



RAG CHEW

GLOUCESTER AMATEUR RADIO
AND ELECTRONICS SOCIETY
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2 Metres – Then and Now by Brian G4CIB

My recent “Ragchew” article about holiday operating Ireland brought home to me how much 2 metre band operating has changed over the years. Readers may recall that in 1982, my visitor licence EI2VJW (the “V” denoting a visitor) granted me permission to operate on the 2m band with a maximum power of 25 watts. The FM rig I took was a Trio TR2300 – a synthesised hand held transceiver with a power output of 1 watt, and for SSB I used an Icom IC202S transceiver with a power output of 3 watts. I still have the IC202S – “battle-scarred” but still very much in use. My original TR2300 was stolen many years ago and I have over the years acquired several examples of varying quality, but I struck lucky about a year ago when a mint example turned up on ebay and as nobody else was interested in bidding, I acquired it for a song. Both these rigs sold in large numbers during the early 1980s. But I'm jumping the gun.

My 2 metre experience dates from 1969 when I joined what was then the Gloucester Amateur Radio Society. Pat, G3MA took me under his wing and when I acquired my call sign G8CIB, he lent me a home-brew 2 metre amplitude modulated transceiver which was a hybrid design – valve transmitter and solid state tunable receiver with a built-in inverter for the transmitter HT supply. Building stable variable frequency oscillators (VFOs) for VHF was quite a challenge beyond the capabilities of most amateurs so most transmitter designs were crystal controlled. Pat's rig was equipped with a crystal for what was then the mobile calling and working frequency of 145.000 MHz – no qsy'ing in those days! In fact the operating procedure was very different then as the transmitters were fixed frequency and the chance of anyone having exactly the same frequency crystal was pretty slim. So the drill was to call CQ on a frequency within your geographical zone (see below) and then tune the band looking for calls. A typical call would be:- “CQ CQ CQ from G8CIB, Golf Eight Charlie India Bravo (*repeated two or three times*) – G8CIB tuning low to high for any calls” signifying you would be tuning 144.000 upwards looking for calls. This could be quite amusing when contests were on because some of the more technically astute teams had more than one receiver and would announce “tuning low to high, high to low and middle out”. It was handy to have a box of crystals that could be plugged into a socket on the front of the transmitter which meant that you could position your signal nearest to where the person was tuning from. As an example, the contest station might be working someone on 144.230MHz and would announce at the end of the exchange “continuing to tune up the band” It was handy if you had a crystal that would come out on say 144.250MHz to nab him!

As I mentioned earlier, there was a band plan based on geographical zones. This is the 2 metre UK Band Plan which was operative from 1st January 1970 when Amplitude Modulation (AM) was still the predominant mode in use:-

144.000 -144.150	CW only (any location)
144.150 -144.500	Zone A - the South West
144.500 -145.100	Zone B - the South East
145.100 -145.500	Zone C - the Midlands
145.500 -145.950	Zone D - the North, Scotland and Northern Ireland
145.950 -146.000	Beacons

Added to this were a few what were called “Special Service” frequencies:-

- 144.090 – 144.100 CW for random meteor scatter
- 144.100 – 144.150 SSB only when artificial satellites or translators are operational
- 144.600 RTTY UK South
- 145.000 International Mobile Calling Frequency

145.300 RTTY International and UK Northern
145.410 International SSB calling channel

This worked very well when the band opened – if you heard a station between 145.500 and 145.950 you knew it was “up North” and you could point your antenna roughly in the direction required.

Many stations consisted of a home brew transmitter combined with a crystal controlled VHF receive converter, the oscillator of which mixed with the 2 metre signal to provide a suitable intermediate frequency (IF) to be fed into a communications receiver. Typical IF frequencies were 28 – 30 MHz and 4 – 6 MHz. If you used the latter, however, good screening was required to avoid broadcast band breakthrough. Another option was to convert one of the many commercial two-way radio sets as used by the utility companies in their vehicles (known as PMR sets – Public Mobile Radio) which were available on the surplus market. Typical examples were the Pye Cambridge, Pye Ranger and Pye Westminster. These sets were all valve, and gobbled battery power!! The Pye Ranger was latterly marketed as a transistor Ranger – the transistors being in the inverter power supply which replaced inefficient vibrators (see me at club for a demonstration of a vibrator power supply – and no – it's not what you might be thinking!). My own set up was a modified Pye Ranger transmitter chassis with a QQV03-10 valve in the final (5 watts of RF out if you were lucky), and for receive a home brew converter (based on a design by G3HBW in the RSGB Radio Communication Handbook) fed into an HRO receiver tuning 4 – 6 MHz. I then built a higher power transmitter with a QQV03-20 valve in the output stage giving about 15 watts of RF. This featured a VXO (to a design in the 1972 ARRL VHF Manual) and initially an AM series gate modulator then later a reactance valve modulator to produce frequency modulation (FM) on the VXO when this mode became predominant on 2 metres.

It's funny how a certain “fad” takes off, and 2 metres was no exception. It became fashionable in the early 1970s to modify the transmitter crystal oscillator (usually an 8MHz or 12MHz crystal) into a VXO (variable crystal oscillator) with the addition of a variable capacitor in series with the crystal in the oscillator. This enabled the crystal frequency to be “pulled” and when multiplied up to 2 metres meant that very often 100KHz of shift could be achieved. This meant that if you heard someone calling CQ on say 144.300 and announce that they were listening their own frequency first before tuning, you could plug in a crystal that was within say a 100KHz and VXO on to his signal. The miniature HC25-U crystals as well as the larger HC8-U could be “pulled” quite easily in this fashion. As an aside you could always tell who the VHF enthusiasts were at Rallies – they were the ones looking through the boxes of crystals looking for the elusive 8 and 12MHz crystals which when multiplied up would come out in the 2 metre band – in the right geographic zone of course!!

But technology moved rapidly in the mid 1970s with the advent of FM and SSB commercial rigs and suddenly the concept of geographic zones and tuning the band for calls seemed archaic. The Liner 2, an early example of a 2 metre SSB rig burst on to the scene and amplitude modulation, with its associated problems of television breakthrough which this mode was notorious for when in close proximity to television sets with primitive solid state front ends, fell by the wayside. Trio, Yaesu, Icom and even Heathkit were soon turning out affordable 2 metre FM rigs in either hand portable or mobile form. Repeaters were another development with a group of amateurs associated with Pye leading the way with the first amateur repeater in the UK being located at Cambridge.

So the VHF band plans changed to reflect the new modes and repeaters along the lines we have today.

So what of operating on 2 metres now? We have rigs available that are orders of magnitude better in performance than when I started out all those years ago. Various activities have brought new life to the band – Summits on the Air and the Tuesday evening activity contests come to mind.

I pose the question – is there as much activity now on 2 metres as there was years ago?

It doesn't seem like it but my memory might be playing tricks on me. Perhaps we should have some sort of 2 metre challenge in the club to promote more activity on the band. Any thoughts anyone?

A New Year Resolution

by Brian G4CIB

It is that time of the year when we make our New Year resolutions and I have one which I make every year – and usually manage to keep it. I hope that you can keep it too! In essence – it's very simple – and when you start it makes you realise how many you have in use in all sorts of equipment and appliances. I'm talking about batteries.

Batteries come in all shapes, sizes and types but they can easily be forgotten about, particularly if they are in a piece of equipment or an appliance which is not used very often. Then the problems can start by way of leakage and contact corrosion.

So I want you to make the same resolution to examine and check all your batteries – just the job to do between Christmas and the New Year. In my shack a variety of handhelds, an electronic keyer, and analogue multimeters even a valve voltmeter they all contain batteries and all of these will come under close scrutiny as the year draws to a close.

So on that note – wishing everyone in GARES a very Happy Christmas and a Peaceful, Prosperous New Year – and may all your batteries be fully charged and leak-free in 2016.

Some jokes from the crackers

What did Adam say on the day before Christmas?
It's Christmas, Eve!

How do you make an idiot laugh on boxing day?
Tell him a joke on Christmas Eve!

What do you have in December that you don't have in any other month ?
The letter "D"!

What does Father Christmas suffer from if he gets stuck in a chimney?
Santa Claustrophobia!

Who delivers cat's Christmas presents?
Santa Paws!

Why does Father Christmas go down the chimney?
Because it soots him!

Who delivers elephants's Christmas presents?
Elephanta Claus!

How many chimney does Father Christmas go down?
Stacks!

Why is Santa like a bear on Christmas Eve?
Because he's Sooty.

A very Merry Christmas and Happy New Year to all

Thank you to those who have contributed to your issue of Ragchew
If you have an article to share; projects, old stories, jokes or cartoons, trips, interesting non radio interests -
email it to me or give it to me on paper at the club
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