



North Bristol Amateur Radio Club

S.H.E.7, Braemar Crescent, Northville, Bristol BS7 0TD
G4GCT, M0NBC, G6PNB

May 2021

Covid-19 Edition

News from She7

She7 has had a complete make over now and is almost ready to receive visitors.

The Kitchen has been renewed, New carpet and the horrible yellow has gone from the walls. There is new lighting and blinds for the windows (although not yet fitted.) The upstairs radio shack is now on the left side of the front door as you enter and ready for us to set up when we return.

She7 hope to be able to start their Lunch Club soon after May 17th as per the government guidelines.



It must be noted however that the total lock down ends June 21st That is of course if all goes well and the numbers are still falling. Remember if you are given a chance of the job please take up the offer.

Keeping the Club Together

Another month, Another Q5 and I am trying my best to keep the club together, however it is very disheartening to get a report that a member has heard nothing from the club since lock down. We can only send out Q5 to members that have registered an email address with us. Q5 is also available on the club's web site so if you hear of a member not hearing from us please point them in the right direction of the web site and tell them to register by clicking the link.

Antenna projects

I start off this month by saying how good it is to get out and play radio. It all started during at the nice weather at the very end of March. The end fed half wave antenna as described in Dec 2020 Q5 with the home made UNUN was set up in my garden using my 10m roach pole that I have had for many years, and is still going strong. The SWR as tested on my MFJ analyser was about 1.7:1, not good so working out that it was resonant on 13 odd MHz the wire had to be shortened. I deliberately cut it long in the first place cutting off about 50cm made things a little better. Then, folding the end of the wire back on itself made the SWR about 1.2:1. I left it there as it was thought that the proximity of a fence and trunk of a tree may be effecting the result and removing too much wire at this stage could prove a disaster. The final tune up will be on my chosen hill top site.



QRP is Safer

I used my ft991 set on low, well 20w to test. The SWR was as previously tested so I answered a call. This was EW2W, Sergey in Belarus. He gave me a 5/7-8. then testing came to a halt. I was just going to have a check on the roach pole when a head popped over my wall. "Excuse me" said the man. "What do you receive on that" "Nothing", I said "It is a fishing pole". Well a conversation was struck.

This man Mike, was entering my road when he saw the pole, well it is 10m (30ft) high. He said he is a SWL using an SDR Play device. He was going to take his licence 40years ago, for some reason he gave up. I told him after lock down we can help him. Let us hope he takes up my offer.

That is one of my projects finished, now on to the 40m EFH antenna with a link feed to to turn it into a dipole when required.

As this column reaches it's conclusion, the rain has started again (28th April) Is it because only yesterday on the TV news, farmers were complaining about the dry April and that their plants were dyeing off. Never mind, it is bound to brighten up again soon. When it does we will be out playing radio for sure.

Dave G7BYN

Strange Display on Waterfall displays

I was asked by one of our members what the angular lines were going from low to hi frequency as seen on his waterfall display on the HF bands. See Photo.

Although I had it correct when I said that it was a spread spectrum transmission, I still didn't know what, or who it was. A general consensus of opinion was that it was over the horizon radar from a country trespassing in the ham bands. Anyhow, remember from my talk way back in 2018 spread spectrum was patented back in 1941 by film star Hedy Lamarr.



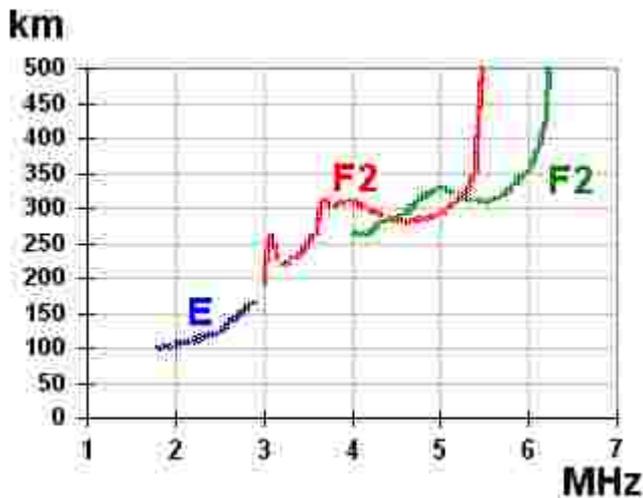
In 1942, during the heyday of her career, Lamarr earned recognition in a field quite different from entertainment. She and her friend, the composer George Antheil, received a patent for an idea of a radio signalling device, or "Secret Communications System," which was a means of changing radio frequencies to keep enemies from decoding messages. Originally designed to defeat the German Nazis, the system became an important step in the development of technology to maintain the security of both military communications and cellular phones.

That gave us the answer to what we were seeing was spread spectrum but not who was doing it. To decode the spread spectrum signal we need to follow the transmitted signal. A sync pulse would keep the TX and RX following together. Not impossible to make but where was this going? A lot of work for just a short answer so I resulted in checking the internet to find the answers.

I very quickly found the answer. It was research radar devices to detect the ionosphere. They are called Ionosonde or Chirp sounder. (Where have we heard of Chirp before) An ionosonde consists of high frequency (HF) radio transmitter, automatically scanning over a wide range. Typically the frequency coverage is 0.5–23 MHz or 1–40 MHz, though normally sweeps are confined to approximately 1.6–12 MHz. A tracking HF receiver which can automatically track the frequency of the transmitter. An antenna with a suitable radiation pattern, which transmits vertically upwards and is efficient over the whole frequency range used.

The transmitter sweeps all or part of the HF frequency range, transmitting short pulses.

These pulses are reflected at various layers of the ionosphere, at heights of 100–400 km, and their echoes are received by the receiver and analysed by the control system. The result is displayed in the form of an ionogram, a graph of reflection height (actually time between transmission and reception of pulse) versus carrier frequency. An ionosonde is used for finding the optimum operation frequencies for broadcasts or two-way communications in the high frequency range.



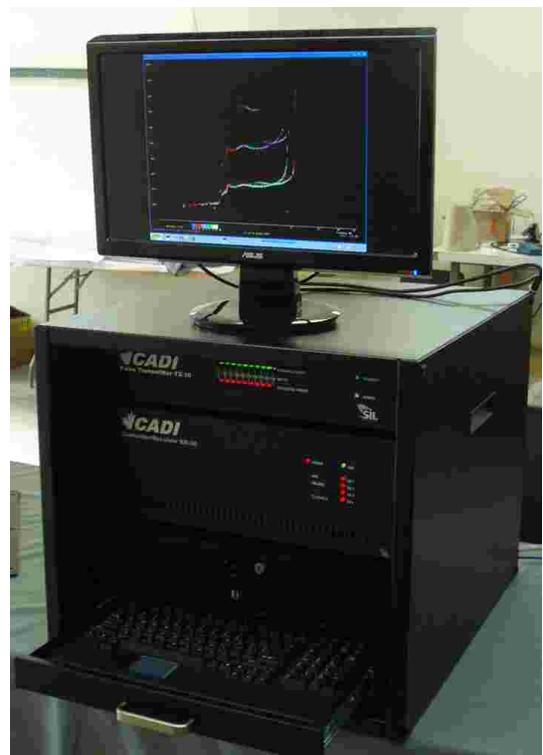
The chart on the left shows clearly the E and F2 Layers. The height of reflection will give you the angle of refraction obtained with your type of antenna. Think it as a tennis ball bouncing. The angle the ball bounces on the ground will result in how far the ball goes before it's second bounce.

Of course this is a simplistic way of describing what happens way up in the atmosphere.

On the right is the computerised equipment that calculates it all. The printout from the screen is read for the forecast that you may hear on the RSGB propagation news.

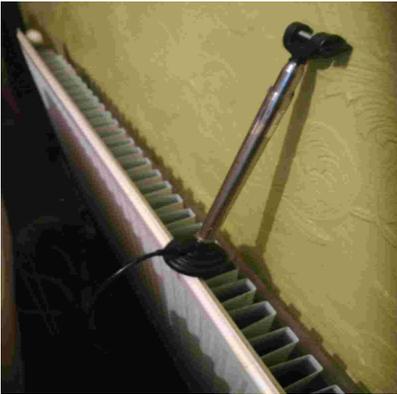
I have summarised this from the Wikipedia website and if you want to find out more please look up the details on the ionosphere.

Dave G7BYN



Projects for those new to the hobby

Another antenna experimenter is Dave, M0HDJ. As you may know Dave has always tried the rather odd approach to his construction techniques. This particular antenna is made on an old mag-mount and uses a selfie stick for not only 2m but for 70cm. They have been sold in the pound shops for, well, £1 and have and have been used before but a couple of them used in a dipole form. Dave informs me that the thread was a match to the mag mount so helped the construction.



Dave used it almost retracted for 70cm and extended for 2m. Just shows that you can do a lot for little or no money. Dave would have used an SWR meter to finely tune so this brings me to the next subject of basic test gear. Test gear is a must, even if the radio is used for just the odd chit chat. The questions often asked is my radio transmitting? Am I getting out? With a simple bit of test equipment you can test it yourself.

Newbies:-The Basic Gear & Accessories Required

It was noticed by Dick (G0XAY) on one of our nets that an un-named ham couldn't test out his coax because he didn't own any basic test gear. Not even a 50Ω dummy load. Here is a short column of things a newbie should do after buying the first rig.

Most of you start off with a Baofeng handie. This is a very cheap rig but very restrictive. I have seen large, in fact giant antennas stuck on top of them because the whips on any hand held is inefficient. My opinion is a handie is just that. Years ago the walkie talkie had a huge telescopic antenna that would snag and get bent in use. This is where the helical whip came in. it is to make the handie just that. It makes it handie to use.

The way to increase your range is to install an outside antenna, or if you can't instal outside make an internal antenna yourself. There are lots of projects on line so I will not go into the construction here. (If you want me to drop me a email). So you have made your antenna that you saw on line, how do you test it? I would advise that you don't just use it without testing SWR (Return Losses.)

To test that your new antenna is resonant and no signal is returning down your coax the basic test is using an SWR meter.

The bit of coax that you had been given by a friend with connectors, is it OK? A 50Ω dummy load would do the trick to see if the connections are made off correctly, shorted or open circuit. Just transmit with the antenna replaced with your dummy load, check the SWR, easy.

So you bought your Baofeng, what other things do you need for your kit? Start making a collection now. This need not be expensive and some can be made at home quite simply. It is a shame that there are no rallies at the moment as this is always a good source of cheap test gear.

1. First and foremost an SWR meter to cover the bands you use.
2. Dummy load either buy or make one (see Dennis's article Q5 April 2021.)
3. Digital or Analogue multimeter.
4. Passive field strength meter (Home made).

All of the above can be purchased quite reasonably and may be considered the basic test equipment to own whilst the following list will certainly be an advantage to own but not essential.

5. Dip Oscillator. The older valve ones were called Grid Dip Oscillators so us oldies often call them GDOs
6. Antenna analyser these can be quite expensive but experimenters find them invaluable. The classic MFJ ones are getting cheaper second hand.
7. Oscilloscope if bought new can be very expensive.

Start collecting your kit now and when we get back at the club we will show you how to get the best out of the. Various bits and pieces.

Don't forget, if you take a trip up a hill to work portable, take some photographs and send them in to me at the Q5 editorial desk.

NBARC Nets

To spice up our nets, the Wed net will be a Technical net. If members have a problem, or just want to know how something works, ask your question here. This came about because some participants of our nets didn't want to spend the night talking about the weather and general chit chat. They said it was boring, so wouldn't come on any net. The Chit Chat evenings will be the club night being Friday and the Sunday net. We hope this will cater for all.

Wednesday net GB3BS 20:00 to 21:00 Local

Friday net GB3AC 19:00 to 19:30 Then QSY to GB3BS 19:30 to 20:00

Saturday DMR Net GB7BS 19:00 to 20:00 South west cluster TS2 (950)

Sunday morning 80m Net 3.65MHz 08:00 has now been suspended.

Sunday Evening Net Dave, M0RKE ran this net on GB3AA for a while but, the Sunday Net now reverts to GB3AC 20:00 to 21:00 clock time.

Club Contacts

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Next Q5

Beginning of June
Dave G7BYN

Please email me with any articles, Items for sale or Wanted. Any other subjects you would like covered, drop me an email and I will see what I can do.

80m Net

You may have noticed that the 80m Net as ran by Dave M0HDJ is temporarily being suspended. The reason? the difficulty operating during all the contesting that is going on by our fellow hams in Europe who refuse to follow any published band plan.