The British Amateur Television Club

BATC

No. 264 – Summer 2019

New World record for DATV on 24Ghz

(without the use of a satellite!)

... and much more inside!

The British Amateur Television Club

The club provides the following for its members:

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

www.batc.org.uk



BATC

BATC

Sh

President:	David Mann, G8ADM
Chairman: Email:	Dave Crump G8GKQ Club affairs and Technical queries chair@batc.tv
General Secretary: Email:	Noel Matthews, G8GTZ General club correspondence and business. ETCC Liason secretary@batc.ty
op/Members Services: Email:	Noel Matthews, G8GTZ shop@batc.tv
Hon.Treasurer: Email:	Brian Summers, G8GQS Enquiries about club finances, donations, Club Constitution. treasurer@batc.tv
Contests: Email:	Clive Reynolds G3GJA contests@batc.tv
Digital Architect: Email:	Phil Crump M0DNY phil@philcrump.co.uk
CQ-TV Editor: Email:	Frank Heritage, M0AEU editor@batc.tv
Repeaters:	Clive Reynolds, G3GJA
Publicity/Social media: Email:	lan Parker, G8XZD publicity@batc.tv
Membership:	Robert Burn, G8NXG All membership inquiries including new applications, current membership, non receipt of CQ-TV, subscriptions.

Email: memsec@batc.tv

BATC Online

Website:http://www.batc.org.ukBATC Wiki:https://wiki.batc.org.uk/BATC_WikiForum:https://forum.batc.org.uk/Stream:https://batc.org.uk/live/Dxspot:https://www.dxspot.tv/

Legal Niceties (the small print)

E&OE.Whilst every care is taken in the production of this publication, the editor accepts no legal responsibility for the advice, data and opinions expressed. The BATC neither endorses nor is it responsible for the content of advertisements or the activities of those advertisers. No guarantee of accuracy is implied or given for the material herein.

The BATC expressly disclaims all liability to any person in respect of anything and in respect of the consequences of anything done or omitted to be done wholly or partly in reliance upon the whole or any part of this magazine. As the regulations for the operation of radio frequency equipment vary in different countries, readers are advised to check that building or operating any piece of equipment described in CQ-TV will not contravene the rules that apply in their own country. The contents of this publication are covered by international copyright and must not be reproduced without permission, although an exception is made for not-for-profit publications (only) wishing to reprint short extracts or single articles and then only if acknowledgment is given to CQ-TV. Apart from any fair dealing for the purposes of published review, private study or research permitted under applicable copyright legislation, no part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopy, recording or otherwise, without the prior permission of the publisher.

All copyrights and trademarks mentioned in this publication are acknowledged and no infringement of the intellectual copyright of others is intended.

Printed in Great Britain. ISSN 1466-6790

© Copyright BATC & Contributors 2019

CQ-TV 264

Contents:

- 4 Chairman's Chat...
- 5 The Listing new and renewing members
- 8 Obituaries
- 8 BATC stand, Blackpool 2018 & 2019
- 9 BATC Members' Shop Update
- 10 Contest and Activity News
- 12 MCR21 Project Launch
- 13 23 cm QRM
- 14 Protecting Your LimeSDR Mini
- 15 Portsdown Made Simple
- 16 How to use K7FRY's 10 Character Locator Website
- 17 Dual channel output for the BATC version 2 MiniTiouner PCB
- 19 KITTENS 19 & KITTENS 19 Activity Day
- 21 Goonhilly Spectrum Monitor and WebSDR Maintenance Visit
- 22 Video Fundamentals 18
- 23 BATC at the Kempton Park Rally
- 24 A very cheap easy to make Sync detector for analogue video
- 25 Well, I tried... 5.8GHz ATV
- 26 Video Production with a smartphone! Part I.
- 28 Turning Back the Pages CQ-TV 76
- 31 MCR21 Recording its History
- 31 BATC at the Newbury Rally 2019

Contributions

The preferred method of communication is by email, all email addresses are shown above.

Alternatively you can write to us at: BATC, Silverwood, South View Road, Pinner, HA5 3YA, United Kingdom

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 November 30th Please send your contributions in as soon as you can prior to this date. Don't wait for the deadline if you have something to publish as the longer we have your article, the easier it is for us to prepare the page layouts. If you have pictures that you want including in your article, please send them, in the highest possible quality, as separate files. Pictures already embedded in a page are difficult to extract at high quality but if you want to demonstrate your preferred layout, a sample of your finished work with pictures in place is welcomed. Please note the implications of submitting an article which are detailed on the contents page.

From the Chairman...

The wideband transponder on QO-100 has certainly created the interest that we had hoped. What has pleased me is that it has stimulated so much experimentation with DVB-S2, H265 and even DVB-T. Please keep sharing your experiences and questions on the BATC Forum and then transfer the ideas that work on to the BATC Wiki.

The QO-100 Wideband Spectrum Monitor (part-funded by your subscriptions) has been improved by Phil M0DNY to indicate frequency and symbol rate; it also flags up any anti-social transmissions that are over the recommended power level. I was pleased that we were able to clear up the phase noise fault during our recent visit to Goonhilly.

I know that many of you were able to participate in the IARU Region I ATV Contest earlier this month. Even if you had only one contact, please submit an entry – it is all evidence to help us retain access to our valuable spectrum. We are looking to introduce some more (lowkey) contests to encourage this sort of reportable activity.

The shop, website and streamer have taken a lot of your committee's time over the last 3 months. We have put in place extra layers of security to reduce the likelihood of any further successful attacks, but it is a constant battle, so we remain vigilant. Meanwhile, the shop has been very busy with orders, but we are having to moderate these to stay below the VAT Registration threshold; please remember that we are all volunteers and there are limits to what we can do!

Dave Crump G8GKQ

Noel G8GTZ and I travelled to HamRadio 2019 at Friedrichshafen last weekend, where we presented to the ATV lecture stream and helped AMSAT-DL answer questions about QO-100 on their stand. It was great to see so much interest in ATV – the live demonstration of the Portsdown transmitter was particularly popular.

Our challenge now is to translate this interest into activity on all the bands – not just 13 cm and 3 cm. The threat to our valuable spectrum (especially 2 m and 23 cm) is very real and we really do need to "use it or lose it", so please get on the air at every opportunity and make sure that your activity is publicised.

I hope to see many of you at the next Regional CAT hosted by Finningley Amateur Radio Society at Sandtoft near Doncaster, where we will share the weekend with the Microwave Round Table. Two overlapping interest groups should make for a really good event.



Rob Burn G8NXG



The Listing

new and renewing members

Once again, 'The Listing' of members who have joined the BATC or who have renewed membership over the three months to the end of May appears below and I hope that it continues to be of use to members.

The Club has now reached another membership milestone – we have reached over 1300 members! Thanks to all who have joined over the period and to those who have demonstrated continuing support by renewing your membership subscription.

And talk of subscriptions reminds me to say that if you have an e-mail address you will be (or should be!) familiar with the messages that you receive at or near renewal time. There are however a couple of things to be mindful of with this system. The obvious one is to ensure that the entry within your membership details for your e-mail address is correct! Many of us use multiple e-mail

Australia		
Henry Titchen	VK2HJT	Gordon
Wayne Stringer	VK5BI	Seaton
India		
Maheir Kapadia	A65IT	Mumbai
South Africa		
Cor Rademeyer	ZS6CR	Secunda
Tom Van den Bon	ZR6TG	Vanderbijlpark
Thailand		
Tanan	HSIJAN	Bangkok
Rangseeprom		
Austria		
Helmut Fosodeder	OE5FHM	Gaspoltshofen
Reinhold	OE5RNL	Linz
Autengruber		
Josef Donschachner	OE3JDA	Oehling
Heinz Meschnark	OE8MEQ	St Stefan
Belgium		
Vandewalle Yves	ON4YV	Brussels
Frans Van de Velde	ON4VVV	Gent
Denis Goffaux	ON4MU	Ixelles
Patrick De Rocker	ON7ARQ	Merelbeke
Raphaël Ghislain	ON3GE	Strépy-Bracquegnies
Walter Losci	ON7VT	Strombeek-Bever
Wybo Alain	ON7ATV	Wenduine De Haan
Denmark		
Ole Nykjær	OZ2OE	Horsens

addresses these days and it is so easy to overlook an update due to a change of plan, or of e-mail provider.

Paying for subscriptions has been made as straight-forward as possible by making use of the electronic payment systems, PayPal and BACS. However, we do recognise that not everyone wishes to pay via electronic means and so a form is provided under 'How to Pay' under the Shop tab on the BATC website.

Finally, members who wish to receive a written renewal letter only have to ask; in fact you do have to ask as they are not automatically sent! Just send me an e-mail at renewal time – I'll ensure that you are sent a renewal letter with current price information.

As always if you do spot an error please let me know: **memsec@batc.tv**

Michael Wehnert	OZ5WU	Naestved
Finland		
Kauto Huopio	OH2LFM	Espoo
Arno Martin	OH7XM	Espoo
France		
Jean-pierre	F6DZP	Migne-auxances
Courjaud		
Daniel Chagnot	F6BUH	Brie et Angonnes
Mike Lord	F8VOU	Chatain
Alain Deval	F5MNA	Granges-sur-Baume
		Hauteroche
Auvray Michel	FIETU	lzy
Paul-André Schmid	F4WAG	La Roche sur le Buis
Dominique Metayer	FIEJP	Le Grand Quevilly
Christian Leloup	FIAFZ	Mardié
Jacques Rambaud	F6BKI	Merignac
Jean Michel	F5AGO	Migné Auxances
Fournier		
Jerome Baur	F4GMU	Pontfaverger
Christian Lecoq	F5OTS	Sain Martin d'Heuille
Rolf Collette	F9ZG	Saint Gilles
Lepron Romain	F4THU	Saint Privat des
		Vieux
Claudy Benard	FIEOF	Saint Valery en Caux
Michel Torregrossa	FIUKQ	Varennes Vauzelles
Jean Claude Darge	FIHGJ	Veules les roses

Germany		
Björn Eikermann	DD5BEA	Algermissen
Josef Grimm	DJ6PI	Augsburg
Walter Plaschke	DB2BG	Bremen
Patrick Leicht		Bruckmühl
Marco Kubon	DLIMX	Clausthal-Zellerfeld
Kaspritzki Hans	DGIHTS	Dessau- Roßlau
Winfrey Flöter	DL3HQD	Dessau-Rosslau
Jens Behrendt	DK3SAW	Dessau-Roßlau
Herbert Klopott	DB9IF	Dorsten
Werner Vyhnalek	DG4DUL	Eulowutz
Norbert Wetzel	DF6IY	Gaggenau
Horst Wellner	DL2GA	Garching
Jörg-Michael Kamla	DK3VK	Goslar
Michael Rieger	DL4MAU	Hallbergmoos
Guenther Borchert	DF5FC	Heidenrod-Kemel
Mike Buchholz	DL2AMB	Heilbad
		Heiligenstadt
Juergen Feldhoff	DK5KC	Langerwehe
Steffen Kaiser	DL5SFI	Leonberg
Wolfgang Lux	DL8BBC	Lohne
Dirk Petig	DDIPE	Mengerskirchen
Hans-Walter Peters	DC5EO	Mönchengladbch
Mennicken Claus	DKIUP	Neresheim
Hans Kirschbaum	DB9JQ	Neuss
Hans-Gerhard Hass	DC8UE	Norderstedt
Wolfgang Schreiner	DC2TH	Oberteuringen
Gert Weinhold	DG8EB	Oelsnitz
Erich Jankow	DL6ZEW	Oschersleben
		(Bode)
Robert Knoblach	DD4YR	Penzberg
Ulrich Knobloch		Schwarme
Franz Pfeil	DC9IG	Seesen
Andreas Preuss	DL5APR	Selm
Franz-Josef Rechin	DL5VG	St . Ingbert
Dietmar Barthel	DG0CPG	Stassfurt
Horst Prissing	DGIHPS	Staßfurt
Manfred Brandt	DO3MBS	Staßfurt
Falk Troll	DG2TF	Staßfurt OT
		Rathmannsdorf
Stefan Bloechl	DL2SKY	Sünching
Rainer Schuster	DGORS	Syrau
Joerg Delvos	DJ4ZZ	Unterlüß
Joachim Schoone	DG8BF	Wiesmoor
Frank Panser	DD0CW	Wildeck
Reinhard Beck	DL3BR	Winterlingen

Greece		
Yiannis Koulougeris	SVICOA	Aigaleo
Emmanouil	SVIBKE	Cholargos
Mantzaras		
Grigorios Smiaris	SV2RR	Kilkis
Isle of Man		
Phil Smith	GD1HIA	Douglas
Italy		
Mario Armando Natali	IONAA	Assisi
Franco Milan	IU3ADL	Caneva
Marcello Casetta	IKIYWB	Moncalieri
Alessandro Tesconi	IK5EHI	Pietrasanta
Roberto Pelizzari	IU2JXD	Rodengo Saiano
Roberto Mascitti	I6JEH	San Benedetto Del Tronto
Ugo Variola	IW3QID	Trieste
Alessandro	IZ3CTS	Vittorio Veneto
Mattiuzzi		
Luxembourg		
Jean Weber	LXIWJ	Huncherange
Montenegro		
Dragan Milosevic	406DM	Podgorica
Nothorlands		
Netherlands		
Rusty Salemink		Aalten
Rusty Salemink HC Sutphen	PEIGDF	Aalten Almere
Rusty Salemink HC Sutphen Jack Hoogewerff	PEIGDF PA3AXO	Aalten Almere Bosschenhoofd
Rusty Salemink HC Sutphen Jack Hoogewerff Martin Struijs	PEIGDF PA3AXO PE3MST	Aalten Almere Bosschenhoofd Burgum
Rusty Salemink HC Sutphen Jack Hoogewerff Martin Struijs Jeroen Bastemeijer	PEIGDF PA3AXO PE3MST PEIRGE	Aalten Almere Bosschenhoofd Burgum Delft
Rusty Salemink HC Sutphen Jack Hoogewerff Martin Struijs Jeroen Bastemeijer Hans Baard	PEIGDF PA3AXO PE3MST PEIRGE PEINKP	Aalten Almere Bosschenhoofd Burgum Delft Ede
Rusty Salemink HC Sutphen Jack Hoogewerff Martin Struijs Jeroen Bastemeijer Hans Baard Marco Geels	PEIGDF PA3AXO PE3MST PEIRGE PEINKP PEIBR	Aalten Almere Bosschenhoofd Burgum Delft Ede Enschede
Rusty Salemink HC Sutphen Jack Hoogewerff Martin Struijs Jeroen Bastemeijer Hans Baard Marco Geels Lourens Koopmans	PEIGDF PA3AXO PE3MST PEIRGE PEINKP PEIBR PH0DX	Aalten Almere Bosschenhoofd Burgum Delft Ede Enschede Groningen
Rusty Salemink HC Sutphen Jack Hoogewerff Martin Struijs Jeroen Bastemeijer Hans Baard Marco Geels Lourens Koopmans OJM Baken	PEIGDF PA3AXO PE3MST PEIRGE PEINKP PEIBR PE1BR PH0DX PEIPMD	Aalten Almere Bosschenhoofd Burgum Delft Ede Enschede Groningen Grou
Rusty Salemink HC Sutphen Jack Hoogewerff Martin Struijs Jeroen Bastemeijer Hans Baard Marco Geels Lourens Koopmans OJM Baken Frank de Wilde	PEIGDF PA3AXO PE3MST PE1RGE PE1NKP PE1BR PHODX PE1PMD PH2M	Aalten Almere Bosschenhoofd Burgum Delft Ede Enschede Groningen Grou Hazerswoude-Dorp
Rusty Salemink HC Sutphen Jack Hoogewerff Martin Struijs Jeroen Bastemeijer Hans Baard Marco Geels Lourens Koopmans OJM Baken Frank de Wilde PJ. Halfweeg	PEIGDF PA3AXO PE3MST PE1RGE PE1NKP PE1BR PH0DX PE1PMD PH2M PA0VAB	Aalten Almere Bosschenhoofd Burgum Delft Ede Enschede Groningen Grou Hazerswoude-Dorp Hippolytushoef
Rusty Salemink HC Sutphen Jack Hoogewerff Martin Struijs Jeroen Bastemeijer Hans Baard Marco Geels Lourens Koopmans OJM Baken Frank de Wilde P.J. Halfweeg Tonnie Luijerink	PEIGDF PA3AXO PE3MST PE1RGE PE1NKP PE1BR PH0DX PE1PMD PH2M PH3MURA PH3MURA PH3MURA PH3MURA PH3MURA PH3MURA PH3MURA PH3MURA PH3MURA	Aalten Almere Bosschenhoofd Burgum Delft Ede Enschede Groningen Grou Hazerswoude-Dorp Hippolytushoef
Rusty Salemink HC Sutphen Jack Hoogewerff Martin Struijs Jeroen Bastemeijer Hans Baard Marco Geels Lourens Koopmans OJM Baken Frank de Wilde P.J. Halfweeg Tonnie Luijerink Dustin Snijders	PEIGDF PA3AXO PE3MST PE1RGE PE1NKP PE1BR PH0DX PH0PMD PH2M PA0VAB PA3GLL	Aalten Almere Bosschenhoofd Burgum Delft Ede Enschede Groningen Grou Hazerswoude-Dorp Hippolytushoef Losser Pijnacker
Rusty Salemink HC Sutphen Jack Hoogewerff Martin Struijs Jeroen Bastemeijer Hans Baard Marco Geels Lourens Koopmans OJM Baken Frank de Wilde P.J. Halfweeg Tonnie Luijerink Dustin Snijders David Roosendaal	PEIGDF PA3AXO PE3MST PE1RGE PE1RKP PE1BR PH0DX PH0DX PH1PMD PH2M PH2M PH2M PH2M PH2M PH2M PH3GLL PE1OZS PE1MUD	Aalten Almere Bosschenhoofd Burgum Delft Ede Enschede Groningen Grou Hazerswoude-Dorp Hippolytushoef Losser Pijnacker
Rusty Salemink HC Sutphen Jack Hoogewerff Martin Struijs Jeroen Bastemeijer Hans Baard Marco Geels Lourens Koopmans OJM Baken Frank de Wilde P.J. Halfweeg Tonnie Luijerink Dustin Snijders David Roosendaal Norway	PEIGDF PA3AXO PE3MST PE1RGE PE1NKP PE1BR PE1PMD PH0DX PH0DX PH0DX PE1PMD PH0DX PH0DX PE1PMD PH0DX PH0DX PE1PMD PH0DX PH0X PH0X PH0X PH0X PH0X PH0X	Aalten Almere Bosschenhoofd Burgum Delft Ede Enschede Groningen Grou Hazerswoude-Dorp Hippolytushoef Losser Pijnacker Utrecht
Rusty Salemink HC Sutphen Jack Hoogewerff Martin Struijs Jeroen Bastemeijer Hans Baard Marco Geels Lourens Koopmans OJM Baken Frank de Wilde P.J. Halfweeg Tonnie Luijerink Dustin Snijders David Roosendaal Norway Tormod Berg	PEIGDF PA3AXO PE3MST PE1RGE PE1RKP PE1BR PE1PMD PH0DX PH0DX PH1PMD PH1PMD PH2M PH2M PH1PMD PH2M PH3GLL PH3GLL PA3GLL PE1MUD PA3GLL PE1MUD PA6DPA	Aalten Almere Bosschenhoofd Burgum Delft Ede Enschede Groningen Grou Hazerswoude-Dorp Hippolytushoef Losser Pijnacker Utrecht Bardufoss
Rusty Salemink HC Sutphen Jack Hoogewerff Martin Struijs Jeroen Bastemeijer Hans Baard Marco Geels Lourens Koopmans OJM Baken Frank de Wilde P.J. Halfweeg Tonnie Luijerink Dustin Snijders David Roosendaal Norway Tormod Berg Poland	PEIGDF PA3AXO PE3MST PE1RGE PE1RRGE PE1BR PE1BR PHODX PHODX PHODX PE1PMD PHODX PHODX PE1PMD PHOXAB PA3GLL PE1OZS PE1MUD LA6DP	Aalten Almere Bosschenhoofd Burgum Delft Ede Enschede Groningen Grou Hazerswoude-Dorp Hippolytushoef Losser Pijnacker Dutrecht
Rusty Salemink HC Sutphen Jack Hoogewerff Martin Struijs Jeroen Bastemeijer Hans Baard Marco Geels Lourens Koopmans OJM Baken Frank de Wilde P.J. Halfweeg Tonnie Luijerink Dustin Snijders David Roosendaal Norway Tormod Berg Poland Tomasz Salwach	PEIGDF PA3AXO PE3MST PE1RGE PE1RRE PE1BR PE1BR PHODX PE1PMD PHODX PE1PMD PHODX PE1PMD PHODX PLIPMD PAOVAB PAIGUL PAOVAB PLIOZS PLIOZS PLIODX PEIMUD PEIMUD SQ6QV	Aalten Almere Bosschenhoofd Burgum Delft Ede Enschede Groningen Grou Hazerswoude-Dorp Hippolytushoef Losser Pijnacker Utrecht Bardufoss
Rusty Salemink HC Sutphen Jack Hoogewerff Martin Struijs Jeroen Bastemeijer Hans Baard Marco Geels Lourens Koopmans OJM Baken Frank de Wilde P.J. Halfweeg Tonnie Luijerink Dustin Snijders David Roosendaal Norway Tormod Berg Poland Tomasz Salwach Piotr Herko	PEIGDF PA3AXO PE3MST PE1RGE PE1RRE PE1BR PE1BR PE1PMD PHODX PHODX PE1PMD PHODX PHODX PHODX PHODX PAOVAB PAOVAB PEIOZS PAGOLA PEIOZS	Aalten Almere Bosschenhoofd Burgum Delft Ede Enschede Groningen Grou Hazerswoude-Dorp Hippolytushoef Losser Pijnacker Utrecht Bardufoss Bardufoss
Rusty Salemink HC Sutphen Jack Hoogewerff Martin Struijs Jeroen Bastemeijer Hans Baard Marco Geels Lourens Koopmans OJM Baken Frank de Wilde P.J. Halfweeg Tonnie Luijerink Dustin Snijders David Roosendaal Norway Tormod Berg Poland Tomasz Salwach Piotr Herko Jan Galuhn	PEIGDF PA3AXO PEIRGE PEIRGE PEIRGE PEIRR PEINKP PEIPMD PHODX PHODX PEIPMD PHODX PHODX PHODX PHODX PAOVAB	Aalten Almere Bosschenhoofd Burgum Delft Ede Enschede Groningen Grou Hazerswoude-Dorp Hippolytushoef Losser Pijnacker Dijnacker Utrecht Bardufoss Bardufoss Bardufoss
Rusty Salemink HC Sutphen Jack Hoogewerff Martin Struijs Jeroen Bastemeijer Hans Baard Marco Geels Lourens Koopmans OJM Baken Frank de Wilde P.J. Halfweeg Tonnie Luijerink Dustin Snijders David Roosendaal Norway Tormod Berg Poland Tomasz Salwach Piotr Herko Jan Galuhn Artur Sobiech	PEIGDF PA3AXO PEIRGE PEIRGE PEIRGE PEIRRE PEIRMP PEIRMP PEIRMP PEIRMP PHODX PHODX PEIRMP PHODX PEIRMP PAOVAB PEIOZS PEIOZS <td>Aalten Almere Bosschenhoofd Burgum Delft Ede Enschede Groningen Grou Hazerswoude-Dorp Hippolytushoef Losser Pijnacker Dijnacker Utrecht Losser Bardufoss Bardufoss Serock</td>	Aalten Almere Bosschenhoofd Burgum Delft Ede Enschede Groningen Grou Hazerswoude-Dorp Hippolytushoef Losser Pijnacker Dijnacker Utrecht Losser Bardufoss Bardufoss Serock

Portugal		
Carlos Abrunheiro	CTIXC	Coimbra
Miguel Pelicano	CTIBYM	Evora
Antonio Pacheco	CTIERW	Paço de Arcos
Slovenia		
Bojan Majhenic	S52ME	Maribor
Spain		
Alejandro	EA4BFK	Las Rozas
Fernandez		
Antonio Fernández	EA4LE	Las Rozas de Madrid
Tomas Orzaez	EA6WQ	Manacor
Jose-Maria Gomez-	EA2AA	Urduliz
Salazar		
Sweden		
Anders Klint	SAOBDK	Huddinge
Nicklas Hellberg	SA5MAC	Norrköping
Lars Pettersson	SM4IVE	Odensbacken
Switzerland		
Luca Rovelli	HB9OBD	Barbengo
Christoph Joos	HB9HAL	Domat/Ems
υκ		
John Morris	G6PEP	Abingdon
Alan Matthews	MOAQC	Alford
Glyn Cartwright	2M0ETJ	Annan
Bryan Oliver		Barnet
Noel Matthews	G8GTZ	Basingstoke
Martin Man	G7NSY	Bath
Gary Cash	2E0LGZ	Birkenhead Wirral
Simon Macdonald- Smith	MOIVQ	Bognor Regis
Clive Greenwood	MOHHF	Boughton
Martin Newell	G8KOE	Bridgwater
David Brain	G3XMC	Bristol
John Harkins	2E0FEP	Bristol
Richard Zerafa	2EOUAI	Bristol
Peter Howell	MODCV	Cambridge
Martin Charman	G4FKK	Carshalton
John Houldridge	G6KYD	Chessington
Tony Wilson	G6ZAC	Chilworth, Guildford.
Paul Howey	G4BBP	Chippenham
Tim Bucknall		Congleton
John Melton	GOORX	Crawley
Mike Stevens	G8CUL	Didcot
Graham Bailey	GIZTJ	Dideford
Howard King	G8DXV	Doddinghurst
Richard Ferryman	G4BBH	Dover

Victor Robertson	2M0JVR	Fochabers
Kevin Mayes	GOEBL	Goathland
Leslie Dodd	G7VTC	Hallaze
Jim Whelan	G6NOI	Higher Bebington
Kassidy Fenton		Houghton Le Spring
Nick Partridge	G7PLS	Immingham
Donald IIsley	G4ZVW	lpswich
Paul Mulliner	MOBKJ	Kettering
Peter Elms	GOIJU	Kings Lynn
John Brown	GM7HHB	Kirknewton
Chris Smith	GIIII	Leeds
David Taylor	MOKZX	Leeds
Simon Clark	2E0DXE	Lincoln
Peter Holmes	MIOVAX	Lisburn
Kelvin Law	G4WMZ	Little Downham
Thanasis Tsigas	MOHXU	London
David Pearson	G4UFS	Milton Keynes
Tony Nicholson	G8FLV	Northallerton
Steve Liptrott	G4EGY	Nottingham
Stephen Catlin	G8HLM	Oakham
Hamish Knox	MM6OGU	Orkney
Stephen Carey	G4MJW	Plymouth
Nigel Phillips	M3NLL	Poole
David Blowers		Reigate
David Blowers David Bondy	G4NRT	Reigate Rochester
David Blowers David Bondy Christopher Price	G4NRT 2E0BMA	Reigate Rochester Saxilby
David Blowers David Bondy Christopher Price Nigel Smith	G4NRT 2E0BMA G4EQD	Reigate Rochester Saxilby Scunthorpe
David Blowers David Bondy Christopher Price Nigel Smith Robert Harris	G4NRT 2E0BMA G4EQD G4APV	Reigate Rochester Saxilby Scunthorpe Sheffield
David Blowers David Bondy Christopher Price Nigel Smith Robert Harris Nikolas Vranic	G4NRT 2E0BMA G4EQD G4APV G8PLI	Reigate Rochester Saxilby Scunthorpe Sheffield Sheffield
David Blowers David Bondy Christopher Price Nigel Smith Robert Harris Nikolas Vranic Mark Hopewell	G4NRT 2E0BMA G4EQD G4APV G8PLI M0XMH	Reigate Rochester Saxilby Scunthorpe Sheffield Sheffield Shrewsbury
David Blowers David Bondy Christopher Price Nigel Smith Robert Harris Nikolas Vranic Mark Hopewell John Simkins	G4NRT 2E0BMA G4EQD G4APV G8PLI M0XMH G8IYS	Reigate Rochester Saxilby Scunthorpe Sheffield Sheffield Shrewsbury South Croydon
David Blowers David Bondy Christopher Price Nigel Smith Robert Harris Nikolas Vranic Mark Hopewell John Simkins Cori Haws	G4NRT 2E0BMA G4EQD G4APV G8PLI M0XMH G8IYS M0YCH	Reigate Rochester Saxilby Scunthorpe Sheffield Sheffield Shrewsbury South Croydon Southampton
David Blowers David Bondy Christopher Price Nigel Smith Robert Harris Nikolas Vranic Mark Hopewell John Simkins Cori Haws Stephen Thompson	G4NRT 2E0BMA G4EQD G4APV G8PLI M0XMH G8IYS M0YCH G8TNA	Reigate Rochester Saxilby Scunthorpe Sheffield Sheffield Shrewsbury South Croydon Southampton St Austell
David Blowers David Bondy Christopher Price Nigel Smith Robert Harris Nikolas Vranic Mark Hopewell John Simkins Cori Haws Stephen Thompson Andrew Ellis	G4NRT 2E0BMA G4EQD G4APV G8PLI M0XMH G8IYS M0YCH G8TNA MIDNS	ReigateRochesterSaxilbyScunthorpeSheffieldSheffieldShrewsburySouth CroydonSouthamptonSt AustellSt Stephen St Austell
David Blowers David Bondy Christopher Price Nigel Smith Robert Harris Nikolas Vranic Mark Hopewell John Simkins Cori Haws Stephen Thompson Andrew Ellis Keith Faulkner	G4NRT 2E0BMA G4EQD G4APV G8PLI M0XMH G8IYS M0YCH G8TNA MIDNS G4EQZ	ReigateRochesterSaxilbyScunthorpeSheffieldSheffieldShrewsburySouth CroydonSouthamptonSt AustellSt Stephen St AustellStoke-on-Trent
David Blowers David Bondy Christopher Price Nigel Smith Robert Harris Nikolas Vranic Mark Hopewell John Simkins Cori Haws Stephen Thompson Andrew Ellis Keith Faulkner Richard Thorley	G4NRT 2E0BMA G4EQD G4APV G8PLI M0XMH G8IYS M0YCH G8TNA G8TNA MIDNS G4EQZ G7MGA	ReigateRochesterSaxilbyScunthorpeSheffieldSheffieldSheffieldShrewsburySouth CroydonSouth CroydonSouthamptonSt AustellSt Stephen St AustellStoke-on-TrentStoke-on-Trent
David Blowers David Bondy Christopher Price Nigel Smith Robert Harris Nikolas Vranic Mark Hopewell John Simkins Cori Haws Stephen Thompson Andrew Ellis Keith Faulkner Richard Thorley Drew Belcher	G4NRT 2E0BMA G4EQD G4APV G8PLI M0XMH G8IYS M0YCH G8TNA MIDNS G4EQZ G7MGA G7DMO	ReigateRochesterSaxilbyScunthorpeSheffieldSheffieldShrewsburySouth CroydonSouthamptonSt AustellSt Stephen St AustellStoke-on-TrentStoke-on-TrentStoke-on-TrentStourbridge
David Blowers David Bondy Christopher Price Nigel Smith Robert Harris Nikolas Vranic Mark Hopewell John Simkins Cori Haws Cori Haws Stephen Thompson Andrew Ellis Keith Faulkner Richard Thorley Drew Belcher Michael Meadows	G4NRT 2E0BMA G4EQD G4APV G8PLI M0XMH G8IYS M0YCH G8TNA G4EQZ G4EQZ G7MGA G4EQU	ReigateRochesterSaxilbyScunthorpeScunthorpeSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSouth CroydonSouth CroydonSouth CroydonStokenon TrentStoke-on-TrentStourbridgeStroud
David Blowers David Bondy Christopher Price Nigel Smith Robert Harris Nikolas Vranic Mark Hopewell John Simkins Cori Haws Stephen Thompson Andrew Ellis Keith Faulkner Richard Thorley Drew Belcher Michael Meadows Dave Cahill	G4NRT 2E0BMA G4EQD G4APV G8PLI M0XMH G8IYS M0YCH G8TNA MIDNS G4EQZ G7MGA G4EQUZ	ReigateRochesterSaxilbyScunthorpeSheffieldSheffieldSheffieldShrewsburySouth CroydonSouthamptonSt AustellSt Stephen St AustellStoke-on-TrentStoke-on-TrentStoke-on-TrentStourbridgeStroudSurrey
David Blowers David Bondy Christopher Price Nigel Smith Robert Harris Nikolas Vranic Mark Hopewell John Simkins Cori Haws Cori Haws Stephen Thompson Andrew Ellis Keith Faulkner Richard Thorley Drew Belcher Michael Meadows Dave Cahill David Hazell	G4NRT 2E0BMA G4EQD G4APV G8PLI M0XMH G8IYS M0YCH G8TNA G4EQZ G7MGA G7DMO G4GUG	ReigateRochesterSaxilbyScunthorpeScunthorpeSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSouth CroydonSouth CroydonSouth CroydonStoke-on-TrentStoke-on-TrentStourbridgeStroudSurreySwindon
David Blowers David Bondy Christopher Price Nigel Smith Robert Harris Nikolas Vranic Mark Hopewell John Simkins Cori Haws Stephen Thompson Andrew Ellis Keith Faulkner Richard Thorley Drew Belcher Michael Meadows Dave Cahill David Hazell Peter Wallace	G4NRT 2E0BMA G4EQD G4APV G8PLI M0XMH G8IYS M0YCH G8TNA MIDNS G4EQZ G7MGA G7DMO G4EQZ G7DMO G4GUG G4GUG	ReigateRochesterSaxilbyScunthorpeSheffieldSheffieldSheffieldShrewsburySouth CroydonSouth CroydonSouth CroydonStoke-on-TrentStoke-on-TrentStoke-on-TrentStourbridgeStroudSurreySwindonTelford
David Blowers David Bondy Christopher Price Nigel Smith Robert Harris Nikolas Vranic Mark Hopewell John Simkins Cori Haws Cori Haws Stephen Thompson Andrew Ellis Keith Faulkner Richard Thorley Drew Belcher Drew Belcher Michael Meadows Dave Cahill David Hazell Peter Wallace Nathan Prentice	G4NRT 2E0BMA G4EQD G4APV G8PLI M0XMH G8IYS M0YCH G8TNA G8TNA G8TNA G4EQZ G7MGA G7DMO G4EQZ G7DMO G1OAR MI0NPR	ReigateRochesterSaxilbyScunthorpeScunthorpeSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSouth CroydonSouth CroydonStoke-on-TrentStoke-on-TrentStourbridgeStroudSurreySwindonTelfordTempo
David Blowers David Bondy Christopher Price Nigel Smith Robert Harris Nikolas Vranic Mark Hopewell John Simkins Cori Haws Cori Haws Stephen Thompson Andrew Ellis Keith Faulkner Richard Thorley Drew Belcher Michael Meadows Dave Cahill David Hazell Pater Wallace Nathan Prentice Peter Barnes	G4NRT 2E0BMA G4EQD G4FQD G8PLI M0XMH G8IYS M0YCH G8TNA G4EQZ G7MGA G7DMO G4GUG G1OAR M10NPR M10NVR	ReigateRochesterSaxilbySaxilbyScunthorpeSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSouth CroydonSouth CroydonSouth CroydonStoke-on-TrentStoke-on-TrentStoke-on-TrentStourbridgeSurreySwindonTelfordTempoThornbury
David Blowers David Bondy Christopher Price Nigel Smith Robert Harris Nikolas Vranic Mark Hopewell John Simkins Cori Haws Cori Haws Stephen Thompson Andrew Ellis Keith Faulkner Richard Thorley Drew Belcher Drew Belcher Dave Cahill David Hazell Pater Wallace Nathan Prentice Peter Barnes Chris Pegrum	G4NRT 2E0BMA G4EQD G4FQD G8PLI M0XMH G8IYS M0YCH G8TNA G4EQZ G7MGA G7DMO G4GUG G1OAR MIONNR M0SWN	ReigateRochesterSaxilbyScunthorpeSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSouth CroydonSouth CroydonStoke-on-TrentStoke-on-TrentStoke-on-TrentStourbridgeStourbridgeSurreySwindonTelfordTempoThornburyTunbridge Wells
David Blowers David Bondy Christopher Price Nigel Smith Robert Harris Nikolas Vranic Mark Hopewell John Simkins Cori Haws Cori Haws Cori Haws Stephen Thompson Andrew Ellis Keith Faulkner Richard Thorley Drew Belcher Michael Meadows Dave Cahill David Hazell Pater Wallace Nathan Prentice Peter Barnes Chris Pegrum Robert Williams	G4NRT 2E0BMA G4EQD G4FQD G4FQD G8PLI M0XMH G8IYS M0YCH G8TNA G4EQZ G7MGA G7DMO G4GUG G1OAR MIDNPR M0SWN M0SWN M0NAY	ReigateRochesterSaxilbySaxilbyScunthorpeSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSouth CroydonSouth CroydonSouth CroydonStoke-on-TrentStoke-on-TrentStoke-on-TrentStourbridgeStroudSurreySwindonTelfordTempoThornburyTunbridge WellsWelshpool
David Blowers David Bondy Christopher Price Nigel Smith Robert Harris Nikolas Vranic Mark Hopewell John Simkins Cori Haws Cori Haws Stephen Thompson Andrew Ellis Keith Faulkner Richard Thorley Drew Belcher Michael Meadows Dave Cahill David Hazell Peter Wallace Nathan Prentice Peter Barnes Chris Pegrum Robert Williams David Atkinson	G4NRT 2E0BMA G4EQD G4FQD G4FQD G8PLI M0XMH G8IYS M0YCH G8TNA G4EQZ G7MGA G7DMO G4EQZ G1OAR MIDNPR M0SWN G1OAR M0SWN GW6EUS G8DRF	ReigateRochesterSaxilbySaxilbyScunthorpeSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldSheffieldShetfieldSheffieldSheffieldSheffieldSheffieldSheffieldSouth CroydonSouth CroydonStoke-on-TrentStoke-on-TrentStoke-on-TrentStourbridgeStroudSurreySwindonTelfordTempoThornburyTunbridge WellsWelshpoolWitham

Wolverhampton ARS	G8TA	Wolverhampton
David Wright	G3XOU	Yelverton
Brazil		
Luiz Carlos Piraja	PS8RF	Teresina
Junior		

USA		
Kerry Banke	N6IZW	La Mesa
Michael Glass	N9BNN	Lebanon
Wolfgang Snitsar	KV4ATV	Panama City
David Curtis	N6NZ	Sunnyvale

Obituaries

Mike Walters, G3JVL, has passed away.

Mike was well known for his microwave activities and antenna designs.

The most famous was the JVL Loop Yagis for the 23cm and 13cm bands and used by many ATV'ers.

He will be sadly missed. 🌘

BATC stand, Blackpool 2018 & 2019

Having attended the Blackpool Rally for many years I offered to help John G3WFK who has manned the stand for a number of years. Although having previously manned a club stand over the years, this year I expected it to be different - and it was.

John and Elaine 2EIBVS, (BYLARA stand), worked as a team and John demonstrated how the stand should be laid out - having perfected this on many occasions.

With the stand setup and the doors opened, there was a steady foot fall throughout the day. John having run the stand on many occasions, knew a lot of fellow BATC members and hams.

The year went by and Blackpool Rally was upon us once again. Sadly, John G3WFK was poorly and unable to make the day. Elaine 2E1BVS had brought the equipment for the stand and we started on the setup, though not as slick as in previous years. The new kids on the block, myself and Peter G6PYL, ably assisted by Elaine, got things up and running. Without the leading light of John, the slower start to proceedings went without a hitch.



We had Dave-Cam providing the video which we were transmitting on 5.6 Ghz.

Bill G4YWD & Peter G6PYL

So we were up and running, meeting lots of people. The big subject of the day was QO-100 which has opened up yet another avenue - although its more of a multilane motorway. There have been some presentations showing what the satellite can offer, so if you have the opportunity to work through it or just receive – check the band plan.



I had brought some of my TV equipment and provided a 5.6 Ghz transmission which was being received by other clubs in the room.



BATC Members' Shop Update

Noel Matthews G8GTZ

Believe it or not, the "new" BATC website is now over I year old! One of the significant improvements over the old site is the use of Woocommerce to provide the members' shop facility which allows us much more flexibility in how we present products for sale. As we have now become familiar with the inner workings of the shop, we have recently made some changes the pricing structure.

Postage Rates

Until recently, most products were being sold at a flat postage rate no matter where they were being shipped to. This meant that UK members were subsidising sales to overseas

members; however, Woocommerce has given us the flexibility to implement regional postage charges. This has enabled us to reduce the base price of most products and add realistic postage charges for Europe and the rest of the world. As a result, our UK members have seen a price reduction on most products, our European members have seen very little price change and the rest of the world saw a slight price increase, which has been largely offset by the weaker UK pound exchange rate.

Why Members Only?

One question we get asked is "why do I have to join to use the BATC shop?". The answer is that the club is an "unincorporated mutual association" and we do not have to submit tax returns in the UK provided that all sales, and any surplus, remain within the club. However, this does mean that we can only sell to paid-up members of the club on a so called "mutual trading basis". So whilst you have to join BATC to use the shop it does also mean you get access to other benefits such as CQ-TV magazine and use of the streaming facilities.

2019 Shop Turnover

With the launch of Oscar100 in February we have seen a significant increase in the volume and value of products shipped from the shop - we have received over 1250 orders in 2019 and sold \sim 350 tuners in the last year. As well as increasing the work load for the volunteers who run the BATC shop and finances, this has created a major problem for the club in that, without managing the situation carefully, the club could exceed a turnover of £85,000 which is the UK threshold for VAT registration.



▶ Products shipped each month in 2019

Your committee has discussed this and, for a number of reasons, we are determined that the club will not exceed this threshold and we are holding monthly review meetings to ensure this does not happen. One effect of this is that you will see limits of the number of higher value items such as Serit tuners and USB modules being placed in the shop at any one time.

Which Components Do We Sell?

We often get asked why we don't stock all the components needed for a project – this is because we only stock the "hard to get" or specialised components, otherwise our volunteers would spend all day running to the Post office trying to compete with ebay! This is the reason that we no longer stock the LimeSDR Mini – still a major component in the Portsdown 2019 system – it is now available from Mouser Electronics in the UK at a competitive price. Additionally, not stocking it will help us control our revenue and workload for the remainder of 2019.

Bottom Line

Please always remember that the shop is staffed by volunteers. The only reason that the volunteers perform this task is to further the hobby of Amateur Television. So if you don't get an immediate response to your shop order, it may be that the shop volunteer is actually in his shack building something – or even spending time with his family!

Contest and Activity News

With the recently announced threats to 2m by aeronautical use and restriction on 23cm for Galileo it's more important than ever to demonstrate our use of all of the bands that can accommodate ATV in its various forms. One of the best ways that we can document our use of the frequencies allocated to us is by participating in contests and activity weekends.



Some of the certificates being presented for the 2018 IARU International contest: G4CBW was top station on 3.4GHz, G8GTZ won 24GHz and Neil G4LDR and G8GTZ jointly won 76GHz.

With that in mind, it was disappointing that the recent activity weekends and in particular the IARU International Contest were not as well supported as last year. The weather in some parts of the country was appalling for the activity weekend in April so understandably many portable operators decided to stay at home. Another factor affecting participation is probably the result of QO-100 capturing a lot of attention.

The weather wasn't quite blazing June for the IARU contest either and I'm sure that reduced the portable entries. However, from logs received so far there are a lot of fixed stations that were very active last year, some even winning a section, that did not appear this year.



Clive Reynolds G3GJA

Of the 16 entries received so far, 4 operated from different locations on the Saturday and Sunday and there have been 3 entries for the UK only section of which one, for the first time, there are two 4m band entries. Early results suggest that Noel G8GTZ has done well on 3cms but I'm not going to announce any other results for the UK due to issues with the software used to compile results and adjudicate the entries. Worked fine last year but it's really got the hump this year! I'll post the UK results on the forum as soon as I can.



► G8GTZ/P end of the world 24GHz ATV record

In other news Noel G8GTZ/P achieved a world record ATV contact at 24GHz on the 12th May. Over a distance of 126km he got pictures to G4CBW/G4FRE from IO82QL to IO83SO.



Please send activity reports to contests@batc.tv or post them in the forum under https://forum.batc.org.uk/viewforum.php?f=75



► GOFRE/P receiving G8GTZ/P on 6cm FM ATV and 24GHz DATV

However, that record didn't stand long as during the IARU contest Noel exchanged pictures with G4FRE/P at 136km between IO81FD and IO81XW81 on 24GHz. They also exchanged on 6cm using FM ATV.

There's a change to the Activity Weekend in September. It's now going to be a full-blown contest featuring all of the bands available 70cm down. I am going to see if I can talk the Committee into sponsoring awards for this so keep an eye on the forum. Rules will follow the IARU format and please use the Excel logsheets.

The date of the August activity weekend has been changed to avoid a clash with a rally that many ATVers attend.

The Christmas Repeater Activity Contest will be run again this year and hopefully there will be more groups getting their members on air to secure the ± 100 prize to support their repeater's upkeep. Full details will appear in the Autumn issue of CQ-TV and on the forum.

As usual, any suggestions, comments or entries to **contests@batc.tv**

Clive G3GJA BATC Contests Manager

Forthcoming Activity Weekends and ATV Contests calendar

1200 UTC 13 July 2019 – 1800 UTC 14 July 2019
1200 UTC 17 August 2019 – 1800 UTC 18 Aug 2019
1200 UTC 14 September 2019 – 1800 UTC 15 Sept 2019
1200 UTC 19 October 2019 – 1800 UTC 20 Oct 2019
1200 UTC 16 November 2019 – 1800 UTC 17 Nov 2019
2019 Christmas Repeater Activity Contest

ATV Activity Weekend – all bands ATV Activity Weekend **Note date change** Low Band BATC Contest 6m, 4m, 2m & 70cm Activity Weekend – all bands Activity Weekend – all bands Details to follow



MCR21 Project Launch

There is a long history of OB vans and the BATC. Longterm members of the BATC will remember my Blue OB van and its many appearances at BATC conventions. They may even remember its predecessor Monocoulus owned by Joe Rose now sadly deceased RIP, and going back even further Matilda , or more recently the OB vans run by Paul Marshall and currently the blue ATV van built by Tony Hornby.

Now MCR21s time has come to be restored again, this time back to it's original 1963 glory. We have chosen to do this properly so as to ensure it's survival well into the future. A charitable trust, a CIO, the Broadcast Television Technology Trust (BTTT) has been formed to own and care for MCR21 and in the fullness of time a full range of historic broadcast television equipment.

We are fortunate to have received a funding grant from the HLF, Heritage Lottery Fund. This will cover the restoration, display, and most importantly work with students to explain the history and technology of time and to show how programs were made over half a century ago. Our funding is not complete and, hint, more needs to be raised to meet our HLF commitments.

We have two websites **www.mcr21.org.uk** and **www.bttt.org.uk** both are works in progress but they will give more information about our aims.



Just 30 years between these two pictures, in the 27 years that have elapsed since the 1992 picture, which was taken at the Spalding Radio rally, the van has deteriorated somewhat but is still restorable and we hope to get



Brian Summers G8GQS

it back to 1963 inside and outside. In this way it will represent a record of the development of television technology of the period.

If you are able to help in any way or know of anyone who worked on MCR21 during its BBC service we would be pleased to hear from you.

The Launch Event

A Pye Mk6 camera of the type used in MCR21

This will take place at the Amberley Chalk Pits Museum, BN18 9LT on the weekend of the 17-18th August 2019



www.amberleymuseum.co.uk in Humphrey's Barn. We are still finalising the details but hope to have a couple of vintage cameras, display items from MCR21, videos and possibly a later OB van. MCR21 will not be there in the flesh.

The museum opens at 10am and we would welcome as many visitors as possible, the museum is large and I recommend allowing most of the day to look around. There is a cafe.

The Future

Once MCR21 is ready and out on public display and we are well established, there are thoughts that our ambitions would include vintage cameras and other broadcast equipment that is used to produce television programmes. Given sufficient friends, sponsors, volunteers, funding, miracles, we might be able to have a proper museum. I look with envy at the USA were there are several physical museums. **www.earlytelevision.org** or to the UK National Museum of computing **www.tnmoc.org**

The Broadcast Television Technology Trust June 2019

Supported by The National Lottery Heritage Fund

- I. CQ-TV #156
- 2. CQ-TV #75
- 3. CQ-TV #252
- 4. brian@mcr21.org.uk



Ian Waters G3KKD



23 cm QRM

The Problem

Although my main ATV activity, in recent years, has been on other bands, 23 cm has not been neglected. I have had 23 cm equipment in my shack for nearly 40 years. A few years ago a mobile phone base station mast was erected about a guarter of a mile away. If I beamed at it there was a little interference on 23, but it was not a problem. However more recently the QRM has increased enormously. The noise floor was so high that reception of the fairly strong signals from the local GB3PV repeater was not possible and the communication segment of the band was blotted out. I do not know why this was so but suggest that new services had been installed and/or powers had been increased. Other amateurs, living further away, also had a problem. Attempts to improve things by using pre-amplifiers with high IP3, to reduce inter-modulation did not help. It was concluded that the only cure was a filter between the aerial and the first stage. The loss of such a filter must degrade receiver sensitivity, but that is better than nothing.

The solution

If I were only interested in receiving PV or the communication segment, a good quality inter-digital filter, for which many designs have been published, would suffice. As an ATV operator I really needed to be able to look at the repeater input at 1249 and the output at 1316 MHz. A single filter with a pass band of 80 MHz did not seem practical and the use of 2 or 3 discreet filters with relay switching did not appeal. The photograph and drawing show what has been developed. It consists of two high Q critically coupled resonators, with a passband of 10 MHz and minimum loss, that can be tuned from 1240 to 1320 MHz. (DATV in the Cambridge area uses 4165 ks/s and





an occupied bandwidth of 5 MHz, so the 10 MHz seemed appropriate). This automatically covers the communications segment.

Construction

I was fortunate in finding some 3" (76 mm) thick wall (3.5 mm) brass tubing to make the outer of the two resonators. This made it possible to attach the top covers with screws. Other means can of course be used. The inner tubes are standard 21.5 mm OD copper water pipe. This is soldered into the top cover taking care to keep it perpendicular. These tubes together give a line impedance of 70 Ohms, which is close to ideal. The resonators are individually tuned by varying the lengths of the inner elements by moving tuning pistons. These are turned to give a close sliding fit in the tube. I originally thought that I would have to use some fingers at the end of the inner tube to give good contact with the piston. This has been found not to be necessary. Contact is at a high impedance point and the pistons are of such a length to make good capacitive coupling. The tuning changes quite smoothly.

Piston rods are soldered into the pistons and pass through guide plugs, which are a press fit into the tubes. I made these from PTFE, but other materials would be suitable. The rods are clamped to a ganging bar, which moves both together. The dimensions of the input/output and coupling loop between the resonators may be seen from the drawing. The coupling loop passes through a small metal tube press fitted into both resonators, which contains a PTFE bush. The size of this loop, which determines the pass bandwidth of the filter is fairly critical.

I will not describe the mechanism used to move the two pistons together, beyond saying that I used a lead screw, with a fine thread, and a nut. Anyone having the mechanical facilities to make this filter will have their own ideas.

Setting up

- I. Set the tuning control mid way.
- 2. Feed in a signal at 1280 MHz.
- 3. Release the piston rods from the ganging bar.
- 4. Look at the output of the filter on a spectrum analyser, or a receiver with S meter.
- 5. Adjust each piston, in turn, for maximum output.
- 6. Tune the signal to 1240 MHz and check the output.
- 7. Do the same at 1316 MHz.

8. If you have a spectrum analyser with a tracking generator, or a sweep generator you can observe pass band at various frequencies, the measured result at 1296 MHz is shown in the drawing. The insertion loss is less than 1dB at 1316 and 1296, but rather higher at 1249 MHz.

In use

In use, for TV, I set up a MiniTiouner RX for the desired frequency and tune the filter, observing the RF power and MER readings, for optimum. For communications I tune to a beacon frequency and adjust for maximum signal.



If there is a little backlash in the tuning drive it is best to tune past the signal and then back on to it.

Finally

As my QTH is partly surrounded by very large trees, it is necessary for the aerial with the RX front end and the TX PA to be located remote from the shack at the top of the garden. The filter will ultimately be installed there and controlled by a small reversible motor.

Protecting Your LimeSDR Mini

Charlie G3WDG has provided details of how he has provided physical protection of his LimeSDR Mini using a recycled diecast box.

He has drilled then filed 2 square holes in one end of the box to provide keying for the square bases of the SMA sockets. Then he has bolted the board into the box with spacers, and used a slot cut into the other end of the box (later packed with a grommet) to enable the fitting of the USB extension lead.





Dave Crump G8GKQ



Portsdown Made Simple

A No-soldering DATV Tx for QO-100

This article describes how you can use a Portsdown with a LimeSDR to put together the basis of a simple but capable DATV Transmitter for QO-100 without even picking up a soldering iron or needing to use another computer. It provides 1 mW of drive at 2408 MHz for feeding to an external power amplifier.

Components

The design is based around a Raspberry Pi 3B or 3B+ computer, with a 7 inch Touchscreen fitted. The software for this is supplied pre-configured on an SD Card that you can purchase from the BATC Shop. A full list of suppliers and part numbers for the other components required is included at the end of the article.

The transmitted signal (at a level of about 1 mW, 0 dBm) is generated using a LimeSDR Mini, which is powered from a USB Hub, as the Raspberry Pi can struggle to supply the hundreds of milliamps required.

There are 2 options for providing picture content: you can either use an EasyCap video capture dongle (available from the BATC Shop) to take an existing composite video and line-level audio feed; or you can use the Raspberry Pi Camera, with an eBay-supplied microphone dongle.

The official mains power supply for the Raspberry Pi connects by a Micro-USB plug, and can also supply the 7 inch touchscreen through the push-on wire connectors supplied with the screen. The Powered USB hub should be purchased with its own mains power supply.

Getting Started

Connect all the components together as shown in the diagram, taking care to insert the ribbon cables with the correct orientation. Also double-check that you have wired the touchscreen power supply leads to the correct pins on the Raspberry Pi GPIO connector. The BATC SD Card slots into the Raspberry Pi underneath the PCB with the card contacts facing up.



Apply power to the Raspberry Pi and the USB Hub. Do not worry that the screen does not light up immediately, but you should see the LEDs flashing on the Raspberry Pi. After 30 seconds or so, the screen should start showing rolling text and then the Portsdown Main Menu.

To select the LimeSDR Mini as the output source, select "Output To" and then "Lime Mini". Note that if you don't have power to the USB Hub, the "Lime Mini" button will be greyed out. You can then select the frequency, symbol rate and video source by using the other touchscreen buttons. When all set, simply press TX, and you should get about 1 mW of RF to send to your power amplifier.

For more information, you can refer to the BATC Wiki: *https://wiki.batc.org.uk/Portsdown_2019* ,or post questions on the BATC Forum.

Limitations

The Portsdown Lime combination has a number of limitations at present:

On selecting transmit, there is a burst of RF at about 10 dB above the normal signal level which is used by the LimeSDR Mini for internal calibration. This signal can overdrive and damage PAs, and care should be taken not to transmit it. The Portsdown "PTT" output (available on GPIO pin 40) is delayed to take account of this. Current software limitations mean that only some combinations of symbol rates and FECs are reliable. SR 500, FEC 1/2 works well, as does SR333 FEC 1/2. These 2 settings are quite adequate for normal QO-100 operation. However, please bear in mind that the system is not perfect!

Component Sources

Farnell: https://cpc.farnell.com/b/raspberry-pi

Raspberry Pi 3B	RPI3-MODBP: SC14882
Touchscreen:	RASPBERRYPI-DISPLAY: SC I 3858
Pi Camera:	RPI 8MP CAMERA BOARD: SCI 4028
Raspberry Pi PSU:	SW4600-UK-: SC14284
USB Hub:	NLUSB2-224P: CS23310

BATC: https://batc.org.uk/shop/

Portsdown Transmitter – pre-programmed SD Card Portsdown Transmitter – EasyCap Video Capture Device

Mouser: https://www.mouser.co.uk

LimeSDR Mini: 392-CS-LIME-05

eBay: https://www.ebay.co.uk

White 3.5mm Microphone Earphone Socket USB 2.0 Sound Card Speaker Audio Adapter (or similar)

How to use K7FRY's 10 Character Locator Website

The link that is mentioned in the ATV logsheet (https://k7fry.com/grid/) did no longer show the map on my screen. Instead it was all grey.

I found out it has something to do with risk and safety. Likely I am not the only one who had this problem and it is easy to solve.

- In Firefox you must click on the lock icon in the address bar,
- Then click the arrow on the control Center,
- Click Disable protection for now.
- In Exporer and Opera a notification shows up that asks permission to accept the risk.
- In Chrome, click the shield with the red cross at the right hand end of the address bar, and then "load unsafe scripts.

Hopefully this information helps you.

Steve Fry K7FRY asked the following:

"If you can please spread the word to donate. Google changed its pricing policies last year on mapping and it is no longer free. The increased popularity has brought more expenses to keep the site going".



Chris PA3CRX

Page 16



Dual channel output for the BATC version 2 MiniTiouner PCB

Noel Matthews G8GTZ



The Serit NIM used in the BATC MiniTiouner has a dual tuner capability and is capable of tuning two independent channels and of decoding and outputting two transport streams. When the version 2 MiniTiouner PCB was designed by Mike GOMJW and Jean-Pierre F6DZP they included a header for future expansion giving access to the 2nd transport stream. When the unit is used for terrestrial contacts there is normally no need for a 2nd channel and a USB interface needed to use the 2nd channel was not developed. However, with the launch of Oscarl 00, there are often 2 or more separate signals on the wideband transponder. Currently the only way of receiving more than one of them at a time is by using separate MiniTiouners and running multiple versions of the MiniTuione software, so there is now a requirement to access the 2nd transport stream.





Mike G0MJW has developed a small daughter board which hosts a 2nd USB module and 74HC-10 chip

and plugs in to the main MiniTiouner board providing a second USB output whilst still fitting inside the standard Hammond case.





The new board sits on top of a standard header fitted to the empty socket next to the Serit NIM. Two new holes need to be drilled in the rear panel, one for the USB connector and another for support. A simple bracket needs to be fabricated to manage the USB plugging forces.







Prototypes of the PCB have been produced and work successfully and Jean-Pierre is developing a special version of software called DualTioune which will enable the NIM to be tuned to 2 separate channels and the 2nd transport stream to be received over a 2nd USB port.



Note, this board is only suitable for use with the BATCV2 board and will be made available in the BATC members shop.



Further updates on the project will be made on the BATC forum, including when the software is ready for release, and a wiki page will be set up with schematics and assembly details.

Bill G4YWD

KITTENS 19

Knowledge in Television's Technical Electronic Necessary Systems

When it was suggested that regional events would be a useful addition to the hobby, Brian G4EWJ introduced us to the small CAT and KITTENS 19 was put into place. Having been to two CATs and seen what support was available for members, KITTENS 19 was a natural progression. Noel G8GTZ provided the application form via the website - which worked extremely well, keeping us informed of various details that helped organise the event.

On arrival registration and introduction to the event started with a welcome to all from Bill G4YWD, Chairman at the Wirral Amateur Radio Society, G3NWR. KITTENS 19 provided an informal/hands-on event that enabled members to come and develop their skills.

Via Skype, Dave G8GKQ gave a running commentary presentation update on Portsdown with Noel G8GTZ assisting locally with the slides.

Following Dave's presentation we moved to the KITTENS working area with hands-on time. Brian G4EWJ gave live demonstrations of TV on the QO-100 satellite via our 2.4 meter and 1.2 meter dishes. These were impressive and an inspiration for those that have the space to install the dishes required. The weather was very kind as this enabled members to inspect the outdoor setup first-hand.

A buffet lunch provided the opportunity to network with other participants before the afternoon's presentation.

Noel's presentation on QO-100 in the afternoon was also well received though the lecture theatre seats were too comfortable as I found out when I awoke at the end of the presentation. Apologies to all for the snoring.

The rest of the afternoon was then spent in the KITTENS working area or back on the roof with Brian G4EWJ and QO-100 operation.

The day passed very quickly and soon it was time to say farewell to those that were traveling home. A small group went for dinner via taxi provided by Ziggy MIEIV returning to the club before retiring for the night. Tomorrow was going to be a busy day for the teams at Horrocks Wood, Winter Hill and Brown Clee.



▶ Noel G8GTZ talking about QO-100 in the Lecture Theatre



Kittens Hands-on, show & tell, BATC shop



The satellite dishes at the Wirral Amateur Radio Society, G3NWR

KITTENS 19 Activity Day

Bill G4YWD

Following the successful day at KITTENS 19 on the Wirral, the Telford group including M0MHO, G7ACD, G4FRE, G8AQA, Dave G8VZT and G8GTZ were active from Brown Clee near Bridgenorth in IO82QL, whilst G3NWR including G4CBW went to Winter Hill - Horrocks Wood car park at IO83SO46GX - a distance of 126.6 kms



Left to right: Vincent, MOLCR; Dave, 2E0DHQ; Tony, G4CBW; Jim, G6NOI; Owen, M7OMW

G3NWR were P5 on 5.6Ghz and several successful QSO's were made between the 2 sites including Heather M0MHO achieving her first ATV QSO. M0PNN was then worked at a distance of 65 kms (didn't get the QRA) on 5665MHz.





G8GTZ/G4FRE then worked G4CBW on 24GHz - this set a new world record for 24GHz DATV at a distance of 126.6 kms. Signals were 15 - 18 MER at both ends so there was plenty in hand.



By then M0YDH had returned to Wolverhampton and we achieved David's first ever 2 way ATV QSO over a distance of \sim 30 kms - a great effort after a lot of hard work and perseverance - well done David!

A great day out and good practice for the contest in 3 weeks time. (5)



Goonhilly Spectrum Monitor and WebSDR Maintenance Visit

Dave Crump G8GKQ

During the first week of June, Phil MODNY and myself had the chance to perform some routine maintenance on the Goonhilly Spectrum Monitor and WebSDR installation. Our main aim was to find the cause of the occasional phase noise issues affecting the WebSDR.

Fault-finding

We had arrived equipped with numerous LNBs and a new replacement GPS reference unit. After a visual check that nothing obvious was awry (such as loose connections or cable damage), the next task was to try swapping out the LNB to see if that made any improvement, but this was not easy as the fault was intermittent, and could not be made to occur on demand. However, on substituting a Startek LNB modified for external reference by Paul M0EYT, I found that there was no reception at all, whereas it had bench-tested OK a few days before.

I checked the 25 MHz reference signal level at the LNB input and found it to be almost undetectable. I traced the fault back to a poor connection between the centre pin of a BNC plug and a BNC socket on a cheap BNC to F adapter that I had used on the back panel of the indoor equipment tray.



▶ The faulty BNC to F adapter

I replaced the adapter and the 25 MHz reference signal was restored to the LNB. Putting the original LNB back into place showed a 1 dB improvement in received signal levels and total absence of the previous phase noise fault.

Locking the Airspy SDRs

The spectrum monitor and the WebSDR each use Airspy SDRs and, although the original intention had been to lock them to the second output of the Leo Bodnar GPS Reference (set to 10 MHz), this had not been possible on initial installation. This configuration was completed and the previous correcting offset (in software) removed by Phil.

Dish Peaking

During initial installation, the dish was peaked using the best version of the MiniTioune software available, but that only had an MER resolution of 0.5 dB. On this visit, the dish was found to still be in good alignment, but fine adjustment using the latest version of MiniTioune with 0.1 dB MER resolution enabled a gain of a further 0.5 dB.

Finishing Touches

While the system was offline, the opportunity was taken to reboot the server and the firewall (for the first time since the transponders opened) and allow some software updates to be completed.

The wideband spectrum monitor showed the 1.5dB signal strength (C/N) gain achieved in the improvements. Note that the "over-power" indication is computed relative to the received beacon C/N and so the power threshold remains unchanged.

Thanks to Phil MODNY and Paul MOEYT for their assistance and to Goonhilly Earth Station for their continued support to the project. (5)



▶ The BATC and AMSAT-UK Installation at Goonhilly Earth Station

Video Fundamentals 18 Picture & Video Frequency Response

First we are going to look at Multiburst waveforms and what they mean. This is a quick visual way of testing the HF frequency response of video systems. It will not show poor LF response. Multiburst started life as an analogue test but can be used with digital systems.

There are two similar types ones with discrete frequency bursts and the other with a continuous swept frequency.

Good quality generators set the sine waves on a 350mv pedestal and have the start and stop 50% transitions on pedestal. The use is quite simple and the observation on a waveform monitor or 'scope. (the scope, of course, should be flat to above the highest frequency of the multiburst).



▶ Picture of multiburst with LF, 0.5, 1.0, 2.0, 3.0, 4.8, & 5.8MHz sections.



▶ Picture of sweep waveform with 1 to 5Mhz. range

Brian Summers G8GQS



▶ Picture of HF cut off response through 4Mhz low pass filter.

This is quite a good quality filter and has a nice smooth roll off at the HF end. The faint vertical lines are marker pips. Note what the filter has done to the colour burst.



▶ Picture of extreme example of a poor circuit

This is the sweep signal after some 25yds of poor thin co-ax with a poor reflective joint in the middle. Note the loss of overall loss of amplitude for both LF, the resistive loss, and HF cable loss. The interesting dip in the middle is caused by the reflection.

What is a good result? Well it depends on what equipment is being measured. For standard definition (SD) perhaps in a mixer or video amplifier a response to perhaps over 10Mhz would be good as this would indicate that other distortions were minimised. In a transmission system you would not want the bandwidth to be any more than needed and the response might be to 5.5Mhz or even less. In a digital system, SD again, there are 720 pixels horizontally and this is a hard limit to the frequency response. A good Analogue to Digital converter will have a "brick wall" anti-aliasing filter on the input. Later A to Ds used a technique of oversampling to reduce or eliminate the need for this expensive input filter.

Test cards & frequency gratings

The response of a complete system is often checked by pointing a camera at a test card. This does not always give a meaningful result, as it checks the lens, camera, transmission system, and the display monitor, each of which may restrict the bandwidth.

With digital cameras, for the HF detail, the results depend on just how the light from the frequency response bars falls on the sensor pixels. By chance it may be that the bar edge transition falls on the centre of one pixel and grey is the result. A small move and the grating springs into view! A digitised analogue camera would show the same effect of fixed position pixels.

One thing to be aware of is the printing of the resolution gratings on a card testcard. These normally have square edges and are effectively a square wave input to the lens/ camera/monitor system. As square waves are made of the fundamental frequency plus harmonics the results can be misleading. Illustrated is a section of a famous printed testcard design and the edges are quite square.

Only the most expensive glass test cards have sine wave gratings. However the electronic test cards like the Philips PM5544 do have sine wave gratings.



▶ Picture of Test Card Gratings showing the hard edges

Monitors

Most people are using or will soon be using flat screen monitors (TVs) of one make or another. The larger sizes have an adequate number of pixels, These days I would choose one that is at least true HD, 1920×1080 rather that the "HD" ready which translates to a smaller number of pixels. Small flat screen monitors usually have a smaller pixel density often related to computer sizes like VGA. Read the specification.

Colour CRT monitors/TVs are limited by the number of phosphor dots and can be quite poor resolution wise, especially for small screen sizes. The specifications for these often don't mention resolution or the tube type? Choose with care.

Monochrome ex broadcast monitors have very good resolution often into the 8-10MHz equivalent range and are ideal for measurements.

BATC at the Kempton Park Rally

 Dave Crump offering Portsdown advice to Roger, G8HKN



A very cheap easy to make Sync detector for analogue video

John GOATW

I know that over the years there have been many sync detection circuits published for use with repeater logic or just as alarms to alert you to local activity, but whilst building some new repeater logic I had cause to look at this issue again.

During a search on the internet I came across the MAX7461 Video loss detection IC available on eBay for less than \pounds 3 including postage.

Then whilst looking for a suitable relay to give a closing contact output I came across ready built relay modules available in various working voltages with + and - triggering inputs at £1.20 each.

The MAX7461 IC is a 5 legged device but adjacent pins 2 and 3 both connect to ground, so with a bit of fiddling the device can be mounted on the print side of a small piece of Vero board, wired as a 4 pin device with the GND pins shorted together.



The only peripheral components required are a coupling capacitor, an output pull up resistor and supply decoupling. An input termination resistor is required if the video signal is not already terminated into other equipment such as a monitor or switching matrix.



Interfacing to the relay module was nearly as simple with the input socket pins being long enough to push through the Vero board and solder directly to the tracks.

Driving the + input of the relay module from the output pin 4 of the IC gives the correct logic to activate the relay when a valid signal is received.



You might notice extra components on my board, but this is just a 7805 regulator fitted as the supply is not a 5V regulated one.



I have tested this using an FPV transmitter and receiver and under very weak signals, typical P1 picture quality it correctly detects a signal.

If you don't want the relay to chatter with very poor signals, add a 10K resistor between pin 4 of the IC and the + input of the relay module, with a 100uF capacitor from the input to ground.

This gives slightly less than a 1 second switching delay.

In conclusion.

For less than £5 and an hour's construction this, as an addition to any analogue receiver, can be used to switch repeater logic, a matrix or even used to record any ATV activity on my CCTV recorder using the alarm inputs.



Well, I tried... 5.8GHz ATV Saturday 8th June 2019

With the high winds and miserable weather forecast it didn't look too promising for much activity but as one hill is only 8 miles away I thought I'd give it a try. It's the wellknown (around here, anyway, SE London) 'View Point' up on the Woldingham ridge, on the top lip of an old chalk quarry overlooking the never-silent M25. It offers a good take-off between South East and South West although as I found out, trees form an effective RF sponge from about 260 degrees all the way round to 135 degrees again. However, a very handy and well cemented-in pole

stands well placed for mounting things on. It's 80mm diameter for future reference so I will be down to the local motor factors (or eBay) for some big exhaust clamps.





Not having such things to hand meant that a quick lash-up with a well-stretched bungee actually did an acceptable job. My setup



at present is a pair of 24dBi flat-plate antenna, a drone 600mW tx and matching rx. The tx uses a small security camera as a video source and the original microphone was panel mounted to pick up, on this occasion, wind noise. Careful alignment was made in Noel's direction, but unfortunately nothing was received nor successfully sent. It didn't help that showers were frequent and that the wind (and wind-chill) rendered it fairly miserable. So I packed up and went home to put together a 4M Jaybeam I'd prepared from my store and contacted Martin, G4FKK to see if we could manage an exchange.

At my end I was using my Portsdown, driving some nameless eBay amplifier and then a cheap Chinese VHF

Gareth G4XAT

amp using a MRF186. Previously built and tested on FM, this device was happy to give over 100 watts (on 28 volts) on 6, 4, and 2M. I'd previously checked the bias and waveform of my DATV and other than adding an open ¼ wave stub for 2M and 70cms (which cleaned up the harmonics a treat), it was good to go, sending about 25 watts down long coax to the beam in my garden, mounted at about 4m AGL and pointing in Martin's direction albeit through some houses and not line of sight.

For RX I was using a RTL-T2 dongle also fitted inside my Portsdown. Martin was using a 5 element beam and a home-brew Mosfet amp for 4M, suitably throttled back to the appropriate ERP.

And we exchanged pictures, quite happily too, despite the relative lack of absolute sensitivity or filtering. This made for our joint first 4M DATV QSO, adding to the 2M one we managed a couple of weeks back. Martin was monitoring his own transmission using SDRAngel and a ADLAM PLUTO so I suggested that he hooked it up directly to the beam. This he did and he got almost instant lock on my transmission, also without filtering or additional pre-amplification. We tried 500KS and that worked too, making the most of the available bandwidth.

Spurred on by Martin's success, I followed the how-to video **https://www.youtube.com/watch?v=Bb8S_J9peD8** which is very helpful and I was also able to receive my own signals.

Now to submit my contest entry, first ever 4M 2-way and first ever contest! $\textcircled{\sc b}$



Video Production - with a smartphone! Part 1



One of the other little-known aspects of the BATC constitution is the society also exists to encourage members to produce video content.

Look in most previous CQ-TVs and you'll find a plethora of articles dedicated to the RF and home construction but little or nothing has been dedicated to shooting or editing your own material together.

In this two-part series I explain how you can use your smartphone, or tablet, to produce content that is a little bit more interesting than endless shots of your shack, aerials, or that big rabbit.

More content than ever is now being shot by the major broadcasters on mobile phones, especially in news. Most of it you'd never know, unless you looked closely. Certainly within my time as a broadcaster we've gone from heavy cameras, ob scanners and dozens of people, and now we've got the tools in our pocket. Now no-one has an excuse 'it's too expensive or complicated'.

So how do you get started? And how we can do it on a ham's budget? You'll need a smartphone, most people have one, and it doesn't matter if it is Apple or Android.

Make sure you are shooting at 1920 x 1080. Most phones have a stock camera app although many of the App Stores offer a more sophisticated offering - such as Filmic Pro for when you are ready to take the next step.

Of course video uses a lot of memory so you may have to be creative with your apps and photos to free up some space. Also don't forget to put it into airplane mode to stop your recordings being interrupted. As a bare minimum we need a steady clear shot and sound you can hear.

Probably the first thing to get you going is a decent lightweight tripod and a smartphone clamp. Nothing screams "amateur" more than wobbly cam. But put it in a clamp and tripod and you've made the first move to go pro.





Ian Parker G8XZD



▶ The phone is clamped securely into the holder which is threaded to attach to a tripod plate

Ok admit it. When was the last time you cleaned the lens?

It only needs a small amount of fluff or grease to make it look like its been shot through the bottom of a milk bottle. So clean it carefully with a soft cloth once it's out of your pocket or bag.

The next thing to check is do you have you phone level? Is the sea going downhill or a building tilting over. Most tripods have a spirit level to assist this adjustment. And remember when you move the tripod is to check this again.



Don't forget to level your tripod

Several different shape and sizes of phone mount can be fixed to a tripod plate

CQ-TV 264 – Summer 2019

In general avoid shooting into the light – have that behind you – otherwise everything will look much darker than it should be and you won't see any detail in people's faces.

Now we are starting to get there.

The next top tip is to lock the focus and exposure. On many phones you touch the screen over the subject of interest for a few seconds and you'll see AF (auto focus) and AE (auto exposure) lock.

So why does this matter? Many phones have an annoying habit of trying to auto focus and this makes the whole picture twitch in and out of focus which is most disconcerting. Locking the exposure stops the picture getting brighter or darker as things move around in shot. And don't forget to reset it between takes.

When filming an event resist the temptation to move the camera too much, and too quickly.

Get a variety of shots. A big wide to establish the geography of where you are and what's going on. Move the camera and get different angles and shot size of the action. If people are moving in the shot, let them enter and leave frame. Always run your shot long. Aim for at least 10 seconds before moving. And if you are doing a pan from one object to another, leave 10 seconds clear at the beginning of the shot, then make the move slowly and purposely, and finally hold the shot for another 10 seconds. That way around you get three shots for the price of one.

Go for big close ups and cutaway shots to show the action in big close up. For example, if some one is demonstrating a piece of equipment, shoot it wide, then watch that sequence back and identify the close ups you require. Get the person doing the demo to go back over the action with the camera up close, and get the detail shots. Always try and match the continuity of what happened in the master shot.

You can never come away with too many shots. Look for detail, pans across the equipment, moves from one part of it to the other. And don't forget the odd "arty" shot as well.

Practice is the best way to get better and more confident with the phone.

Next we come to the sound.

This should get as much TLC as the pictures. Unless you are just recording natural sound on a calm day don't be tempted to use the smartphone mic. These will pick up handling noise, wind noise, and generally sound distant. For about a fiver you can get a tie clip mic from eBay or Amazon (other suppliers are available). This is well worth



One of these microphones costs 10x more than the other - but both have a very acceptable sound.

the purchase. Make sure it has the right connector. This is usually a 3.5mm TRRS for older iPhones, TRS for Android, or via a lightning connector adaptor - or even a USB-C connector.

Try not to lose the windshield, and make sure hair or clothing doesn't rub the mic. Even a cheap and cheerful one is better than the speaker being drowned out by wind noise. Of course you can spend a lot more on a better microphone, and there are even some WiFi radio mics appearing at sensible prices. If you are doing lots of interview, say at a show, use a handheld mic - if it is outside, make sure you use one with a windshield.

Hopefully these tips can help make your productions look much smoother and more professional.

Don't forget there are plenty of opportunities to make videos, perhaps of demos at radio clubs, or how to set up a Minitiouner and laptop. Perhaps you've just made a piece of equipment and want to show off your home construction, the list is endless.

Next time I'll make some suggestions on how to start editing your material together, including music, sound effects, and voice overs.

We'll look at the basics of smartphone editing, captioning your masterpiece, and how to play it out on air. •

Turning Back the Pages

A dip into the archives of CQ-TV, looking at the issue of 47 years ago

Peter Delaney - G8KZG

CQ-TV 76

CQ-TV 76 appeared in November 1971, and featured a camera at the station of lan Waters, G6KKD-T on the front cover. Zoom lenses were then still relatively rare, especially for amateur use, but this Pye camera was capable of a variety of shots, as it had a turret for several lenses on the front, which could be selected by the camera operator to suit the scene being televised.

Now-a-days, a home-built monitor would be something rare to find, with modern lcd displays being lightweight and compact units that are easily transportable. Martin Allard, however, wished to install a complete tv station into the back of a mini car., and so designed a transistorized

625 line monitor that would run on a 12 volt supply, drawing about 1.2 amps. Based on a 21 cm crt, the 'specialist' parts - the scan coils

and line output transformer - were obtained at a bargain price from Birkett's of Lincoln (who often advertised useful surplus components in CQ-TV at the time). The familiar integrated power regulators were not available then, so the power supply was built of discrete devices,

and able to run from either mains of battery. The video input signal was fed to a sync circuit, which produced pulses to drive the line timebase (B), a clamping circuit in the video amplifier (F) and the field timebase (D). The line

timebase output driver stage had a transformer formed on a pot core, with 2 secondary windings - one drove the line output stage, whilst the other drove the separate

eht generator, which produced the various high voltages for the crt. The transformer in the field timebase was a small, readily available, audio transformer.

CQ-TV 264 – Summer 2019

Arthur Critchley continued description of the triple standard sync pulse generator, for which the basic design had been in the previous issue. This part included the ways to add colour timing signals to the basic S.P.G. The line ident pulse was already available, and needed an output stage, but a further circuit was designed to produce the burst gate pulse. A monostable was triggered by the

trailing edge of the line sync pulse, and the output gated by field drive. Arthur went on to consider ways in which the colour subcarrier and the line timing pulses could be locked together. This was not straightforward, as the ratio was not an integer one which could be achieved by a simple counter chain. The remainder of that article looked at how a genlock could be added. Simply put, the purpose of a genlock was to ensure the timings from the

SPG matched those of another source - maybe an off-air signal, or a remote camera, as only if both the 'local' and 'remote' sources are timed with each field and each line starting at the same instant can the two be superimposed, cross faded, or 'clean' cuts made. A 'simple genlock system'

Fig 17. Action of Monostable in detecting Equalizing Pulses

NOTE 3.5NS PULSE LEADING-EDGE IS DELAYED ON SYNCS BECAUSE OF IC. DELAYS. THUS NEG. EDGE TO 324 WILL NOT TRIGGER MONOSTABLE BECAUSE PIN 5 HAS ALREADY GONE LOW - PREVENTING ACTION. NEXT TIME IT IS PIN 5 GOING HIGH WHICH INITIATES THE ACTION & THIS ONLY OCCURS ON AN EQUALIZING PULSE TRAILING - EDGE . (AN 5 FIRES ON POSITIVE EDGES IF 384 LOW & 384 FIRE ON NEGATIVE EDGES IF PIN5 HIGH)

was shown, in which the synchronising pulses from the remote source were fed to the two 74121 monostable circuits. The upper one delayed the remote sync pulse by a little over half a line, and its output was differentiated to form a narrow pulse, and that was gated with the local line blanking, to trigger the 7473 bistable. The output of this became a DC voltage that depended on the frequency and phase difference between the two sets of sync pulses, and was used to alter the frequency of the SPG master oscillator, until the local pulse frequency and phase matched that of the remote source. (These days, with digital circuitry such as frame-stores, there are other ways to bring local and remote sources into coincident timing).

The series of 'instructional' articles on integrated logic circuits - also written by Arthur Critchley - moved on to show how these could be used to make a grey scale generator and a crystal oscillator, and various ways to double the frequency of an input pulse. Two other 'television specific' applications were shown in this issue. If a test pattern was made driven from mixed blanking pulses, the half of a line at the top of an interlaced picture would have the test signal displaced on that line. The

1/2 LINE L.BL

1 LNE

LINE

1/2 LINE OMITTED.

M.BL. F.BL

CATE OTTOU

NO PULSE

R-S. BISTABLE OUTPUT.

solution was to remove that half line from the picture - the 74121 monostable being triggered by composite sync pulses, and when gated with mixed blanking, regenerated the mixed blanking at the output - except that half a line would be missing from the output - as shown by the waveforms. The other circuit used two dual retriggerable monostables to form a standards detector.

The 525 line system had a field that lasted for 16 2/3 ms, whereas the 625 line system field lasted for 20 ms. Again, a set of waveforms were shown to show how it worked.

BATC members had been experimenting with colour television since the 1950s, but with the spread of colour broadcasting, amateurs began to adopt the same standards, so that pictures could be displayed on domestic format monitors or receivers. One of the difficulties

was to keep the transmitted signal within the permitted bandwidth, but also with minimal distortion, so that the colour sub-carrier would be faithfully transferred to the radiated signal. Nigel Walker, G6ADK-T, described his way to accomplish this, using a modulator in the video transmitter that comprised both transistor and valve circuitry. The upper set of transistors formed a voltage amplifier for the video signal, whilst the lower set were a sync separator, driving the E88CC double triode valve to produce clamping pulses. Those pulses were used to clamp the video signal at the grids of the two 6CH6 valves. These formed the modulator output stage, working as a parallel pair of cathode followers.

John Lawrence's "Circuit Notebook" series had reached part 9, with examples of video amplifiers, where achieving amplification over a broad band of frequencies was necessary. One of the examples included was for a vidicon camera head amplifier, for which the input signal from the

image sensing target was extremely low. For that reason, the cascade pair of transistors VT1 and VT2 were run at low current, so as to reduce the level of noise that they might introduce, whereas the similar pair VT4 and VT5 were run at a higher current, to produce the standard level output signal.

The news from members included reports of activity in South Australia, South Africa and Germany - in the latter case, mentioning an exchange scheme whereby CQ-TV articles would appear in "Amateurfunk-Magazin" in German, and articles from there would be reprinted, in English, in CQ-TV.

MCR21 Recording its History

Brian Summers G8GQS

As part of the Broadcast Television Technology Trusts wider remit we are recording the history of MCR21, it's programmes and those who worked with it. Ultimately this will expand to cover other equipments and operations.

We have made a start with this by recording the memories of two of the crew from back in 1963/4, over half a century ago! These recordings are currently being edited by two students from the Royal Holloway, University of London. When it is finished it will be up on our website.

Harry is holding a Marconi MkIII camera of the type he used when starting his career with the BBC. With 20:20 hindsight I would have properly dressed this camera with lenses and the focus control. Roger is standing in front of an equipment bay with an EMI valve SPG, an RCA CCU for a TK60 Image Orthicon camera and at the top is a Dage valve 525 line SPG.

► Left to right: Harry Coventry Senior Cameraman, Brian Summers (me) and Roger Pearce Vision Supervisor.

BATC at the Newbury Rally 2019

Rallies and events with an BATC stand: (subject to change)

2019

For a list of all rallies see: http://rsgb.org/main/news/rallies/

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