arm) are specified.



► The ‘key’ of printed circuit board

With a so-called ‘torque wrench’ the correct torque could be selected for the connector. In fact, the torque wrench uses a ball that is pressed by a spring into a hole and at a certain torque that ball ‘shoots’ out of the hole. Result: the wrench nods.



► A torque wrench for SMA connectors, the ball is pressed by a spring into a hole in the hinged part

However, the desired torque for a SMA connector is not unique; specifications differ per brand and then also whether they are made of brass or stainless steel. According to a specification found, a brass SMA connector is for example at least 0.34 Nm and recommended 0.56 Nm. For the stainless steel version the minimum torque is double (0.68 Nm) and the maximum 0.85 to 1.07 Nm.

By using both connectors’ materials, you should therefore need to have two wrenches.

Or one adjustable one? The adjustable wrenches will give the spring more or less tension, set by turning the handgrip. The scale on the handgrip mentions the torque.

Calibration?

If a torque wrench is used, it is necessary that it is also checked (regularly) for the desired torque, in case of drifting of the mechanical construction.

Therefore it makes likely no sense for an amateur to buy one or more cheap torque wrenches. However, with such a wrench you can get an idea of how a certain torque feels.

Alternatives.

If you know for what torque your connector is specified but you do not have a calibrated torque wrench? You can use an existing wrench (for example the printed circuit board wrench) and a piece of string and a weight.

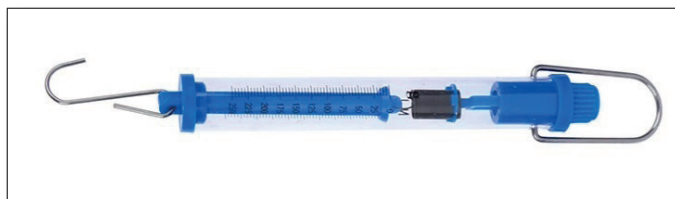
This way you can at least get a good idea of how the torque in question feels.

0.85 Nm is a force of 0.85 Newton at a distance of one meter. This corresponds to 15.4 Newton at 55 mm (length of my printed circuit board wrench).

It is assumed that 1 Newton equals a weight of 0.102 kg, so a weight of 1.75 kg must hang on a string on the (horizontal) wrench.

A longer wrench obviously requires a different (lower) weight.

If you do not want to use a weight, you may use instead a (cheap) spring balance.



► Cheap spring balance

Just make your own scale on it, or a line with a felt tip pen at the nominal moments for the individual connectors. Such spring balance could easily be checked and calibrated with some weights and a (kitchen) scale.

Maybe print some SMA wrench with a 3D printer for the combination with such spring balance?

If you have such tool: check a SMA connection that you already fastened your way and surprise yourself if it is tightened within specification. 🗨️

Fitting my PA in a case with a fan

Jim Smith G7NTG

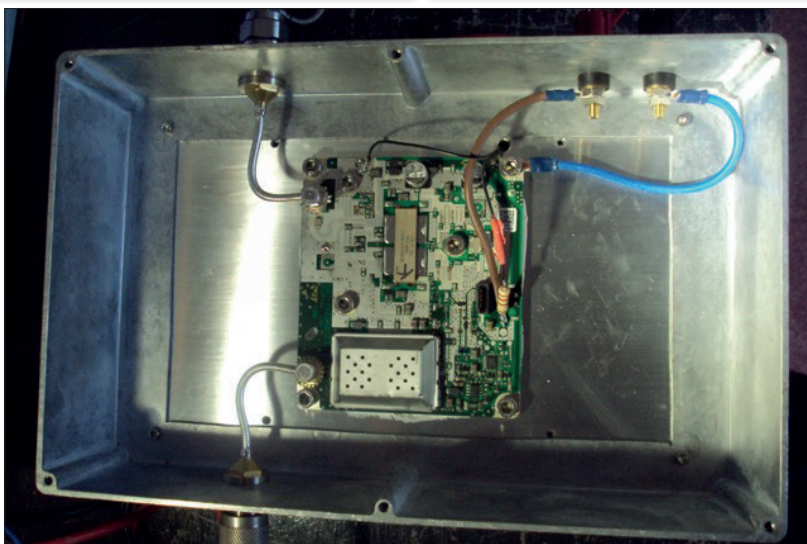


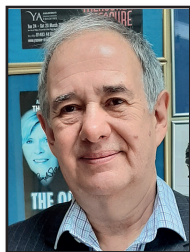
My latest 2.4GHz amplifier project uses a pallet from bisonelectronics-sp2iyr on eBay and is modified to give 75-80W from a 28 volt supply at 15 amps max and a max drive level of 250mW.

PI dB is around 50-60W at about 31dB gain (conversion details will be in the next issue of CQ-TV)

Heatsink is PS200/250 from GD Rectifiers and the box is a Hammond 1550J (275x175x67mm)

I used the original semi rigid cables as I had some, although I convert most pallets to take SMA so you would still need to make up semi rigid RG-402 cables so as not to put too much load on the SMA sockets. 🗨️





QO100 from VO1 Newfoundland

Graham Shirville G3VZV & David Bowman G0MRF

The possibility of contact through QO100 from Canada came about after numerous discussions and debates at a number of AMSAT-UK colloquia and various microwave roundtable events across the UK.

Often, these discussions were undertaken in a bar, late in the evening, so memories of the original ideas remain somewhat vague. They certainly started not long after the activation of QO100 but, of course, plans were interrupted by Covid and it was not until the AMSAT-UK committee announced a challenge at the colloquium in October 2022, that the concept moved from an idea to possible plan.

It should be recalled that the nominal footprint of QO100 reaches zero elevation around 50 miles offshore of Newfoundland and at St John's the elevation is approx. MINUS 1 degree,

At that time, it was not possible to fly directly from the UK to St John's in Newfoundland and we were rather put off by the thought of flying with lots of gear indirectly via Toronto or Halifax. This all changed at the beginning of 2024 when Westjet announced direct flights to St John's from London Gatwick. A direct flight of less than five hours made everything seem much more attractive.

Four flights every week provided some flexibility and after discussions with some "likely suspects" a small team of two signed up for the mission. David G0MRF and Graham G3VZV agreed to combine their expertise and equipment and decided that mid-May would probably be the earliest time that might not still have snow on the ground (we just managed that) so bookings were made for flights, car hire and accommodation.

In relation to accommodation, we came across the "Assistant Lighthouse Keeper's cottage" at Fort Amherst. This is adjacent to the lighthouse itself, exactly across the inlet from Signal Hill and, from the images that were available online, it had a balcony that exactly faced out to sea at around due East. Nothing in the way to QO100 except, apparently, occasional passing icebergs – luckily we were spared these on this trip.



► The VO1/G3VZV antenna – image G3VZV

The other activities of Gopan M0XUU and the VO100QO team have been reported elsewhere but we arrived at our intended QTH on Wednesday 15 May in the afternoon around 15:30 local time. We were kindly met on site by Graham VO1DZ who had the VO1NAR beacon with him.

This was very useful to have as, using the WebSDR at Goonhilly, we could use the beacon to aim the dish and see how the uplink path was doing. We setup two completely separate stations. Both used 65 cms dishes that we had brought with us, David's setup, intended for FT8 and CW, comprised an IC9700 for its full duplex capability. It used an upconverter from 70cms to 2.4GHz on transmit to a Poty feed. On receive, a downconverter with a Leo Bodnar GPS locked oscillator on 595MHz was used to convert the 739MHz output from the LNB, down to 144MHz. Graham used his well-travelled laptop running SDR Console – thank you Simon G4ELI, a Pluto SDR, a driver and a SG Labs PA. The dish was also fed by a Poty feed and on receive a QRO.CZ Inb with a TXCO.



► The VO1/G0MRF antenna – image G3VZV



► Fort Amherst Lighthouse and cottages – image VE4SW

Our intention was to also attempt DATV using a Portsdown and Pluto combination on transmit with a Minituner for reception. We also had a 100+ Watt PA from Jim G7NTG with us for DATV but which was put to good use on SSB later on. This setup, with the 65cm dish proven to be just ok for DATV operation from Graham's home QTH so we had our fingers crossed.

We spent the next hours installing the stations and taking our best guess at pointing the dishes towards QO-100. We also installed the VOINAR 10W beacon and left it to run overnight.

Thursday got off to an exciting start when we began to be able to see the VOINAR beacon appearing on the Goonhilly WebSDR. By peaking the dish we optimised the transponded beacon signal on 10489.539MHz and hoped it was going to allow us to hear signals on 10G directly from the satellite.



► The two operating positions in the warm – image GOMRF

After a few minutes, the weakest of signals became visible in the WSJT waterfall. Having swapped the patch feed from the beacon to the upconverter, we began to decode signals and made our first FT8 QSO with R3LO at 09.00 on the Thursday 16 May. The opening was quite short and each QSO required several repeats but by 10.10 UTC, 13 QSOs were safely in the log.

On the Thursday, conditions at the site were really hard, the weather was cold, damp and foggy and we spent some time touring looking for other possible sites as well as joining the local amateur radio "Coffee Morning" at a nearby MacDonald's.

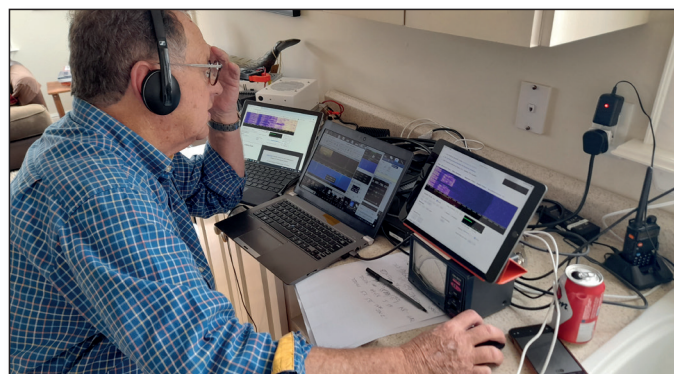


► Meeting the locals (please notice the BATC polo shirt) – image GOMRF

We also visited the VO100QO team of Stefan and John, who were struggling in the cold by the beach at Maddox Cove.

When we returned to the house a few hours later, we once again heard the VOINAR beacon which was running from our terrace, and another opening between 15.58 and 17.32 saw our FT8 QSO count increase to 26. David noted that the received reports from FT8 were around 16dB lower running 15W output from VOI compared to his home location where he would run no more than 2 – 3W. Those extra losses were on the 2.4GHz uplink and are probably due to a combination of the poor angle of visibility to the satellite and RF absorption due to beaming the signal through hundreds of kilometres of rain and fog at zero degrees elevation, rather than 10km when operating from Europe.

Friday looked much the same weatherwise but conditions did improve in the late afternoon/evening. David continued with FT8 while Graham made the first SSB contacts for the team. We had a 100 watt amplifier with us, intended for use with possible DATV contacts and this was put into use to improve the uplink SSB signals level.



► VO1/G3VZV working a pile up – image GOMRF

As well as being an active lighthouse, the installation at Fort Amherst includes a very loud foghorn which is activated autonomously when visibility is below a certain minimum. As we know, like RF, light can be radiated in certain predetermined directions. The same cannot be said for the foghorn, this was very loud even with double glazing and ear plugs. Something woke up Graham around 05:30 local time on the Saturday morning – it may have been the foghorn stopping for a while. In any event a quick check of the downlink showed a waterfall that looked very similar to what it is like in the UK, with signals and the beacons 20dB+ above the noise floor. Lots of SSB and FT8 contacts ensued. We still had the big PA in circuit, so we apologise for being so strong that we occasionally upset Leila.

Unfortunately, we had to pack up all the equipment and antennas and vacate the cottage by mid-morning. This precluded us from being able to set up the DATV equipment that we had with us. Next time maybe?

By the time we left the cottage the sun had come out for the first time since our arrival. We headed to the other side of the inlet and up to the top of Signal Hill and its vantage point 128m ASL.

After a quick investigation of the tourist attractions, we decided to try out our fully portable battery powered rig. This utilises a 40 cm dish and everything was carried as hand baggage on the flight across. The other parts were the same as we had used in the cottage except that power came from a 99Wh Li battery and the laptop ran on its internal power.

To our utter amazement, simply placing the antenna on the low wall by the car park looking out across the North Atlantic resulted in lots of signals being seen on the waterfall – we didn't dare try moving it but another 12 SSB QSOs ensued.

By the end of the mission our total QSO count was:

FT8 – 94	CW - 1	SSB – 152
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This trip was not intended to be a proper DXpedition – as we didn't know if we would hear or work anybody, it was more of a “proof of concept” mission. Most importantly though – we proved that it is possible, and we also had lots of fun.

Lessons learnt and further work

The weather in Newfoundland in mid-May can still be cold and damp – not ideal for portable operation. How the fog and rain affected the RF is unclear.



The signal levels always had deep QSB – the uplink on 2.4 GHz was affected but even more so on the 10GHz downlink where they varied by more than 20 dB. The pattern of the QSB seemed consistent, it was not measured accurately but signals appeared to peak every 30 seconds and seemed to exhibit a sinusoidal pattern. Too late to investigate during our trip we wondered if there is some form of polarisation rotation taking place. With a twin LNB feeding separate SDRs a future team could examine this possibility quite easily.

Previous horizon grazing signal paths across the North Sea have suggested that a location the beach might be better than higher up. With the results obtained by the three teams from various locations, we don't think that we yet know whether this is true in this QO100 situation.

In addition to the 30 second fading and attenuation due to water, we also noticed frequent but very brief signal enhancements. These increases in signal were less than a second in duration and may have been due to aircraft reflections.

It is possible that DVB-S with its shorter lock up time might be more suitable than S2 for this operation.

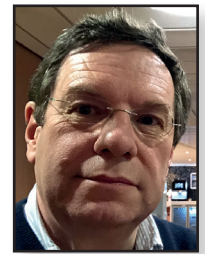
We know that geostationary spacecraft actually move around a three-dimensional figure of eight over a period of hours. Our normal tracking programmes are probably not precise enough to correctly track these changes, but we pondered about the possible impact this movement may be having to the actual footprint through a 24 hour period. Could there be a “best time” to try?

Having a beacon at or around Signal Hill would be a great advantage. It could be low power, <10 watts feeding a small dish which could be discrete and weather resistant. Including a 10 GHz LNB feeding a Web SDR would enable proper long term investigations to be made about the path and signal strengths in both directions.

Although we were fortunate not to suffer from any equipment failures during the trip, we were quite careful to ensure that, wherever possible, we had a redundant back-up spare for most items of equipment. This gave us some peace of mind.

So there remains the award for the first DATV QSO via QO100 from Newfoundland to win, also there were no VOI to VOI qsos recorded – so that could be another first. 🗣️

► VO1IG3VZV operating portable from Signal Hill – image GOMRF



A method for remote off-air status monitoring for DATV repeaters

Justin D. Cockett G8YTZ

Since GB3JV went on air in 2019, I've been very keen on using remote management solutions. GB3JV uses a ModBus RTU which is presented as a graphical desktop using the Home Assistant integration.

The Home Assistant Companion App allows me to monitor the repeater's health status and allow me to instigate a remote shutdown, if required. The system will also indicate if there is a problem at the transmitter (RF output is lost for example).

I've recently implemented a remote receive monitoring solution: Essentially this is a Minitiuoner/Ryde receiver that is permanently monitoring the repeater with a software solution that will send a notification to a group of Mobile Phones and Alexa. In this article I describe two solutions on how to achieve this.

The monitoring receiver

The monitoring receiver is straightforward enough, the receiver can be located on-site, but by locating the monitoring receiver a few miles away from the repeater site (most likely your home) you'll be able to detect an antenna fault.

What you'll need:

- ▶ A good quality receiving antenna to ensure reliable reception
- ▶ A MiniTiouner
- ▶ A Ryde Receiver

The set-up is straightforward enough; you configure the receiver to permanently receive the repeater output and to boot on the correct default preset.

The only modification to the Ryde Receiver software is to add three lines of code; webhooks that will signal a change of the receiver lock condition to a software application

Mobile app notifications

There are multiple methods of achieving this. Below I describe two:

Home Assistant: I use my Home Assistant instance for the remote repeater management using ModBus/RTU, but Home Assistant also supports Incoming webhooks which can be used to trigger an automation.

The automation can be used to send a notification to

Alexa, Google Home, Apple Home Pod etc. It can also be used to trigger a notification to your mobile device if you have installed the Home Assistant Companion App.

SLACK: SLACK is a messaging app for business that connects people to information. There is a free tier that is 100% suitable for this application. I also use SLACK as part of the GB3JV "in use" notification system. Subscribers to the gb3jv.co.uk website get notified via SLACK of repeater activity; this has helped drive more repeater usage. In this application we use SLACK to send a notification to a Mobile Device using a SLACK App that provides an incoming webhook to drive the notification.

Modification of the Ryde code:

There are three lines to add to the ryde/rydeplayer/states/playback.py file:

- ▶ Firstly, toward the top of the file, add the line: `import urllib.request` as below:

```
1 # Ryde Player provides a on screen interface and video player for Longmynd compatible tuners.
2 # Copyright © 2020 Tim Clark
3
4 # This program is free software: you can redistribute it and/or modify
5 # it under the terms of the GNU General Public License as published by
6 # the Free Software Foundation, either version 3 of the License, or
7 # (at your option) any later version.
8 #
9 # This program is distributed in the hope that it will be useful,
10 # but WITHOUT ANY WARRANTY; without even the implied warranty of
11 # MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
12 # GNU General Public License for more details.
13 #
14 # You should have received a copy of the GNU General Public License
15 # along with this program. If not, see <https://www.gnu.org/licenses/>.
16
17 import pydispmann, pygame, enum
18 import urllib.request
```

- ▶ Figure 1 ryde/rydeplayer/states/playback.py

- ▶ Then, towards the bottom of the file add the URL of your webhook destinations below. One line will activate the webhook on receiver lock and one when lock is lost. The URL destination will be defined when we configure Home Assistant or SLACK later in the article.

```
1 # Update the state and redraw the message if required
2 def setState(self, newState):
3     if(newState != self.state):
4         self.state = newState
5         if(newState == States.LOCKED):
6             urllib.request.urlopen("http://192.168.0.144:8123/api/webhook/gb3jv-rx-lock-on-VfKETSz2Qeev__lnznkECqIn").read()
7             self.backSurface.fill(self.theme.colours.backgroundPlayState)
8             self.drawMessage("Locked\nNo Video", self.backSurface)
9             self.backDispmanxLayer.updateLayer()
10            self.frontSurface.fill(self.theme.colours.transparent)
11        else:
12            self.frontSurface.fill(self.theme.colours.backgroundPlayState)
13            displayText = "ERROR\nNOT FOUND"
14            if(newState == States.NOSOURCE):
15                displayText = "Source\nnot\nconnected"
16            elif(newState == States.SOURCELOAD):
17                displayText = "Waiting\nfor\nsource"
18            elif(newState == States.NOLOCK):
19                urllib.request.urlopen("http://192.168.0.144:8123/api/webhook/gb3jv-rx-lock-off-VfKETSz2Qeev__lnznkECqIn").read()
20                displayText = "Not\nlocked"
21            self.drawMessage(displayText, self.frontSurface)
22            self.frontDispmanxLayer.updateLayer()
23            return True
24        else:
25            return False
```

- ▶ Figure 2 ryde/rydeplayer/states/playback.py

Home Assistant:

These instructions assume that you already have a Home Assistant server and that you are using the Home Assistant Companion App. If not, this application should be the basis of your SMART home. I'll be publishing future articles of how Home Assistant can enhance Amateur Radio.

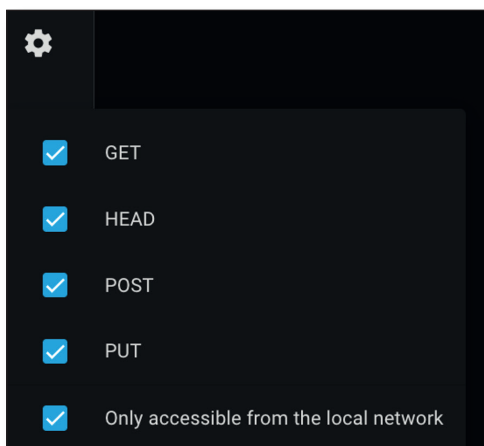
To configure an incoming webhook in Home Assistant is easy:

- ▶ Create a new Home Assistant Automation by going to: Settings => Automations & Scenes => Create new Automation
- ▶ In the title “When” Add a Trigger and use the search term “webhook”
- ▶ Select webhook and you'll see that Home Assistant has created a webhook. You can rename the webhook to something memorable if you like, but I would also advise suffixing the ID you've created with the unique ID that home Assistant has created as a security measure.
- ▶ The result should look something like this:



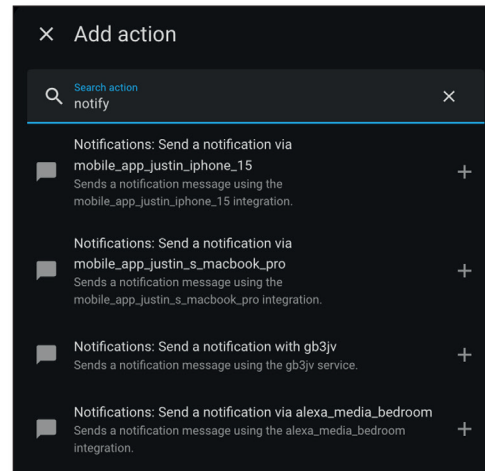
▶ Figure 3 Automation trigger

- ▶ Click on the cogwheel to the right of the webhook ID and select all options, the only optional option is if you want to expose the webhook to the internet. You would only do this if your Ryde receiver were not on the same network as the Home Assistant server. I'm quite happy to publish my URL because my webhook is not externally exposed to the internet.



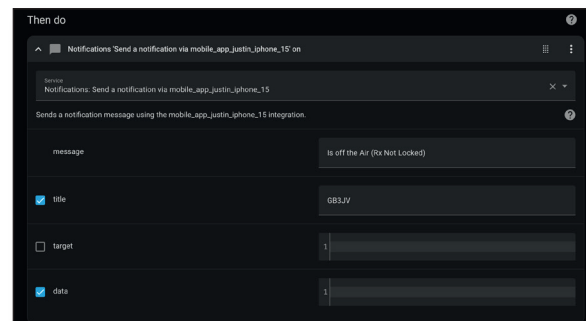
▶ Figure 4 Options Cog

- ▶ In the title “Then Do” select the destination device that you want to notify, in my case it's my iPhone. Use the search term “Notify”.



▶ Figure 5 Adding an action

- ▶ In the rest of the dialogue box select a title (I used the repeater call-sign) and the message that you want to send.
- ▶ Note you can notify multiple devices and even send a text-to-speech message to other devices like Amazon Alexa.



▶ Figure 6 Configuring a notification

- ▶ When you've finished your yaml code should look something like this:

```
alias: GB3JV Rx Lock (off-air)
description: ""
trigger:
  - platform: webhook
    allowed_methods:
      - POST
      - PUT
      - HEAD
      - GET
    local_only: true
    webhook_id: gb3jv-rx-lock-off-air-VfKETSzX2eev__lnznkECqIn
condition: []
action:
  - service: notify.mobile_app_justin_iphone_15
    metadata: {}
    data:
      title: GB3JV
      message: Is off the Air (Rx Not Locked)
      data: {}
mode: single
```

▶ Figure 7 Automation yaml code

- ▶ You need to create another condition for the “Locked” condition, for this you can just cut and paste the yaml into a new automation, updating the message text you wish to send, you’ll need to modify the webhook ID to make both IDs unique.
- ▶ If you want, you can add time restrictions etc. as a “condition”. I would only do this when you have the basics working.
- ▶ To convert the Home Assistant webhook IDs into a URL the URLs takes this form:
[http://\[your_home_assistant_server_ip_address\]/api/webhook/\[your_Webhook_id\]](http://[your_home_assistant_server_ip_address]/api/webhook/[your_Webhook_id])
- ▶ You can test to see if your URLs work, simply by clicking on each one and seeing the resulting notification appear on your device.

Next, we must paste these URLs into the Ryde Receiver’s ryde/rydeplayer/states/playback.py file.

- ▶ There are two entries: You will have two URLs, one for the lock (on-air) condition and one for the unlock (off-air) condition
- ▶ The webhooks in my file look like this:

```

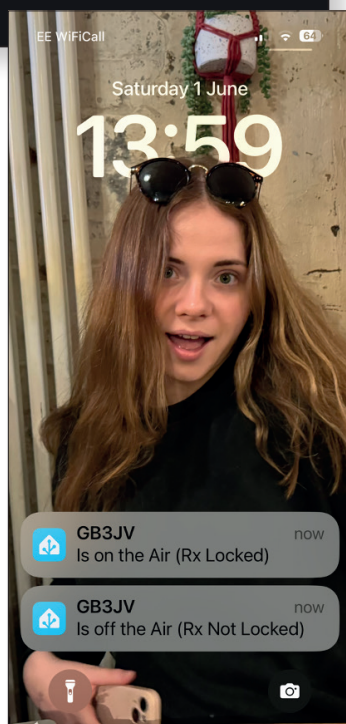
1 # update the state and redraw the message if required
2 def setState(self, newState):
3     if(newState != self.state):
4         self.state = newState
5         if(newState == States.LOCKED):
6             # state is locked
7             urllib.request.urlopen("***** YOUR_WEBHOOK_LOCKED_URL *****").read()
8             self.backSurface.fill(self.theme.colours.backgroundPlayState)
9             self.drawMessage("Locked\nNo Video", self.backSurface)
10            self.backDispmanxLayer.updateLayer()
11            self.frontSurface.fill(self.theme.colours.transparent)
12        else:
13            self.frontSurface.fill(self.theme.colours.backgroundPlayState)
14            displayText = "ERROR\nNOT FOUND"
15            if(newState == States.NOSOURCE):
16                displayText = "Source\nnot\nConnected"
17            elif(newState == States.SOURCELOAD):
18                displayText = "Waiting\nfor\nSource"
19            elif(newState == States.NOLOCK):
20                # State is unlocked
21                urllib.request.urlopen("***** YOUR_WEBHOOK_UNLOCKED_URL *****").read()
22                displayText = "Not\nLocked"
23            self.drawMessage(displayText, self.frontSurface)
24            self.frontDispmanxLayer.updateLayer()
25            return True
26        else:
27            return False

```

▶ Figure 8 ryde/rydeplayer/states/playback.py showing my URLs

- ▶ The notifications look like this (they also notify a connected watch. Home Assistant also supports Android phones.

▶ Figure 9 iPhone notifications



For SLACK users the process is similar, if you already have a Home Assistant interface you can install the SLACK integration into Home Assistant and add another notification to your SLACK channel in your Home Assistant automation, this is a great method if you want to notify other people in your repeater group.

You can also create an incoming native SLACK webhook as a SLACK App and use these public webhook URLs in Ryde to send to members of a SLACK group. To set up a SLACK App the instructions are published here:

<https://api.slack.com/messaging/webhooks>

Discord and many other platforms, IFTTT etc. also support incoming webhooks and automations, so really the notification platform you chose is your decision. Personally, I like Home Assistant as it is a great aggregator for all these platforms.

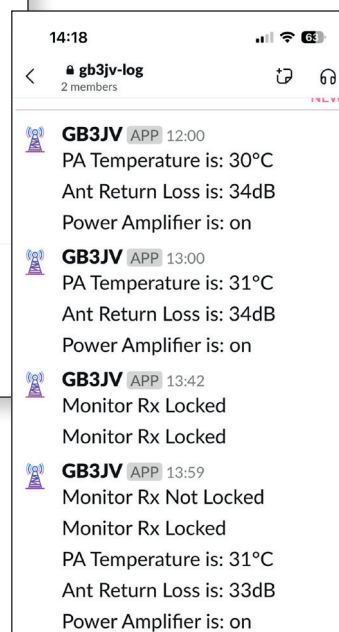
I use SLACK to send various notifications to OMs who subscribe to the GB3JV web site, the repeater controller software that I use is the Bitfocus Companion open-source software, so popular with the media community.

Bitfocus Companion integrates with the Blackmagic ATEM video switcher for source switching and on-screen graphics, VLC (used for audio announcements), M0GUY's media player (Pi Deck), with webhooks the Ryde receivers, and SLACK to send notifications to the user group for when the repeater is in use. 🗣️



▶ Figure 10 “In Use” SLACK Notifications

▶ Figure 11 SLACK Status Notifications





Mr Whippy serves up another seven-band Sundae

Gareth, G4XAT

After my 2022 expedition I was keen to go back to Walbury Hill for this year's IARU DATV contest, so after booking the site I made plans. 'Mr Whippy' is now 41 years old and we have registered it as 'historic', rendering it 'tax free' and ironically OK to drive in the London ULEZ FOC.

It needed some TLC after being laid up for nearly two years so a new petrol feed pipe between the tank and metal pipe was needed along with front brake wheel cylinders all sourced and fitted along with some contact-cleaning to restore the indicators functionality – always useful.



With transport and venue sorted it was on to sorting what gear to take. Gaps in the gain provision have been plugged since 2022 and a total of eight boxes and a large dual-band (9 & 6 cm) transverter were loaded into the camper along with three tripods, three beams, three dishes and other useful bits like a small generator and my trusty Fogstar LiFePO4 battery - 43.5 A/Hr used for the weekend, less than half the available capacity.

I departed at 1pm on Friday, arriving after a congested journey (M25 on a Friday afternoon) around 4pm. Having used the site before I knew what to expect and had the main mast assembled and up by around 6pm. A reach into the 'might come in useful' store had produced a perfect size one-metre long piece of Tufnol ex-military mast section that fitted into the top of my aluminium mast, hopefully leaving the beam radiation pattern as the designers predicted.

The talkback this year was provided by a lightweight 'fishing pole' based 12 Element ZL special for horizontal and my usual full-wave dipole for 2m, a dual band mobile whip was added for 70cms on a mag-mount. The bench in the camper was populated with my FT857 talk-back, antennas selection switch (two metres H and V, and 70cms), my main station Portsdown 4 and PAs for 70, 23 and 13. On air tests followed by accessing GB3JV firstly on 70cms (150 watts, 14 element) and then on 23cm with just 5W (37 element).

Justin, G8YTZ, popped up on 2m talk-back and we switched to horizontal where signals well in excess of 5/9+40 were received. I don't think he needed the linear. GB3SQ was also accessed by swinging the beam around towards the south-west.

Saturday dawned grey with a threat of drizzle but soon dried up, allowing the microwave bands to be sorted out. Various placements of the different bands were tried in an attempt to cover all bearings needed without major movement.



3.4GHz benefitting this year from an ex-Meteosat 95cm dish and coffee-tin feed, giving +10dB on the previous flat-plate antenna. 5.7GHz and 10GHz were using a new lightweight 78cm offset dish acquired from a neighbour with 24GHz benefitting from a dedicated Andrew 30cm dish with a precision commercial transition.



Saturday highlights were microwave contacts on 6, 3, and 1.2cm with Dave G4FRE from two locations and on 70cms working David G0YDH/P up in Shropshire and then Rob on the N Yorks moors as my best DX of 335km.

Rob had to wait for Sunday morning to complete the contact, but it was a successful two-way. The microwave bands were busy on Sunday with Noel G8GTZ/P roaming to three sites, Dave G8GKQ/P (who I completed with on seven bands) and Dave G4FRE/P just across the hill at Coombe Gibbet. Not surprisingly I did not need to swing the dishes towards him.



Things had pretty much finished by mid-Sunday afternoon but before I took the station down I managed a two-way with Justin G8YTZ on 70cms.

23cms did not oblige so I began to take down and pack away. I cleared the site at 5:30 pm and had a much easier journey home, just a shade over two hours. Mr Whippy cruises quite happily on the motorway between 55 and 60 but is hard work around town as 'back in the day' power steering was an option.

Other than being very tired I counted the weekend a success, only forgetting the RX filters for 23cm, something that probably lost me a contact with Mike G8LES. I received Mike at MER27, but it would not decode the picture. Some nice filtered preamps for 23 and 13cm will be needed for next year.

I took my lightweight portable rotator and tried it out. Three UHF beams were probably a bit much for it – designed really for lighter 'fishing pole' based beams like my ZL-Special. So a more rugged design for next year as the wind was capable of re-aligning the array as fast as I set it.

I took and used all three Portsdown 4s and they performed as expected without trouble all weekend. I was also able to quickly check my 10GHz gear on the Greenham Common beacon (off the scale) using the resident Langstone software.

Such handy kit, why would anyone possibly want an IC705? 🗣️





My Portable Set-up

Dave Crump, G8GKQ/P

I described my shack in CQ-TV 280, but my main ATV operation (apart from QO-100) is from portable locations. Over the years I have refined a set of equipment that fits in an estate car and allows me to operate ATV on all bands from 146 MHz to 24 GHz.

All the “driver” equipment sits in the car along with a recently-purchased Fogstar Drift 105 AH LiFePO4 leisure battery (strongly recommended). It is probably easiest to describe the equipment for each band:

- ▶ **144/146 MHz.** An FT-290R for talkback with a 100 W Microwave Modules PA. For DATV I use a separate PA and have extra preamps and filters to provide a clean high-level received signal feed to a MiniTiouner. This is all relay-switched in a 2U rack unit, feeding a five-element beam, which I generally set to be slant-polarised
- ▶ **437 MHz.** A 1U rack unit contains switching logic, (2nd) receive preamp, filters for receive and a driver amplifier with front-panel gain control for transmit. A “Dolphin” PA is positioned behind the rack feeding 50W through a length of URM-67 to the “masthead” preamp switching relay. A GAsFET masthead preamp uses a separate coax to get the received signal back to the rack. A 21-element Tonna yagi breaks down into four pieces for transport
- ▶ **1255 MHz.** Another 1U rack unit with switching, preamps, filters, driver amplifier and front panel drive level control. I send about 15V to a “masthead” preamp/PA unit which uses a Mitsubishi brick to give about 15 W. The aerial is a 25 element quad loop yagi (tuned to 1255 MHz)
- ▶ **2395 MHz.** I currently feed 2395 MHz from the Portsdown 2020 to a Stealth PA (only 7W out as it is designed for 2100 MHz) on the ground underneath the 60 cm dish that has a broadband feed for 2.4 - 10 GHz. On receive I use an MMDS converter down to a 731 MHz IF. Next major project is to build a proper transverter to a 435 MHz IF
- ▶ **3405 MHz.** I feed a 435 MHz IF to a transverter (based on an AirSpan unit) with a Stealth PA (15 W) on the ground underneath the dish
- ▶ **5762 MHz.** I feed a 435 MHz IF to a transverter (all homebrew) with a Ferranti PA (8 W) on the ground underneath the dish. The transverter also has 5665 MHz FM ATV capability with front panel switching
- ▶ **10 GHz.** Again a 440 MHz IF fed to a G3WDG-based transverter with a 10 W PA mounted directly behind the dish



10 GHz
transverter/PA

437 MHz
Preamp/PA

1255 MHz
Preamp/PA

Cables to dish
and mast

Pile of
transverters

Chair

Maplin
speaker tripod

Transverters
yet to be
installed



► **24 GHz.** A 439.5 MHz IF to a transverter based on very old DMC modules but with a Toshiba PA giving about 500 mW. It uses a 45 cm dish with a penny feed

In the top of the driver rack, I have two half-width IU modules. The lower one uses a reversed Portsdown eight-way switch to select one of eight inputs to a MiniTiouner (and a Knucker). The upper one uses an eight-way switch to route the transmit drive signal. It also has a battery voltage meter which is largely redundant now that I have switched from lead-acid to LiFePO4.

On top of the rack is my Portsdown “Double” that I described in CQ-TV 276 (page 11). The left-hand side (Portsdown 2020) is used for transmit and for BandViewer, and the right-hand side (Portsdown 4) is used for receive, connected to the MiniTiouner in the rack below.

All 12 v power distribution now uses PowerPoles. Most of the equipment is designed to be happy with anywhere between 11 v to 15 v, but the microwave PAs need something close to 12 v.

I try to set out the station so that if the mast or tripod fall over they do not hit the car. I do carry guys and pegs which I often use. It is worth routing the cables to the mast and tripod carefully so that they are out of the way. Tests have shown that they are a significant trip hazard and, even worse, you might damage your equipment.

Although the multiband dish feed has (SMA) relay switching for each band, I still need to make an IF switching (and power distribution) unit for the microwave transverters. Currently I have to swap BNC connectors between them. I try at all costs to avoid having to swap SMA connectors when changing bands - it is very slow and painful on the fingers. My ultimate objective is to have everything switch/relay controlled so that no connector changes are required during normal operation.

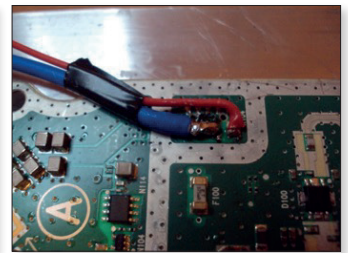
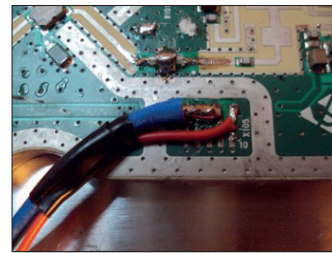
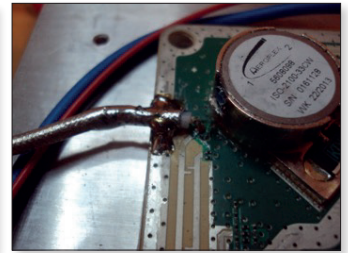
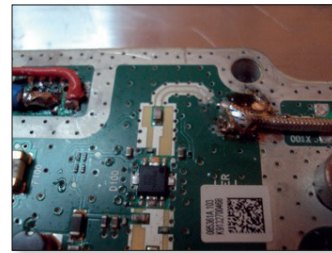
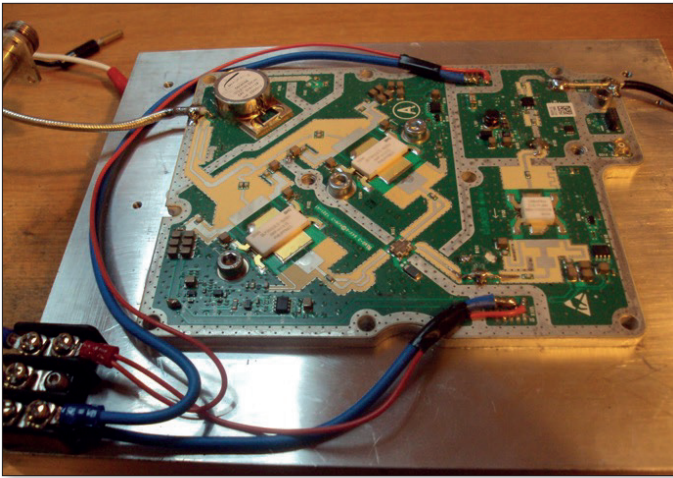
The portable station is never finished - it's an evolution. My aerials are more than 40 years old, as is the FT-290R. Other bits have been accumulated and built over the years. You don't need new equipment, just the right equipment. 📡





Modification of Nokia type PA

Jim Smith G7NTG

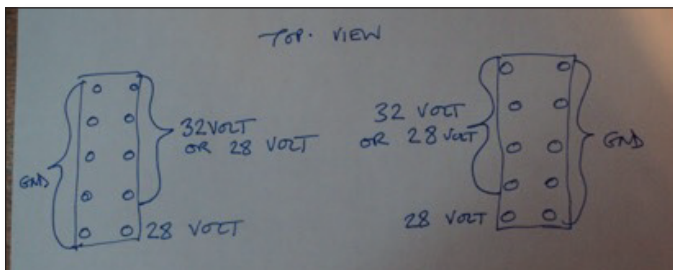
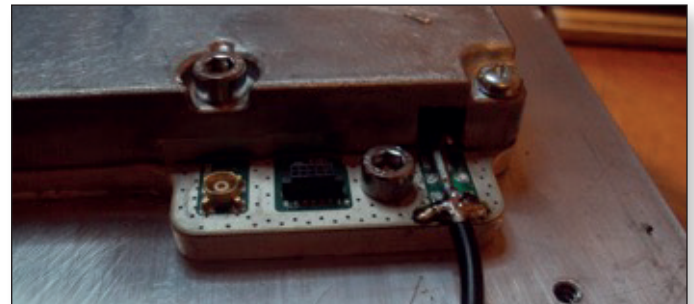


This is the modification of a Nokia type PA with two transistors type BLF8G22LS-160BV. This modification can be done two ways for different power outputs;

1. Single 28 volt power supply which gives 200W at 2.4GHz for es'Hail2 and 250W at 2.3GHz for EME.
2. Twin power supply inputs of 28 volts and 32 volts which gives 250W at 2.4GHz and 320W at 2.3GHz

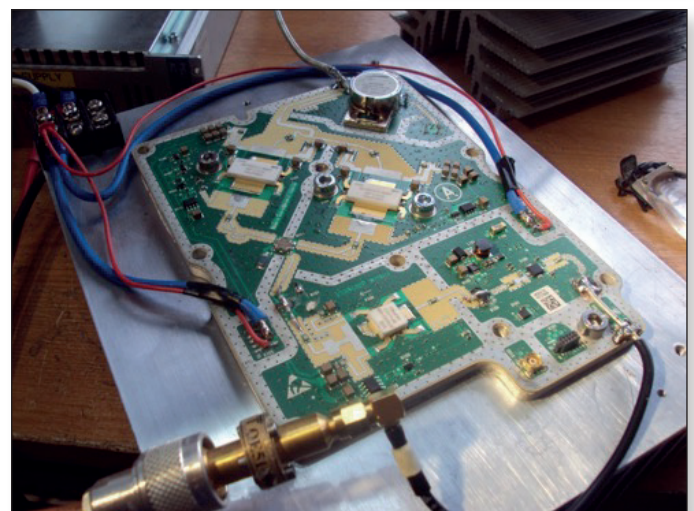
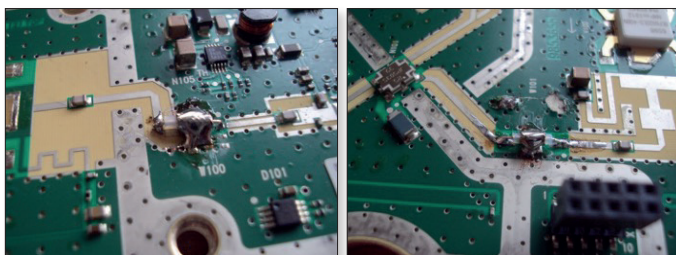
The only difference between these versions is in the power connectors:

The screening cover is cut away to allow all the connections using a hacksaw and file.



For 28 volt supply, just connect all the power pins together. The connectors can be removed as I have done or suitable plugs can be used.

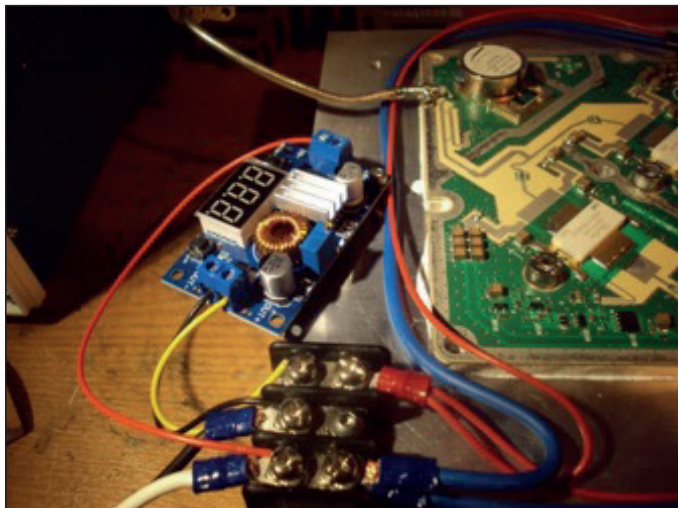
The other mods are to remove the two small isolators and bypass them and also make new input and output connections (the input attenuator pad was removed).



No tuning was done as I feel it didn't need any.

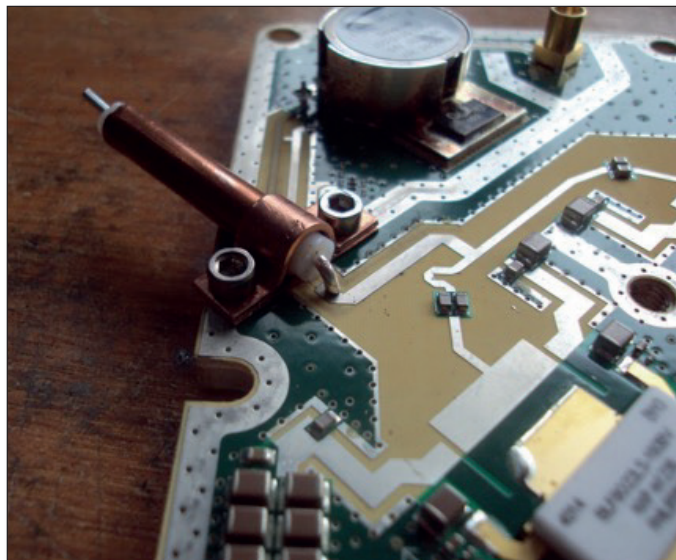
With the dual voltage connection 32+28V, it was found that P1dB is about 175 watts at 2.4GHz and 250 watts at 2.3GHz so it is nice and linear.

To run the 28 volt driver amp on the twin voltage version then just use a switch-mode step down regulator of about 3A + from eBay (I use a 5A one)



https://www.ebay.co.uk/itm/DC-DC-Step-Down-Converter-5-36V-to-1-25-32V-5A-Buck-Voltage-Regulator-UK/153809946953?ssPageName=STRK%3AMEBIDX%3AIT&_trksid=p2060353.m2749.l2649

Here is a much better output connection



This is better because it is nearly impossible to solder to this pallet with any strength.

Feel free to share this information – Let's get as many people on air as possible.

If you don't have the facilities or abilities to carry out this work then I can build you one – email me at thebigclunk@virginmedia.com 📧

**VERY IMPORTANT: TEST WITH THE SCREENING COVER IN PLACE
IF YOU VALUE YOUR EYESIGHT**

Out and about for a contest...



► Dave, G4FRE on 76GHz



► Rob, M0DTS

Turning Back the Pages

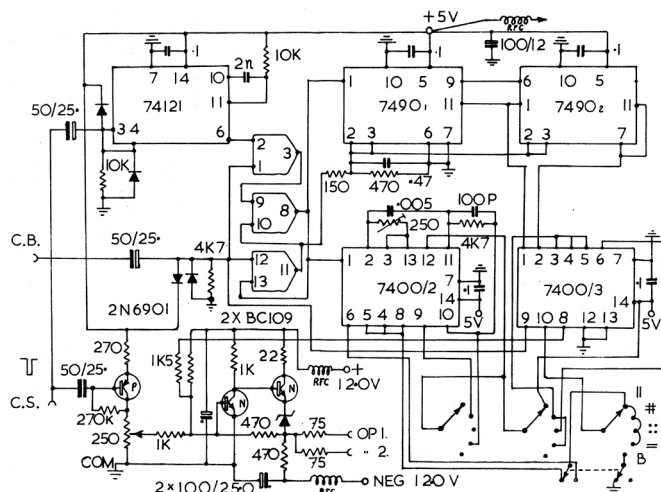
A dip into the archives of CQ-TV, looking at the issue of 48 years ago

Peter Delaney - G8KZG

CQ-TV 95

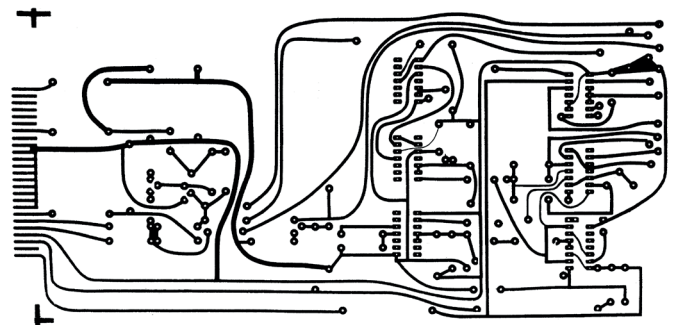
The editorial in CQ-TV 95 included an apology from the editor, Andy Hughes, that this edition was a little smaller than usual (it was 24 rather than 28 pages), and it was possible that there were errors in it. The reason, he explained, was that the time he had available for the magazine was limited as he was also working on a book to be called "An Introduction to Amateur Television", collating the contributions of many BATC members. The book, published by the Club, became available early in 1977.

In the days long before most amateurs had computers able to generate video signals, ideas for making test pattern generators were popular. This time, Alan Watson (who ran the Club's equipment registry to put those who had items available in touch with those seeking them) described the crosshatch and dot generator he had designed. The particular application it was aimed at was the setting up of television monitors, all of which were built around cathode ray tubes then. The test signals produced by this circuit enabled the adjustment of the monitor's controls to get the correct aspect ratio and linearity of scans.



The circuit made use of the then popular 74xx series of TTL logic gates. The 74121, top left, was a monostable multivibrator, which processed mixed sync pulses (C.S.) to create a broad pulse for each line of the image. This was fed from pin 6 to one of the sections of a 7400 (quad NAND gate) device, which was also fed with mixed blanking pulses (M.B.), removing the half line that is part of an interlaced scanning format, to make the pattern 'rock-steady'. The resultant line rate pulses

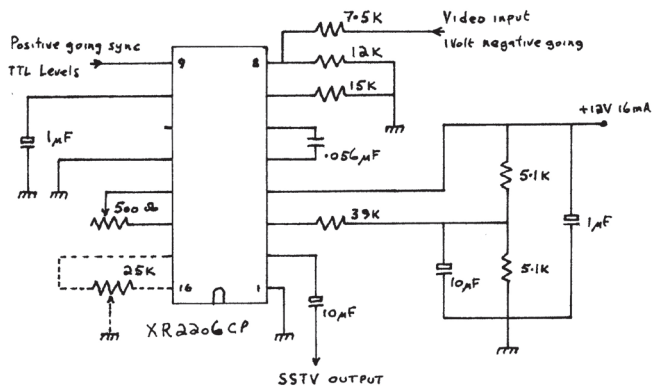
became the input to a pair of 7490 decade counters (top middle and right), being reset by the frame part of the mixed blanking signal, so creating a horizontal pattern. A second 7400 device (in the middle of the diagram) worked as a multivibrator triggered by line rate pulses to produce a series of pulses, adjustable between 19 and 25, per line. The five-way switch (bottom right) allowed the selection of these signals to be combined using the gates of the third 7400 device, and the output of pin 8 of that was then output by means of the discrete 2 transistor amplifier, with mixed sync pulses added through the single PNP transistor (bottom left). The patterns available were vertical lines, a crosshatch, a pattern of dots corresponding to where the horizontal and vertical lines crossed, horizontal lines, and also a fully black or fully white screen.



Alan had also designed a printed circuit board for the design - although (unusually) anyone wanting to build this would have to work out which components fitted where on the board - the article noting that "no links are shown for the sake of clarity - but it should be obvious from a study of the circuit where these should go"! Alan was planning to add a colour bar generator and coder in due course, to make the test generator even more useful.

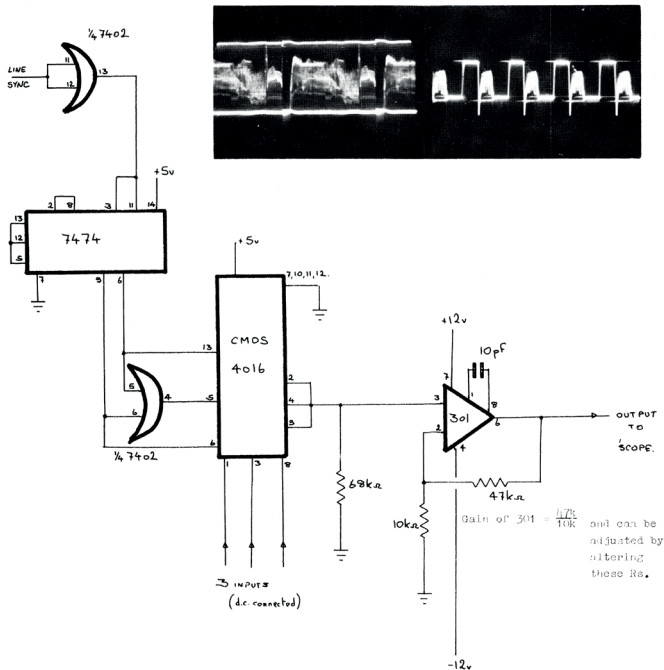
The Club has provided for a wide variety of aspects of amateur television - transmission, picture generation and processing, etc, using a range of modes for image creation. This edition included two items for followers of slow scan television. Lewis Elmer described the novel use of a function generator integrated circuit, the XR2206CP, to generate the FM signal used for SSTV work from a slow scan camera.

The integrated circuit could produce sine, square, triangular, sawtooth and pulse waveforms at frequencies up to 1 MHz, which could be either amplitude or



frequency modulated. The frequency was determined by the capacitor at pins 5 and 6 and the either the resistor at pin 7 or pin 8 - that at pin 7 being selected by a logic 0 at pin 9 to create the 1200 Hz corresponding to sync pulses. A negative going video signal, with black at 3V and white at 2V, applied to pin 8 would modulate the signal frequency of the output signal at pin 2 - the variable resistor at pins 13 and 14 being set for the best shape sinewave at the output (with a resistor at pins 15 and 16 providing a further adjustment of the wave shape if needed).

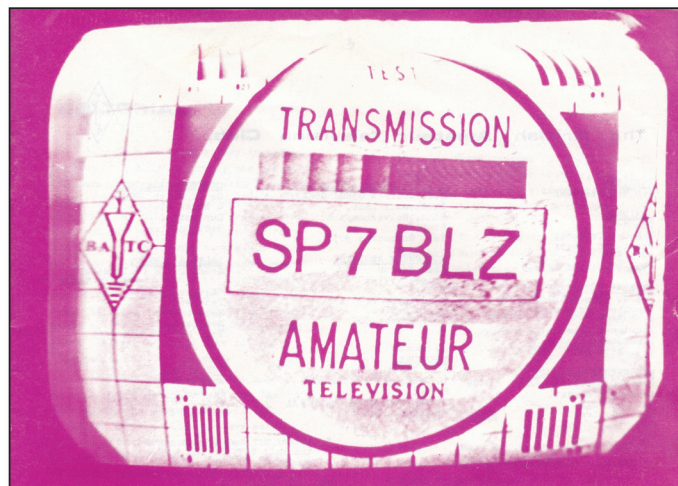
With digital integrated circuits becoming available that could store data - either true memory devices or shift registers - it was becoming possible to convert a fast scan television signal into a slow scan one. A frame of the fast scan signal was read into the storage system at high speed, and then clocked out slowly to produce the corresponding slow scan equivalent. To do this, the analogue fast scan signal had to be converted to a digital format. This was done by setting levels to correspond to black and white areas of the image, sampling the variable



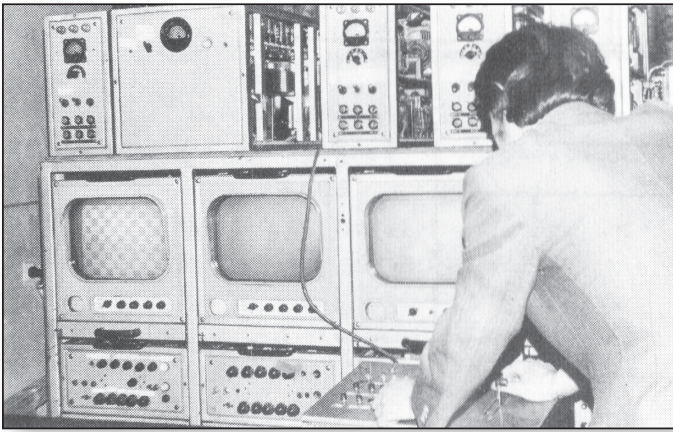
signal in between at 16 levels, and so generating a 4-bit code to represent the level of grey in the image - and this code is what was then stored in the memory.

Setting up the black level and white level controls could be “rather tedious”, so slow scan aficionado Grant Dixon had developed a 3-way switch to sample the white level, the black level and the video signal, (fed to pins 1, 3 and 8 of the 4016 device) which could be displayed on an oscilloscope. This (top, right) showed a sequence of the white, video and black levels, enabling adjustment of the controls to set the video signal between the black and white levels as displayed on the oscilloscope screen. (High speed analogue to digital conversion devices and large capacity memory devices able to store continuous moving fast scan images, would not be available at a price affordable to amateurs for many years yet).

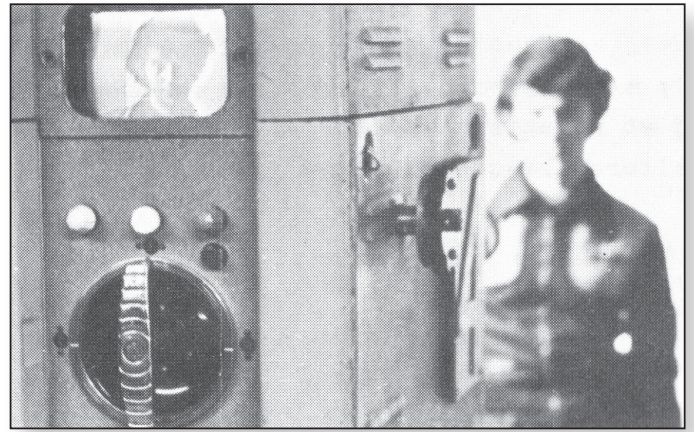
Although it is the British Amateur Television Club, there have been members worldwide from the earliest days of the Club, and in this issue the amateur television equipment of Lech Domasik, SP7BLZ in Poland was featured. He was one of a group of 4 local amateurs who had been able to obtain some old broadcast television equipment, comprising two cameras and their control units, a sync pulse generator, a picture and waveform monitor, a chessboard pattern generator, five monitors, a mixer, and a 70 cm 10 watt transmitter.



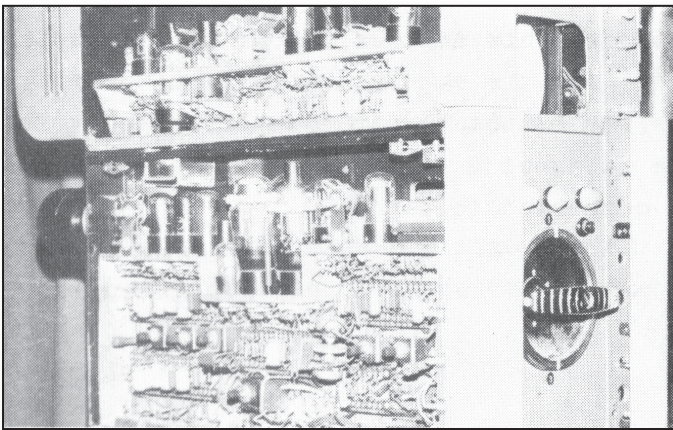
The magazine featured SP7BLZ's test card as received off-air on the front cover, with photographs of the equipment they had. Lech's plans for the future were to build a transmitter with a 50 watt output able to send simultaneous audio and video to a high gain multi-directional aerial. They also wanted to convert some of the equipment - in particular the cameras and the S.P.G., to have transistor rather than valve circuitry.



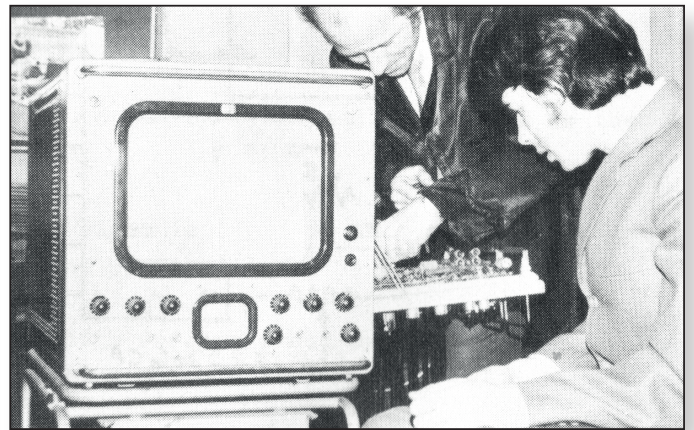
► General view of tv apparatus



► Image orthicon camera with SP7BLZ on the viewfinder



► Line and field generators of camera and viewfinder



► Mk1 224 monitor with SP7DKA and SP7BLZ

Following correspondence in earlier issues of CQ-TV, the committee wanted to comment on the changes to the use of the 70 cm part of the spectrum in the UK. They realised that the 432 MHz sound repeaters were starting to appear in the same part of the band as had been traditionally used - almost exclusively - for amateur television transmissions, and had been actively trying to ensure that users of both modes could operate with minimum interference between them. Tests had been carried out to evaluate the position, and had demonstrated that the two types of transmission could operate alongside each other. As it happens, one of the BATC committee who was active with television transmission on 432 MHz was also involved with building a 70 cm repeater, and so was aware of the possible problems from both sides. The repeater output frequencies had been deliberately set below their input frequencies so as to minimise interference to amateur television transmission.

The notes added that “with regard to the 23 cm band for ATV transmission, the editor would be pleased to report on any experiments taking place so as to encourage others hoping to experiment in this region. There are obvious advantages in using this band for ATV transmissions ... but there are also the problems associated with generating sufficient power at this frequency and also the smaller transmission range which can be expected”.

The magazine also included more information about the forthcoming BATC Convention, including the agenda for the General Meeting and the audited set of accounts. Apart from the BATC Club Sales and Publications stands, the exhibition hall would include a demonstration of the Ceefax / Oracle teletext system (which had only begun in the previous autumn), a members' 'bring and buy' area, and traders M&B components, Bamber Electronics and J Birkett, the specialist in all things vintage radio from Lincoln. 📻

The British Amateur Television Club

The BATC logo consists of the letters 'BATC' in a white, bold, sans-serif font, centered within a dark blue trapezoidal shape that resembles a television screen. This screen is set against a background of two concentric, light blue curved lines that sweep around it from the top right towards the bottom left.

Out and About

Rallies and events with a BATC stand: (Provisional – subject to change)

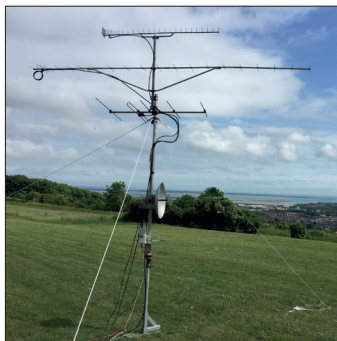
14 July	McMichael Rally Reading	11/13 October	RSGB Convention Milton Keynes
4 August	CAT 24 and general meeting	13 October	Hornsea ARC rally (No shop)
11 August	Flight Refuelling rally Wimborne	26 October	BATC CAT 24 part two (online)
1 September	Telford HamFest (No shop)	November	CATS bazaar
27/28 September	Newark Hamfest	December	Midland MRT

Unless otherwise stated, the BATC Shop will be available at all these rallies and will be offering cheaper prices than online, and accepting card payments.

The most up to date status can be found on this RSGB web page: <https://rsgb.org/main/news/rallies/>

If you are able to help on the BATC Rally stands, please contact the BATC secretary.

Activity Weekends & Contests

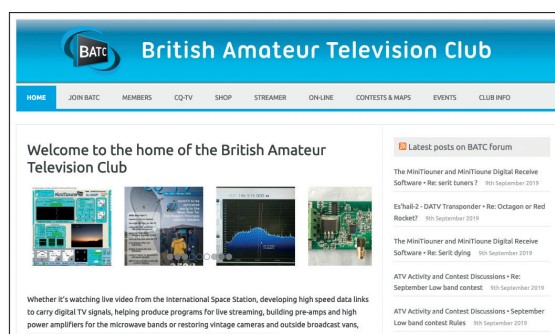


2024 Activity/Contest Weekends:

6/7 July	2m, 4m and 6m
17/18 August	Dutch 6m, 2m and 70cm
7/8 September	13cm and up
5/6 October	70cm
2/3 November	2m, 4m and 6m
6/7 December	All bands

BATC Online

Website: <http://www.batc.org.uk>
BATC Wiki: <https://wiki.batc.org.uk/>
Forum: <https://forum.batc.org.uk/>
Stream: <https://batc.org.uk/live/>
Dxspot: <https://dxspot.batc.org.uk/>
YouTube: <https://tinyurl.com/BATCYouTube>



batc.org.uk