Chelmsford Amateur Radio Society

Newsletter

July Meeting

Tue 6-Jul-2021, 7:30pm

Online by Zoom

Taking Toy Computers Seriously

By Damian Bevan G4WPO

Damian Bevan G4WPO who gave us the fascinating Alan Turing talk last year returns to talk about 'Taking Toy Computers Seriously'.

Low cost ARM-based processors have given us the BBC Microbit and Raspberry Pi amongst many other diminutive devices – yet they are surprisingly capable for their size.

They are also prompting a new effort on coding in schools – as well as a vast range of applications, including for amateur radio.

Zoom:

Quick Link:
https://us02web.zoom.us/j/83085747550?pwd=N0xDOWFPZ3RuRTR3UWt3TmFwbXd4Zz09

- Meeting ID: 830 8574 7550
- Passcode: 098123

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Club Diary

Tue 6-Jul-2021	Taking Toy Computers Seriously – Damian Bevan G4WPO	Online by Zoom
Tue 3-Aug-2021	Short Talks – 'Spectrum Matters' Murray G6JYB + tbc	Online by Zoom

Club Nets

CARS meets for talks/events on the first Tuesday of the month. The subsequent Tuesdays have club radio nets as follows below and dates listed on our calendar at www.g0mwt.org.uk/main/events/categories/net/ :-

- **2nd Tuesday in the Month – VHF**
  The CARS VHF FM Net uses GB3DA from Danbury starting at 8pm (local).
  GB3DA is 145.125MHz Input and 145.725MHz Output - and CTCSS-only (110.9Hz), 2min timeout
  If for any reason GB3DA is not available then 145.375 Simplex will be used. Vertical aerials are best for this
- **3rd Tuesday in the Month - UHF**
  The CARS UHF FM Net uses GB3ER from Danbury and starting at 8pm (local).
  GB3ER is 434.675MHz Input and 433.075MHz Output - and is CTCSS-only
  Vertical aerials are best.
- **4th Tuesday in the Month - HF**
  The CARS 80m Net on "3756kHz" Night, SSB and starting at 8pm (local).
  Horizontal aerials are best. The idea is to enable distant CARS Members to join the Net.
- **5th Tuesday in the Month (when there is one!) - MF**
  This is the CARS Top Band Net on 1947/1950 kHz +/-QRM, LSB and starting at 8pm (local).
  Horizontal aerials are usually used for this Net. A reminder - limit your power to a max of 30 Watts, please.

Training & Morse Classes

If you are interested in the new RSGB online exam or other opportunities,
please contact **John O'Connell M0JOC** our training coordinator and Exam Secretary

John can be contacted via training2021@g0mwt.org.uk or 07868-004380

Note: RSGB now have all three levels of exams available via their online exam booking system. It also has new Foundation training videos online at: http://rsgb.org/foundation-practicals/

In addition RSGB expects to update the exam syllabus for the recent Ofcom EMF changes

More info and other updates are at: www.g0mwt.org.uk/training

Morse classes at Danbury are suspended – but do contact Andy G0IBN who has on-air practice sessions and via Skype too… https://join.skype.com/clsfKXKmINvf

Follow @TrainWithCARS

June Meeting: A Guide to EMF

A major topic over the past year or so has been Ofcom's introduction of more rigorous requirements for public exposure from Electro-Magnetic Fields into amateur and other radio licences. For June we were therefore privileged to have John Rogers M0JAV (Just Another Volunteer!) who is the RSGB lead on the topic. John is currently both a Board member and EMC Committee Chair, so has been kept busy with this extra aspect. CARS had 34 attendees via Zoom for this important subject.

Following a series of consultations that had started in 2020, the new licence conditions became effective on May 18th and both Ofcom and RSGB have been rolling out guidance and calculation tools.

The changes to all transmitting licences require licensees to comply with ICNIRP general public limits on EMF exposure. A whole new section, Schedule-3, has been added by Ofcom to all amateur licences. The changes even include previously licence-exempt users who transmit at powers of more than 10W EIRP. With many countries updating their rules, there has been a team effort between RSGB and ARRL experts.

Ofcom provide both general EMF Guidance and more specific guides for amateurs, ship, aeronautical users and shared sites, along with a basic spreadsheet EMF calculator. Their guidance includes a document 'What you need to know as an Amateur Radio user'.

The Ofcom information is online at www.ofcom.org.uk/emf. Their latest guide is greatly simplified compared to early drafts and now comprises just four key steps:-

- **Step 1 – Do I need to comply?**
- **Step 2 – Carrying out a compliance check**
- **Step 3 – Managing compliance**
- **Step 4 – Keeping an appropriate compliance record**

There is a great emphasis on calculation or modelled configurations, as this can be easier for most amateurs than accurate calibrated measurements. RSGB have developed a more tailored calculation spreadsheet that is compatible with Ofcom's and includes tables of common feeders and antennas.

Carrying out a compliance check to find exclusion zones refers to just two methods:-

1) using the Ofcom or RSGB calculator, or
2) using a pre-assessed configuration to give less conservative exclusion zones

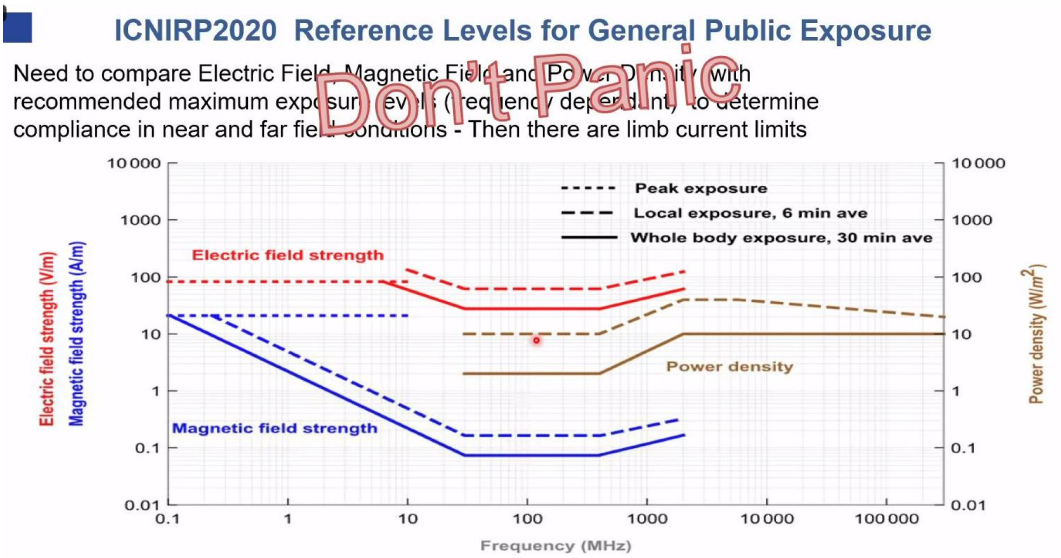
Radio Setup	Band	20m
Transmit mode	SSB	
Frequency MHz	14.2 MHz	
Transceiver		
Transmitter/ linear Power	100.0 W	20.0 dBW
Mode factor	20.0%	-7.0 dB
Transmit % in 6 minutes	40.0%	-4.0 dB
Average power from Transmitter	8.0 W	9.0 dBW
Peak Power from Transmitter	100.0 W	20.0 dBW

Feeder		
Cable Type	RG58A	dB/100m
Feeder		
Loss per 100m		-5.1 dB
Cable Length m	20.0 m	
Other losses dB		-0.2 dB
Feeder loss dB		-1.0 dB
Average power into Antenna	6.1 W	7.8 dBW
Peak power into antenna	76.2 W	18.8 dBW

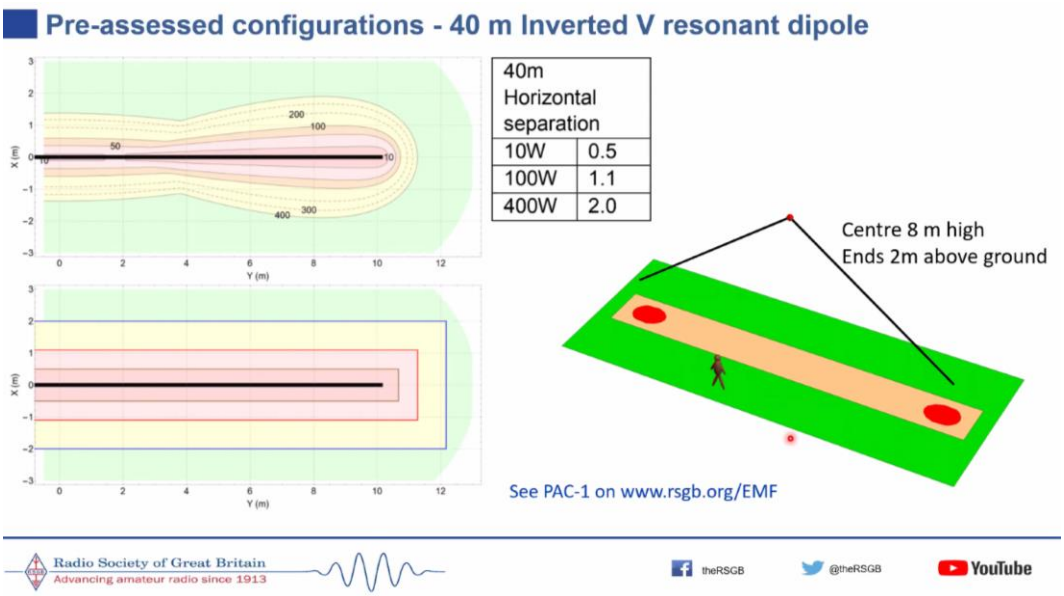
Separation Distances		
My Antenna		
Antenna type	Half wave dipole	dBi
Antenna		
Half wave dipole	1.6	2.2 dBi
Mainlobe EIRP	10.0 W	10.0 dBW
Minimum Antenna Height m	7.0 m	
Directivity Factor -dB		0.0 dB
Average EIRP	10.0 W	10.0 dBW
Peak EIRP	125.0 W	21.0 dBW

A screenshot of the RSGB Calculator spreadsheet

Fortunately Ofcom have given grace periods by which time your assessments need to be undertaken and recorded so that they are available for inspection. These range from 18th November 2021 for all frequencies above 110MHz; to 18th May 2022 for 10MHz-110MHz; and finally 18th November 2022 for below 10MHz.



ICNIRP have revised the exposure limits, but time averaging (and thus duty cycle) are key factors



Pre-assessed configurations are useful for HF.
This one demonstrates how extra height (or lack of it) can make a difference to passers-by

So make sure you read the new Schedule-3 on your new licence conditions. Both Ofcom and RSGB have a lot more online. The RSGB Exam syllabus will also have new content and questions on EMF shortly.

Our thanks to John for a great presentation which prompted lots of questions from the audience at the end!

Useful links:

- Ofcom: www.ofcom.org.uk/emf
- RSGB: www.rsgb.org/emf

National Field Day 2021

CARS CW class meet on a Thursday evening at Danbury Village Hall, due to COVID lessons have been carried out via skype which has proved successful.

When restrictions were eased and the RSGB allowed Field Day the club's Morse class decided they would like to participate in the annual NFD event, this was a late decision so we were unable to advertise the event in the club's newsletter. Although NFD is a contest, it also an enjoyable day with like-minded friends.

We managed to borrow a tent, generator, a pump-up mast and most important a cooker with a kettle, frying pan with sausages and rolls !

The club's Icom 756-Pro3 worked well. We made over 500 contacts mostly around Europe and a few in the USA. This year the Germans were still in lockdown so our score was reduced by around 300 contacts.

Our aerial, a doublet with 100W, had two bullet connections enabling two different lengths of aerial, the shorter length for the higher bands and the longer primarily for top band but can be used on 40 and 80m.

The club's Windows-7 laptop decided to do a Microsoft update half way through the contest which was not appreciated !! The pc had not been used for two years so updates were numerous, I thought I had done them all, but obviously a few more crept in somewhere.

We made 580 QSOs with 379 unique stations. The majority (87%) of QSOs were on 80, 40 and 20m with some on 160m and some sporadic E QSOs on 10 and 15m. There was not much DX about - 89% of QSOs were with Europe, with 42 from USA/Canada and a few from Asia and Africa. Best DX was 5Z4VJ in Kenya, and our longest QSO was W5ZR in Louisiana on 40m (7550 km).

The weather was good to us with lots of sunshine. In fact it was too good, as the heat in the tent was unbearable at times. After 2 hours on the morse key I felt ill and had to go home and was sick, it could have been the heat or it could have been the chicken sandwich which my wife had made for me ?!

Lots of tea and coffee were available and the frying pan of nice sausages made it a pleasurable day, during quiet periods we had lots of chat putting the world to rights !!

Members are reminded that the club has lots of equipment available for use. It is hoped that we can have a "Ham Day" in Oliver's field in the not too distant future where we can play with aerials and generally have an enjoyable day.

Thanks go to Oliver, M0WAG, for allowing us to use his field and to CARS members and CW class operators who participated:

> Andy G0IBN, Les G4JDS, Paul G4PVM, plus CW class: Dean G4WQI, Rob M0KCP, Tony G0JYI, Steve G4ZUL. We were visited by Jonathan G0DVJ and Ray G3XLG.

Andy G0IBN

Andy G0IBN operating right

NFD: Rob G0KCP, Les G4JDS, Tony G0JYI, Dean G4WQI, Tony G4XRG and sitting Paul G4PVM

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