



North Bristol Amateur Radio Club

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

February 2021

Covid-19 Edition

It has taken a lot of time to put this edition together. I am grateful to all those who have contributed in the past and Dennis Buchan for another construction article for this Q5. A cry goes out to other members to send in details of what they have been getting up to during these lock down wet evenings. If I don't get any, I will have to send out for some Magic Ink.

With that said, welcome to the club nets Rick, M7RMT. He is very knowledgeable and when the club opens said he will give us a talk on various subjects. We will hold you to that Rick. (Hi Hi)



Has the Magic Ink arrived, Mat

News from Martin, G7NSU

The SDR receiver as donated by SDR Play is almost ready to hang on the end of a HF antenna. The thought is to connect it at the club but, being careful not to transmit at our shack without disconnecting it first to prevent the risk of blowing the receiver. Or connect it at Martin's QTH. Obviously, it requires a good internet connection to operate.

Martin's Fusion repeater, GB3AD is ready to go and planning has been approved. The problem as usual is Covid. The antenna needs to be installed by volunteers unless a fee of about a quoted £600 is found.

News in Brief

Rocky's News

Rocky and Louise has a new arrival. On the 8th December Holly tipped the scales at 3.5kg Congratulations from all of us at the club and we wish them well.

The Club House at She7

The Kitchen having been finished as reported by Paul, G8YMM a few months ago. The main hall and upstairs shack is almost finished. This has been done by She7 not ourselves.

As some of you may know, GB3AC has been off the air for a few months. This is due to the electrics at She7 being overhauled. The old wire fuse box replaced with RCDs. Luke, one of our members has been overseeing this (as part of his job). AC should be back on air before the next Q5.

Mills On The Air

MOTA has been cancelled, Because this event takes place in May, we felt that it is too near to the current lock down and it is uncertain as to what regulations may or may not be in force. Bear in mind it is not just the organising on the club's side but also the mill owners to consider.

Lighthouses On The Air

Normally the 3rd week in August but, understandably the organisers are a little reserved as to if it is going ahead.

Churches and Chapels On The Air

The date for this event is 11th September and looks very much like it will go ahead. (It is the main man's event after all). We will check out venues nearer the time with Tony, G8CKK and Steve G8JUT

Railways On The Air

This looks like this is also going to take place over the 40s event as it did a couple of years ago. September 26th & 27th.

Getting into Amateur Radio

Getting into the hobby has so many ways. When sorting the loft I came across a passage in an old copy of Tadpole. (Tadpole was a Club Newsletter of the defunct Bristol Amateur Radio Club). It was by Les Avory, G2FQP (SK). Although the article is incomplete I thought it may be of interest to some of you, notably the fact that he didn't take any test or exam at all. The controlling Government office at the time was the GPO (General Post Office). Here goes with Les's bit of history in his own words.

Amateur Profile “In The Beginning” by Les, G2FQP (SK)

I first became interested in radio way back in 1936 when my father built his first valve radio (after the crystal set) on the kitchen table, a Cossor Melody Maker, a straight set, no superhets then. With about 4 valves mounted on a breadboard some 18 by 12 inches with a Bakelite panel.

My father came home one night from the local radio and cycle shop with the news that he had been listening to American Broadcast Stations DIRECT. I didn't believe it was possible, so I paid a visit to find out the truth. There it was, a one valve short wave radio on about 19 metres.

You had to increase the reaction the reaction control below the point of oscillation for best results, you soon lost stations if you took your hands away from the controls due to hand capacitance effect. This was overcome by extension rods on the tuning condensers. Many a happy hour was spent looking for different stations.

Yes, I had to build a receiver, the coil was difficult, a toilet roll former did the trick, 1 ½ inches by 6 inches. The rest of the components came from RAYMARTS of London.

My interest in radio developed into building a converter to listen to amateurs that I had heard about. You couldn't buy a receiver for the Amateur bands on Standard Long wave / Medium Wave. With short wave Superhets coming in, my converter fed into a socket and tuned to a quiet spot, I was in touch with a ham. G2UQ I used to listen to on 40m. He gave me all the details for obtaining a license, so I sent off to the GPO a letter with the following details.

In The Beginning (Continued)

Forms of excitation, crystal control of transmitters, also advanced forms of electron coupled oscillators, methods of coupling driver stages to radio frequency amplifiers, ie capacity and link coupling, Also design of power amplifiers together with various forms of keying for CW purposes. All of the above to be checked against calibrated frequency meters and monitors. This seemed to satisfy the GPO, and was granted my call sign In 1938 of 2FQP. No "G" and no fee as yet.

This allowed me to transmit into a dummy load to a maximum of 10 watts. Of course with this I could be heard across town. Unfortunately, the story ended here and no other manuscripts could be found.



When Les lived in W-S-M, he built this tower. You may be thinking, "That's good, but what's New." I don't know all the details except it is made of timber including the antenna boom. The rotator was home made from aircraft parts

Editors Notes. I noted a few things from his experience from 1938. Les had to learn a lot of technical things, more than today but no exam, just a letter to say I know about this and that.

10W was the limit, just like the foundation license of today. His license was called an "Artificial Aerial License" and was issued up till 1939 (outbreak of WW2). After the war the license was an "A" and allowed all ham bands and transmit via an antenna not just a dummy load.

Toilet rolls are now 2 inches in diameter by 4 1/2 inches wide so less paper now than in 1936 when Les built his receiver.

Les also said no fee as yet. I know there is no fee now but for years there was a fee of £12 for renewal every year. It was only in recent times (2003 I believe) the fee was abolished.

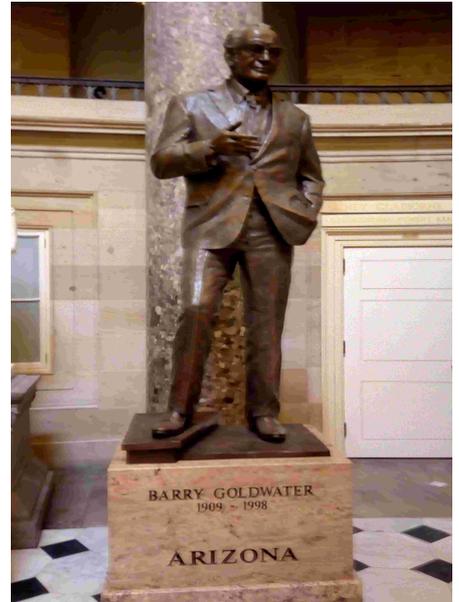
Editors Notes continued

Les was an avid Morse fan, and he once told me a story of working a guy in the states called Barry, K7UGA. He thought nothing of it until, some months latter, received a QSL card. Yes, you guessed it, it was from Senator Barry Goldwater. Barry Goldwater famously stood for Presidency of the USA against Lyndon B Johnson, Johnson won, but that is another story.

Senator Barry Goldwater, K7UGA

His statue is in the National Statuary Hall, The Capital Building on Capital Hill Washington DC (The nearest I came to a radio amateur on my trip to Washington).

A further point of interest, my wives uncle John G0GJB (SK) a member of our club, also worked Senator Barry Goldwater. Small world isn't it.



Many of you in the club may remember old Les, he was always there at events. He could be found at various events talking the talk a great Amateur from years gone by. I hope you enjoyed the short incite to the radio career of G2FQP.

If anyone has memories of old members feel free to email the story to me. My email address is on the end sheet to Q5.

The original article was in Les's own words, the additional photograph of his Tower was given to me by him about 20 years ago, and the other parts of the story were added by me Dave G7BYN.

Power Meter By Dennis Buchan

This project was started during the “Chinese Virus” in the 2020 lock down which had been a project on the back burner for some time. The project revolves around the analogue device AD8317 and the PIC 18F45K22 processor. The RF power meter can be used as a stand alone or can be remotely connected to a PC using GUI developed for using lab view.

To make construction easier the use of modules was used rather than individual integrated circuits. The prototype was built using “Vero Board” and wire ended components. The RF path used semi-rigid cable. A 10MHz amplitude calibrator is included as part of the design.

Design Specifics The AD317 chip has a frequency range of 1MHz to 10 GHz. With a dynamic range of 55db which extends from 0dbM to -55dbM. The AD converter on the PIC was not good enough for two reasons.

1. The number of bits was not enough to give the required resolution and the Ref on board was not stable enough over time due to compiler library limitations. The AD converter was ADS 1015.

Software Compiler



The compiler was based on MIKRO C compiler and the EASYPIC Version 7 development board. This enabled the code to be written and debugged using the minimum of hardware. When the meter was built an off board debugging used to refine the code in conjunction with the real hardware in real time.

Lab view

A GUI was developed in Lab View to read the power meter remotely and to give it some extra remote functions such as controlling the DAC on the PIC and an eight bit port. The GUI is a stand alone executable program.

Calibration

The original design specification was for it to be useful over a range 1Mhz to 2Ghz without an external calibration. The normal range is 500Mhz max but with the the GUI software an external calibration factor can be added so the range can be extended well beyond the 2GHz requirement and the reason for the semi-rigid to take up the 10GHz.

Power

The unit will run off a standard car battery, 10volts to 16volts at 100mA.

Application Link Notes

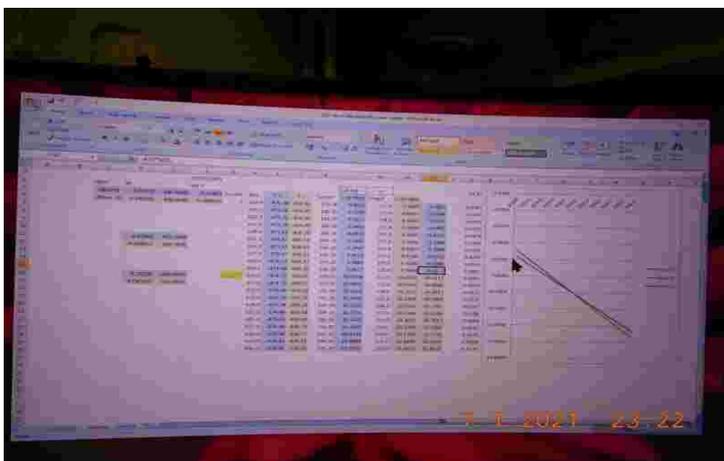
https://www.microchip.com/stellent/groups/picmicro_sg/documents/devicedoc/cn5470043.pdf

<https://www.analog.com/media/en/technical-documentation/data-sheets/ad8317.pdf>

https://www.ti.com/lit/ds/symlink/ads1015.pdf?ts=1610696172606&ref_url=https%253A%252F%252Fwww.ti.com%252Fproduct%252FADS1015

Test Setup

The test setup used signal generator, spectrum analyser and precision attenuators as seen in the picture on the right. The initial calibration used information generated using an excel file. The unit has been calibrated for a range of -50dbm to +50dbm using external couplers for the ranges of +10dbm to 50dbm max.



The software command lines have been supplied by Dennis and are available from him or the editor's email address. It was felt that 17 pages of code a bit too much for this little Q5 but, as I say they are available. Thank you Dennis.



Various views of the finished meter
And the parts that go into making the very professional meter.



Dennis loves building projects like this not forgetting his antenna rotator project as published in November edition. For you new hams or indeed old hams who have not built anything yet, take a look at some kits. There are some really nice kits out there. A small project to build could be as simple as a meter and a few components soldered to the back of it as an RF detector you don't even need to put it in a box.

Kits are available from many adverts in Practical Wireless, take a look. Projects there are not just for the experienced but “People what fiddle”. The projects in PW are very repeatable and the editor will make sure parts are available before any project is published.

Take a leaf out of Dennis's book and start constructing.

Greetings from the Chair G8YMM

Regarding Dave, G7BYN's recent car battery article in Q5 I had a similar experience returning a faulty battery. However, mine was a bit easier returning it hence I will explain and give you some reasoning why.

My Start/Stop car battery was deteriorating as it would not hold its charge if the car was stood still for a few weeks and the Start Stop function was being inhibited by the car computer. Given the age of the battery I decided now was a good time to replace it. So, I embarked on procuring a battery on line from a reputable battery supplier saving me about £80. The battery was ordered late one evening and arrived the next morning at 8am to my pleasant surprise in a box with special packaging to prevent any acid spills. See below.



I installed it later that day and retained the old battery for radio use as it still had a bit off life left in it for general things plus, I can trickle charge it in the garage.

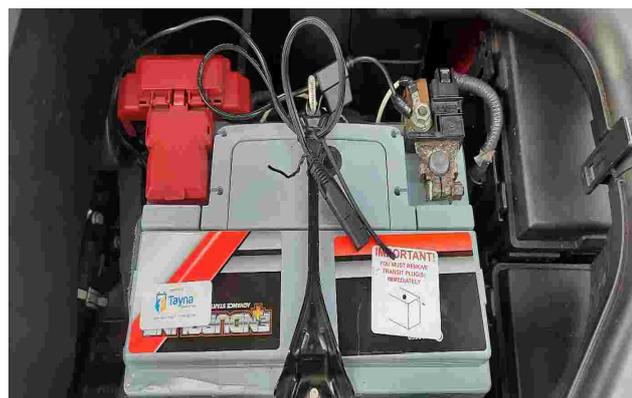
After 8 months I noticed the new car battery was getting sluggish after the car had been standing unused for only a week plus the Start/Stop function of the car had ceased. Note, the Start/Stop function only works if certain criteria / conditions are met such as temperature of engine, battery voltage, charge and sensing to mention a few.

After checking the battery, I noticed the voltage was down to 11.9v so I proceeded to charge it up overnight. The next day the reading was showing fully charged so all was fine. However, it was noticed that after several journeys and a few days standing the battery was just managing to start the engine.

So, I measured the battery again and it had dropped to about 11.9v so I decided to check what the car Alternator voltage was providing when running and the quiescent current drain with the car stopped and locked. The alternator was correct 14.8v and the quiescent current drain was 180mA in line with Nissan specifications found on the internet proving it was not a faulty Alternator or other issues in the electrical wiring / associated circuits. (Note modern cars have a lot of electronics on board so one should expect to see significant current drains when not in use depending on the make and model).

Doing some quick calculations, I should expect to see the battery sufficiently keeping the car in a serviceable condition for at least 4 weeks even if standing idle. However, this was not proving to be the case and later the battery just went flat after 2 days so I knew the battery had developed a fault. Therefore, I contacted the battery company and explained the battery was rapidly failing. They stated they would collect the battery free of charge and if proved faulty would replace under warranty. Three days later after they collected it, I received a new battery and have had no further issues.

So, there are pros and cons dealing with mail order batteries but mine was a reasonably easy with quick turnaround time. Note I could have used my old original battery for a few days if I was desperate. All testing was done using a standard Multimeter and some basic principles which we should all be familiar with being radio amateurs. To make life easy, all my cars have a special connector so I can plug my intelligent smart charger onto without the use of Crock Clips. This means I can simply leave the charger connected to the cars I am not driving without worry. See below.



Well it just goes to show there are some good companies out there, you just got to find them. Ed

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 to the start of the News. This net is run by Dave (M0HDJ)

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 March

Dave G7BYN

The next Q5 will be about the First week in March with an article on APRS on the cheap. If you want to know what APRS is, look it up.

Please email me with any articles. If you are not sure how to write it just ask me if I could write on a specific subject and I will see what I can do.