

The newsletter of the
Crystal Palace Radio & Electronics Club

Affiliated to the Radio Society of Great Britain
Established January 1956

Meetings are held on the first Friday of each month.
The room opens at 7:30pm for an 8pm start at:
All Saints Parish Church,
Beulah Hill, London, SE19 3LG
(opposite the junction with Grange Road).
Visitors are always welcome.

Web sites:	Club Admin: http://cprec.btck.co.uk/ Club Technical: http://cprec.btck.co.uk/OurTechnicalSite
Email:	cprec.g2lw@gmail.com
Club Net:	Each Wednesday at 20:00 on FM on 145.525MHz (S21) ± QRM Experimental net each Saturday at 20:00 on FM on 51.55MHz
Twitter	@BobFBurns or www.twitter.com/bobfburns

Next meeting: Friday 5th July 2019

Admiralty Signalling – Jim M0JFL

In this issue: *Future Meetings & Events, Recent Event News, The Upgrade Bug by Nick Stapley, Technical Snippets, Members News, Miscellaneous, Noticeboard, Diary of External Events, News from other Clubs, Local Training Courses and Club Contact Information.*

Dear Reader

Future 2019 Club Meetings and Events

05 Jul	M	Admiralty Signalling – Jim M0JFL
02 Aug	M	Summer Social and On the Air
06 Sep	M	Power Systems – Paul Dyer - TBC
04 Oct	M	Practical Fault Finding – Martin Butler - TBC
01 Nov		TBA
06 Dec	M	Christmas Social

C = Contest, CM = Committee meeting, E = External event, M = club meeting, R = Rally, T = Training course, V = Visit.

05 July 2019 - Admiralty Signalling by Jim M0JFL

Long before the advent of electrical telegraphy the Government had need to communicate over long distances. The Admiralty in London needed to communicate with the ships in Portsmouth. Messages like "The Spanish are coming" were of great interest, for example. To find out how this was done you'll have to come to Jim's talk.

Recent Event News

07 Jun 2019 - On Air Noise Reduction Systems by John G8MNY

John commenced his presentation by discussing:

- The nature and sources of noise - system noise, sky noise, site noise, neighbour noise, wanted signal background and co-channel noise and jamming
- its measurement by the SINAD method
- its identification by ear and oscilloscope. A light weight portable HF receiver like the Tecsun PL-310 and a pair of headphones may be used to search the local area for noise sources.

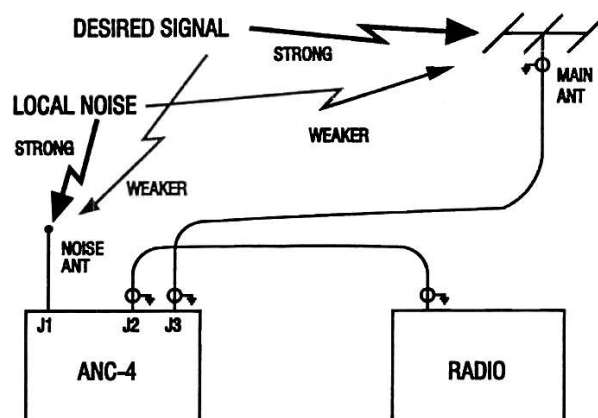
The noise in a circuit is a function of its impedance and can be calculated using the formula $V = \sqrt{4KTBR}$ which gives 0.04997uV emf for a 50ohm resistance at 293K temperature and a 2500Hz bandwidth.

System noise includes receiver noise and local oscillator sideband noise which appears on the incoming signal by reciprocal mixing.

Sky noise varies with the sunspot cycle, the seasons, frequency and time of day. On the lower bands it is typically 30dB above the receiver noise floor - another reason why a preamplifier is not required.

Site and neighbour noise includes that from broadband installations, high efficiency lights and mains born. Broadband routers should include notch filters for each of the amateur bands. Mains born noise can be reduced with a pi or tee format filter but of course it can also be radiated from the mains wiring and picked up by an aerial. High frequency mains born noise may be reduced by fitting ferrite cores to the mains leads.

Incoming wideband noise from an aerial may be attenuated with an aerial tuning unit but not at the frequency of operation - that requires a noise cancelling device, an example of which is shown below.



Noise cancelling requires the use of a second aerial, optional preamplifier and a phase adjustor so that the noise on the received frequency may be reduced by nulling it.

Ignition or similar short pulse based noise may be reduced using a noise blanker, an electronic function fitted to most modern transceivers before the main mode filters. This switches off the incoming signal for very short durations and significantly improves the signal quality.

Another option is to use a digital signal processor as a 'de-noiser' to reduce the background noise in a receiver. These may be used on the audio output path or at a low frequency final IF, typically in the 20-50KHz range.

John made the point that nothing is for free and any of these noise reduction systems will have an effect on the wanted signal. He finished by discussing the requirements for designing a 'noise free' QTH and what can be done to help tolerate the noise.

The Upgrade Bug by Nick Stapley

In the April newsletter I talked about how I revamped my old laptop by replacing the HDD with a much faster SSD. This seems to have given me an 'upgrade bug', as it gave me the idea of improving my current laptop. This was an expensive 17 inch ASUS i7 machine when I bought it, and is more of a desktop replacement than a 'road warrior' machine. It is also a bit unusual in that at the time it was made SSDs were much more expensive than HDDs, and as a compromise it came with two drives in it - a small 128GB SSD which had the operating system on it (and subsequently anything I wanted to load quickly), and an unremarkable 2TB conventional Seagate HDD where I keep and install everything else. The SSD is the C: drive and the HDD the D: drive.

The SSD was great for a fast boot and loading essential programs or games quickly, but otherwise it is really a bit too small. Originally it had a lot of ASUS utilities installed on it plus a recovery partition, both of which took up a fair amount of space. Also, after any of the major Windows 10 updates, usually in April and October, a copy of the old version of the OS is maintained on the C: drive for 30 days so that a user can roll back if the new update

doesn't work well. This typically occupies 20GB, although the files can be removed before this if desired.

In practice this meant that about half the drive was usable at any one time, but it did require managing the drive somewhat to maintain this state, and this became irritating. Also I discovered an unwelcome trend in that more and more software refuses to give you an option when installing as to where you want it installed. The google Chrome browser is an example. It won't let you choose where to install it, but just goes ahead and puts it on a specific folder on the C: drive. I wanted to install it on the D: drive as it has an unbelievably large footprint for a browser of 4 GB. Goodbye Chrome. [1]

The price of SSDs continues to fall. The 240 GB Crucial I bought in February for £33 is now £28 on Amazon, so I decided to look at a suitable replacement for the existing SSD in the ASUS. And this is where things get a bit complicated.

My old laptop HDD was a SATA 3 device and it was easy to find compatible HDDs on Amazon simply by googling '2.5 inch SATA HDDs' or something similar – see the April article. However a(nother) new form factor called M.2 and a(nother) new interface standard called NVME have been around for a few years now, just to confuse everybody. I recommend a utility called Belarc Advisor (https://www.belarc.com/products_belarc_advisor) to find out a host of information about what is in your machine, as well as product keys and serial numbers etc. I used it and it showed the exact model of SSD drive I was replacing, and a quick google enabled me to find its specification. It was as expected an M.2 drive, but apparently with a SATA interface not NVME.



M.2 drives are not at all like conventional HDDs or their replacement SSDs, which have the same connectors, shape and size so that they will fit in the same space. They are more like large sticks of chewing gum.

There are various different forms but the ones in laptops are all (?) '2280' which means 22mm wide and 80mm long – see the picture of my old SSD and note the two notches in the pins at the end. They are designed to fit into PCIe slots which are not particularly new but very versatile. It may seem incredible but you can already get 2 TB drives in the 2280 form. M.2 SSDs are also much much faster than SATA SSDs which are limited by the old SATA spec.

The NVME (non-volatile memory express) interface is a sort of 'parallel serial' interface in that it uses a number of serial transfer 'lanes', which run simultaneously but not in synchronisation. As the original SSD was not NVME I needed to check if an NVME drive could be used in the same slot. Normally this could be done by looking up the spec for the motherboard, but in this case I drew a blank. Belarc found the motherboard model, but googling it failed to give anything other than general information. I had registered the machine with ASUS so sent them an email and got a quick response that it would indeed support NVME SSDs.

Now all I had to do was decide what SSD I wanted. Enter more confusion. A lot of information on the web is incorrect about PCIe and M.2, and in particular there is a widespread statement that if a 2280 SSD has two notches in the pins it must be a SATA device. The notches actually delineate the lanes being used. With a single notch in this form it would mean that 4 lanes are being used, but with two notches that only two are used. My understanding is that it is true that SATA M.2 SSDs have two notches, but know that it is definitely NOT true that if an SSD has two notches it is SATA. There are good performance M.2 SSDs with NVME that also have two notches using only 2 lanes.

In the end I chose another Crucial drive (see the photo and note the pins and notches) in this instance the P1 500GB model which I got for £61 on Amazon.



Replacing the drive was quite easy – one screw to remove an access panel and then one screw holding the original SSD in place, and a quick substitution. As static is potentially a problem I left the machine plugged in but turned off at the wall, as the chassis would then act as an earth which I could touch to discharge any static.

At this point I could have simply put the access panel back, but I decided to take the whole machine apart (as you do). This was surprisingly easy compared to other laptops I have taken apart, a Toshiba being the worst. All that was required was to remove another mere 20



screws and lift away the plastic. The photo shows the machine open to the elements.

To give some idea of the improvement I used the CrystalDiskMark (CDM) app to measure the speed of the Seagate HDD, the SATA SSD in my old laptop, and the new M.2 SSD. The results are given in the table below.

Drive Type:	HDD		SATA SSD		M.2 SSD	
Test	Read MB/s	Write MB/s	Read MB/s	Write MB/s	Read MB/s	Write MB/s
Sequential Q32T1	114.8	115.3	549.2	485.2	1937.9	967.8
4KiB/8T8	0.741	0.940	214.3	260.2	366.3	851.3
4KiB/Q32T1	0.782	0.909	145.2	117.8	349.5	247.6
4KiB/Q1T1	0.386	1.005	17.22	32.67	53.98	116.1

The top line in each instance is a measure of straightforward sequential large file write/read speed, a very easy task. The other three lines are various measures involving random read/writes and small file transfers. The left entry is the HDD and the right entry the M.2. The middle entry for the SATA HDD shows sequential speeds close to the maximum for SATA. I think the differences are remarkable.

As SSD prices have fallen so have HDD prices. They are considerably cheaper than SSDs, but consume more power and are not as fast, although how fast do you need them to run for most applications?. One factor is that SSDs are subject to ‘thermal throttling’. They do not have any internal cooling, so if the temperature rises too much (they have a temperature sensor) the device slows down to about SATA SSD speeds. For the Crucial P1 a review I read showed that this occurred after about 120GB had been written in one burst, in other words after one minute! The best affordable M.2 drives at the moment are probably in the Samsung 970 Evo range with sequential CDM ratings of a staggering 3,900 MB/s for write and 3,500 for read. The cost is about £105 for a 500GB drive.

[1] There is a way round this involving moving the Chrome files to the required directory and using a third party ‘junction’ utility that creates a kind of link from the Chrome folder to the folder where you moved the files. I couldn’t get it to work.

Members News

a) Across town via RB DATV – First 2-way DATV contact on 146.5MHz between Gareth G4XAT & Martin G4FKK.

After lots of experimenting and ‘amplifier bias tweaking’ my/our first DATV ‘QSO’ took place this afternoon at around 16:30. We nearly managed it last weekend but the signals exchanged over a non-line-of-sight path were simply not strong enough. Today though, in place of a Moxon that I was using last weekend, I was using my portable 12 element ZL special, mounted at 6M AGL. Not an ideal height as it was beaming at house roofs some 100 yards distant.

It was however enough for solid copy and a quick lock at 125KS data rate – picture quality a bit like a very tired VHS tape. Pictures were exchanged in both directions (see attached). Martin was able to run a little more power than I and I was able to copy him easily on 250KS and occasionally on 333KS.



TX my end, BATC Portsdown with outboard amp then driving a Chinese ‘100 watt VHF’ amp to 43dBm, feeder down garden to my fishing pole 12 element ZL special. At Martins end, ADALM PLUTO (upgraded firmware)



driven by DATV-Express software via homebrew ½ watt amp into his MOSFET amp suitably re-biased, thence via feeder to a Tonna beam pointing in my direction. Receive at both ends was a humble RTL T2 dongle via the Portsdown software. Screenshots direct from the Raspberry Pi 3.5" touchscreen.

b) CQ WPX CW Contest: This ‘worked all prefixes’ contest is extremely popular, even if conditions are poor because everybody works everybody so plenty of opportunity for contacts. I always try and enter this 48 hour HF Bands contest, even if only for a few hours, as it is always busy and there are stations to work night and day. Despite poor conditions the bands were busy and even 10m was active at 2300 on both evenings. Sadly there was little grey-line operation although a few South American stations did appear very briefly on 15m and 20m on Sunday evening.

The highest serial number heard was over 4,000 on Sunday afternoon but this was probably a team event as multiple operator - multiple transmitters is an allowed category.

I managed 232 QSOs in a few hours on all six HF contest bands and my best contacts were VE9 (Canada), WB2 (North America), PJ4 (Dutch Surinam), CN3 (Morocco) and 4Z4 (Israel). At one point it was so crowded on 20m that I had to use the 250Hz IF filter in my transceiver to separate out the many stations.

Earlier in the year the RTTY and SSB WPX contests occur. Top scores are usually in the millions because the final total of QSO points is multiplied by the number of unique prefixes contacted. This is a good reason to exercise an unusual prefix and there were many in evidence.

c) Dunstable Downs Rally 2019

On a lovely summers day on Sunday 19th May I took myself and G4IQE off for our annual trip to Dunstable Downs rally. I think this is the 3rd year that I have attended the rally which I always enjoy.



Dunstable downs is an open air car boot style rally with a good mix of amateur radio equipment and general electronics and accessories. There are always refreshments and toilet facilities on site so you won't starve or worry about how long you can stay. If you have never been to Dunstable downs I'd say give it a go as I've been told it is always one of the better attended events and is more akin to how rallies used to be.



Now did I go all that way and come back empty handed (of course not)? I purchased a Clansman PRC 320 military HF radio and then spent time rummaging around looking for bits and pieces to go with it (see pics below). I'm really looking forward to giving it a run out when the weather improves.



73 Damien 2E0EUI

Miscellaneous

a) Hamvention Welcomes Orange Shirts Invasion

What was considered a once in a lifetime opportunity, the largest team of ICQ Amateur / Ham Radio Podcast Presenters descended on Xenia Ohio, decked out in splendid new orange shirts, proudly carrying the names of listeners who had sponsored the new attire.

Eight of the eleven team members, three home players from the states, three from the UK along with our Irish and Germany teammates, were welcomed with open arms by listeners and exhibitors, making the trip a humbling experience for all who attended.

Breaking product news from Elecraft, Yaesu, FlexRadio and SDRPlay was quickly reported with a special episode, along with a review episode was released to cover all the news from the show.

The ICQPodcast has released videos of the interviews conducted at Hamvention -

<http://www.youtube.com/icqpodcast>

Hamvention is by far the largest hamfest that any of our team has attended, with a large collection of vendors, special interest groups and lectures. A vibrant flea market, basked in sunshine battled against the sights and smells of the food court area for the dollars taken outside the halls.

Longside bargain hunting at the market, new hardware was purchased, lectures enjoyed but more importantly, meeting friendly fellow hobbyists who made the long journey worth the trip

We thought this trip would be a once in a lifetime trip, however, with careful planning we were able to visit the show at an affordable price. The European team members flew into Chicago, hired a car and drove to the Dayton, Ohio region, returning back through Chicago.

Considering the distance of the trip, everything went as smoothly as possible, and rather than being a one time visit, we hope to return soon.

ICQPodcast Team:

Front Row

- Frank Howell (K4FHM), Martin Butler (M1MRB), Ed Durrant (DD5LP) and Dan Romanick (KB6NU)



Back Row - Edmund Spicer (M0MNG), Chris Howard (M0TCH), Bill Barnes (N3JIX) and Colin Butler (M6BOY)

About the ICQ Amateur / Ham Radio Podcast: The ICQ Amateur / Ham Radio Podcast was launched in 2008, and is approaching 300 episodes, produced fortnight by amateur/ham radio operators for amateur/ham radio operators.

The ICQ Amateur / Ham Radio Podcast does not effect any commercial advertising and relies on the generous support of our listeners who donate to help with the running costs of the show

To find out more about the ICQ Amateur / Ham Radio Podcast, visit <http://www.icqpodcast.com>

Any questions can be directed to Colin Butler (M6BOY) - info@icqpodcast.com

ICQPodcast with Listener sponsors:

Edmund Spicer (M0MNG), Stan (K3JSM) and Marion (W3PSY) Mason, Martin Butler (M1MRB) and Dan Romanick (KB6NU).



b) Do you know your (Maidenhead) locator code? You can work it out using an Ordnance survey map or you can use the following site to do it for you. Just enter your post code and get an instant result.

<https://whatsmylocator.co.uk/>

Miscellaneous

a) On a recent trip to Norway we experienced a fjord cruise, a journey on the Flam railway, a short stay in Bergen with its wonderful fish market, a world heritage site Bryggen where we learnt about the Hanseatic merchants who made Bergen one of the most important European trading ports of the age and also took the funicular railway up Mount Floyen for spectacular views of the city.

However we started our holiday in Oslo and visited the Polar Ship Fram the strongest wooden ship ever built for polar research. The Norwegian-Scottish shipwright was Colin Archer. The Fram was used in expeditions of the Arctic and Antarctic regions by Norwegian explorers from 1893 – 1912. It is said to have sailed further north and further south than any other wooden ship. The ship, 39 metres long and 11 metres wide was shallow, built as such to withstand the tremendous pressure of the ice. This was an excellent museum and we were able to climb aboard and explore below deck.



On the same site another museum houses vessels and maps from Thor Heyerdahl's Kon-Tiki expedition, that used a balsawood raft to cross the pacific in 1947.

Notice Board – Wanted and For Sale

The Notice Board is for all club members to use so if you have one or more items that you wish to buy or sell then please send in the details. Some of the current list of items may be viewed at:

<http://cprec.btck.co.uk/SaleofClubEquipment>

All excl P&P.

Wanted:

I have a big bundle of J-Beam elements for 2M, and a folded dipole in their style. The elements have end-caps in white (maybe yellow once upon a time), brown and black – three different lengths. As I'm missing any boom I wonder if anyone has stashed away assembly instructions for any of their 2M aerials from which I could try and replicate whatever it was, presumably 4 elements upwards. There are many multiples of each colour, but just one folded dipole. An email scan would be great or even brief details of spacing and element lengths. I have some tubing that will do for the boom, I just need to know where to drill it! Thanks. Gareth, G4XAT, [g4xat\(at\)ntlworld.com](mailto:g4xat(at)ntlworld.com).

For Sale

Two AVO 8 Mk VI test meters: One has a broken terminal the other is fine. Both working but no leather carrying cases. £55 each ono. Contact Noel Brown on 0208 761 5883.



CPREC has a large bank of fundamental and overtone quartz crystals, from 1.0 – 99.91MHz. The list, which is on the club website as a downloadable PDF file. Prices are £1 each to club members and £2 each to non members, excluding P&P. Contact Bob on 01737 552170 or [g3oou\(at\)aol.com](mailto:g3oou(at)aol.com).

73

G3OOU

Diary of External Events

14 Jul 2019 - McMichael Radio Rally and Boot Sale

Reading Rugby Football Club, Sonning Lane, Sonning on Thames. RG4 6ST. Open 9.30am to 3.30pm, admission £3. Car boot sale pitches £10 (setup from 7:30). Trade stands and exhibition displays. Catering and bar onsite. More from Min, G0JMS on 07917 830 410 or by email to G0JMS@RADARC.ORG. Web: www.mcmichaelrally.org.uk

25 Aug 2019 - Milton Keynes ARS Rally

Irish Centre, Manor Fields, Watling Street, Bletchley MK2 2HX. Entrance £3. Trader options available with extra indoor pitches available for 2019. Free parking and on-site catering. Open to traders 7am, public from 9am. Additional information at www.mkars.org.uk/rally or contact Francis Hennigan, M0UKF rally@mkars.org.uk or 07563 498 156

27-28 Sep 2019 - 11th National Hamfest

Newark & Nottinghamshire Showground, Lincoln Road, Winthorpe, Newark, Nottinghamshire NG24 2NY.

Free parking. Nearest rail station is Newark where taxis are available. For more information including the flea market, bring & buy and trader list see: <http://www.nationalhamfest.org.uk/>

11-13 Oct 2019 - RSGB Convention

Kent's Hill Park Training and Conference Centre, Swallow House, Timbold Drive, Kent's Hill Park, Milton Keynes, Buckinghamshire MK7 6BZ.

19 Oct 2019 CW Convention and CW Boot Camp

3rd Witham Scout & Guide HQ, Rear of Spring Lodge Community Centre, Powers Hall End, Witham, Essex CM8 2HE. Registration at 8.30am, start 9am. Finish at around 4.30pm. Pre-register as places are limited to G0IBN: g0ibn1@yahoo.com or 0745 342 60 87 Previous events have welcomed visitors from all over the UK.

News from other Clubs

Club Secretaries – please ensure that your future meeting details are present in your newsletters, on your websites or sent to our newsletter editor Bob G3OOU. Palace Pulse is published about ten days before our club meeting which is on the first Friday of each month and closes for editorial contributions a few days before publication. Due to differing publication dates and short lead times it is getting increasingly difficult to include other clubs' events although we will endeavor to do so if advised in time. **If we are regularly unable to obtain the information then that club entry will be removed from this newsletter.**

Readers - If you plan to visit one of these club meetings please check with the club concerned in case of any last minute changes.

Bredhurst Receiving and Transmitting Society

Meet on Thursday night from 8:30pm at the Parkwood Community Centre, Long Catlis Road, Rainham, Kent, ME8 9PN. Contact secretary@brats-qth.org or <http://www.brats-qth.org/brats/>

25 Jul Spectrum Matters by Barry Lewis G4SJH
26 Sep The VHF and UHF Story

Bromley & District Amateur Radio Society

Meets at 19:30 on the third Tuesday of each month at the Victory Social Club, Kechill Gardens, Hayes, Bromley, BR2 7NH. Contact Andy G4WGZ on 01689 878089 or enquiries(at)bdars.co.uk. Web: www.bdars.co.uk

16 Jul Mini HF Antennas Construction
20 Aug Operating and Social Evening
17 Sep Millimetric Microwaves by G0FDZ
15 Oct DMR Hotspots - An Introduction by Damien 2E0EUI

Chelmsford Amateur Radio Society (CARS)

19:30 on the first Tuesday of each month at Oaklands Museum, Moulsham Street, Chelmsford, Essex, CM2 9AQ. Contact: secretary(at)g0mw.org.uk Web: www.g0mw.org.uk

02 Jul Three Short Talks including OFDM and All That by Phil Pearson G0UIB and Marine Radio by Tony Gilbey G4YTG
06 Aug Constructors Competition
03 Sep Life as a Radio Officer by Dave Ellis G4AJY

Couldson Amateur Transmitting Society (CATS)

8:15pm on 2nd Monday each month. Contact: Andy Briers G0KZT on 07729 866600 or secretary(at)catsradio.org. Web site: <http://www.catsradio.org/>

08 Jul Operating Evening
12 Aug Club Annual BBQ

Crawley Amateur Radio Club (CARC)

Every Wednesday 20:00 – 22:00, every Sunday 11:00 – 13:00. Formal events are on the fourth Wednesday of the month, 7-30pm for 8pm. Phil M0TZZ on 07557 735265 or secretary(at)carc.org.uk or Web: <http://www.carc.org.uk/>
26 Jun Radio Astronomy on a Budget by Peter East

Cray Valley Radio Society (CVRS)

Meets at 8pm on the 1st and 3rd Thursday of each month at 1st Royal Eltham Scouts HQ, Rear of 61 - 71 Southend Crescent, Eltham, London, SE9 2SD. Contact: Richard on secretary[at]cvrs.org .Web www.cvrs.org

04 Jul Dxpdition to Wallis and Futuna Island
20 Jul Summer Barbeque - Kieran G8CHB
01 Aug CVRS IOTA trip report Giles M0TGV
05 Sep Dayton 2019 Highlights

Dorking & District Radio Society

Meetings at 7.45pm. Contact: David Browning (M6DJB) at djb.abraxas@btinternet.com. Web site: <http://www.ddrs.org.uk>

24 Sep Small loop antennas by Colin Berry
22 Oct Hermes Lite SDR by Alan Hopper
26 Nov AGM & film

Echelford Amateur Radio Society

Meetings on 2nd and 4th Wednesdays of each month at new venue: St. Hilda's Church Hall, Stanwell Road, Ashford, TW15 3QL. Enquiries to Phil at m1gwz(at)icloud(dot)com. Web site: <http://www.qsl.net/g3ues/index.htm>

26 Jun Natter Night, and Social Evening

Hastings Electronics & Radio Club

Meetings held at the Taplin Centre, Upper Maze Hill, St Leonards on sea, TN38 0LQ, 7pm for 7:30 on the fourth Wednesday of each month. Information from Gordon Sweet M3YXH on 01424 431909, email: sionet3344(at)hotmail.co.uk

Web: <http://herc-hastings.org.uk/>

26 Jun Explore Antenna Modelling by Richard G0ILN
28 Aug Construction Contest
25 Sep Photos Presentation by Alan Harding

Horsham Amateur Radio Club

meets on the first Thursday of each month at the Guide Hall, 20 Denne Road, Horsham, West Sussex, RH12 1JF. NRQ TQ172304 at 20.00hrs local time. Contact Alister Watt G3ZBU at [g3zbu\(at\)hotmail.com](mailto:g3zbu(at)hotmail.com) or <http://www.harc.org.uk/>

04 Jul Talk on 6m by the Chairman of the UK 6m Group (UKSMG) Chris Deacon G4IFX
11 Jul Thursday Evening Fox Hunt – Paul G4TMC
04 Aug From the Low to the Northern countries - G4EFO / G4JHI

Mid-Sussex Amateur Radio Society (MSARS)

Meet most Fridays in the Millfield Suite, Cyprus Hall, Burgess Hill, RH15 8DX from 7.30pm till 10.00. Contact Stella on 01273 844511, [M6ZRJ\(at\)msars.org.uk](mailto:M6ZRJ(at)msars.org.uk) or www.msars.org.uk

19 Jul Bar-B-Q
09 Aug Treasure Hunt with a Difference - Stella and Alan
16 Aug How I Started in Amateur Radio by David Parker

North Kent Radio Society

Meets at the Hurst Community Centre, Room 15, Hurst Place, Bexley, Kent, DA5 3LH. Doors open at 8PM. More information from Stephen G8JZT on secretary@nkr.org.uk or 07985 753370 evenings or weekends.

Web: <http://www.nkr.org.uk/>

02 Jul Natter Night
09 Jul NKRD Midsummer DF Hunt
16 Jul Members talk on their favourite software
06 Aug International Lighthouses and Lightships

Event Planning

17/19 Aug International Lighthouses and Lightships Event

South East Essex Amateur Radio Society (SEARS)

Contact Mark Callow 2E0RMT on 07842 336444 or [secretary\(at\)southessex-ars.co.uk](mailto:secretary(at)southessex-ars.co.uk) or

<http://www.southessex-ars.co.uk/>

Meetings: 7pm 2nd Tuesday each month at The White House, Kiln Road, Benfleet, Essex, SS7 1BU.

09 Jul Club Night

13 Aug Club Night

Surrey Radio Contact Club (SRCC)

7.30 for 7.45pm on 1st. and 3rd. Mondays every Month.

Contact John Kennedy G3MCX on 020 8688 3322 or [secretary\(at\)g3src.org.uk](mailto:secretary(at)g3src.org.uk). Web: <http://g3src.org.uk/>

12 Aug SRCC Annual Barbecue - TBC

07 Oct Autumn Surplus Equipment Sale

Sutton & Cheam Radio Society

8pm on 3rd Thursday every month. Contact Chris Howard at [info\(at\)scrs.org.uk](mailto:info(at)scrs.org.uk) Web: <http://scrs.org.uk/>. SCRS run a practical group most Monday evenings at the Bandstead Scout Hut.

15 Aug Heil Sound by Bob Heil, K9EID

19 Sep Introduction to Oscilloscopes, Martin Butler, M1MRB

17 Oct HMS Belfast Radio Volunteers, Jorgen Faxholm, M0AXP

21 Nov Receiving Es'hail2 by Paul Kenny 2E0PCK

12 Dec Christmas social and friendly quiz

Please replace the (at) with @ when using any email addresses shown in this newsletter.

Crystal Palace Radio & Electronics Club is a member of the South East Tutors training group.

Local Training Courses

Licence Level	Dates	Location	Club Provider	Format	Further details
Please note that a new syllabus will apply for all exams from July 2019.					
Foundation	22 Sep - 6 Oct	Bromley BR2 7NH	Bromley & District ARS	2 days (Sun)	www.bdars.org
Full	07 Oct - 30 Nov	Eltham, SE9 2SD	Cray Valley RS	TBA	www.cvr.org
Intermediate	Feb or Mar 2020 - TBC	Bromley BR2 7NH	Bromley & District ARS	Three Sundays	www.bdars.org
	= course commenced				

CPREC Committee Information

Officers:		
Chairman:	Secretary:	Treasurer:
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