RAGCHEW

AUTUMN 2017

FROM THE EDITOR

The club has had a cracking start to the new season with the Practical Workshops under the leadership of Andy M0RON. At the first one, a small group of mainly newly licensed members were given tuition in setting up a VHF transceiver and conducting a 2 metre QSO from the initial CQ through to the signing off, or "73" at the end. The first attempt was with the rig output fed into a dummy load and then having got the hang of the procedure the individual members were able to conduct a pre-arranged live 2 metre QSO from the club shack on air with Anne 2E1GKY. All the participants enjoyed the experience and gained confidence in operating.

Vernon G0HTO gave an interesting talk recently on batteries, and coincidentally the same week on Radio 4 in the "Bottom Line" series by Evan Davies there was a programme entitled "Batteries" - broadcast on Thursday 5th October at 8.00pm and repeated on Saturday 7th October at 5.30pm and is available on the BBC iPlayer.

In this issue, Tony G4HBV has returned to the theme of interference for his "R.F. Notes" column. Martin 2E0KZU has recently purchased a **Metrovna VNA PRO TOUCH Antenna Analyser** and has put it through its paces and presents his findings in a debut article.

Gary and his Contest Gang entered the **Practical Wireless 4 Metre Contest** - read his account in this issue.

Graeme G0EEA has submitted an idea which I have noted under **"Hints for Hams".** Please submit your ideas so that we can continue this feature.

Our trip to Lundy this year was notable for the very unsettled weather - see my report in this issue.

Our club nets go from strength to strength and I would encourage particularly our newly licensed members to join in - details on the club web site also see the monthly Bulletin prepared by Ron G3SZS.

And finally can I put in a reminder that I am more than happy to receive articles for publication in "Ragchew" - what have you been working? What have you built recently? What have you purchased recently?

Brian G4CIB

Contest Roundup

A small group of members are regularly taking part in the RSGB VHF and HF contests and contributing to the overall club scores. As of the early October we are lying 24th in the VHF UKAC Local Club table. It's interesting to note that all the clubs above us except two are entering the 1296MHz UKAC so to improve our position we will need to give some thought to being active on 23cm. Do any members have that capability?

In the VHF Championship we are in 49th position just below half way in the overall results table.

In the HF AFS Super League 2016/17 we finished in 55th place, also just below half way in the overall results table.

For a summary of forthcoming contests see Contest Calendar in the club's monthly Bulletin which is produced by Ron G3SZS

Contests of course do not appeal to everyone but if any newer members would like to get involved then any of the club members who regularly participate will be more than happy to explain the do's and don'ts of contesting and where to make a start. Make yourself known to the Chairman, Dave G4BCA who will be more than happy to point you in the right direction.

But beware - it can become addictive!

RF NOTES BY TONY, G4HBV

The last couple of “Notes” dealt with some antenna basics. Now I am returning to the topic of interference that I had started to discuss. In a previous “Notes” I showed that a 20 watt two-metre transmitter, having a typical specification of minus 60dB spurious output level could still put a harmonic signal of 500 microvolts into a TV antenna if it lay in the transmit antenna's near field. Some years ago I had to solve a similar problem, using the club's two-metre transceiver on the club net. My neighbour told me she could hear me on her FM broadcast set - “but it was alright”. Well, of course it wasn't! First I started using my own transceiver, meaning that I dropped power from 25 watts to 10 watts. Then I did some number crunching to see how this was happening. The IF on an FM broadcast receiver is about 10.7MHz, so this is where I started.

It was pretty obvious once I started considering harmonics, both in the TX and the FM broadcast RX local oscillator. To clarify, when I talk about first harmonic – I mean double the frequency of the fundamental. Just to confuse things mathematicians and some engineers refer to this as the second harmonic - but I'll stick to what I've always used.

What was happening was the first harmonic from the TX at 290.9MHz was mixing with the FM RX local oscillator's second harmonic at say 301.6MHz (assuming the RX was set to 89.8MHz) – the difference being 10.7MHz.

My solution was to put a coaxial stub filter, tuned to approx. 290MHz, in the feedline to the antenna. These stub filters are easily made and can put an attenuation of 70 to 80dB at the harmonic frequency. The stub filter in this case was (at the harmonic frequency of 290MHz) a quarter wave of coax, with an open-circuited quarter wave stub of coax at each end. Fit appropriate RF connectors and you have an excellent narrow band filter with deep attenuation at the harmonic frequency. The quarter wavelengths are calculated by reducing the free-space wavelengths by the velocity factor of the coax – typically about 0.66. You can actually trim the stubs at either end using your two-metre receiver.

Using my filter as an example, first build the filter with 6.56 inches of coax terminated at each end by about 15 inch stubs. The stubs can then be trimmed to offer maximum attenuation of a signal on your operating frequency (say 145.475MHz) using your two-metre transceiver in RECEIVE mode and listening to a signal (on air or off air). You simply clip bits off the stubs, measuring them each time, until you pass the point of maximum attenuation. Having noted what this stub length was, simply divide it by two and clip the stubs to this length. You now have a filter accurately tuned to suppress the first harmonic at your usual operating frequency. The method can be used for any band and any harmonic.

On test with a dummy load, my stub filter showed no effect on SWR. If you want more information on stub filters, an excellent article appeared in November 1994 RadCom,

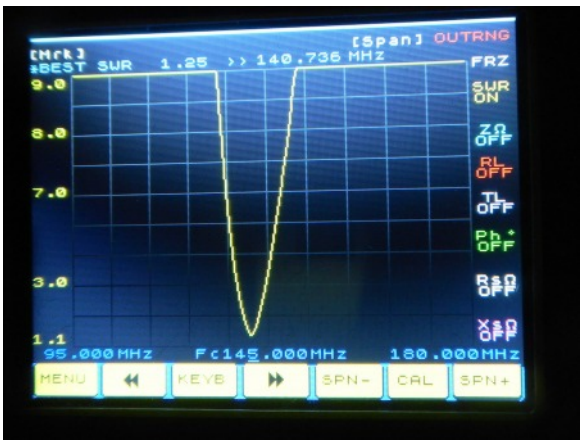
Metrovna VNA PRO TOUCH Antenna Analyser review
by
Martin Macrae 2E0KZU

After taking the Foundation and Intermediate courses and test, I set up my Yaesu FT991 as best I could with a 20M long dipole. The FT991 internal antenna matcher rattled and clanked, but only got a good SWR around 7MHz on that setup. I then used an MFJ antenna matching unit to get the best SWR. But again only lower than 2:1 around 7MHz. I was interested in finding out about other antenna characteristics and what they mean, so I bought the Metrovna analyser as it was one of the cheaper units available that give a real-time graphic display.
This is USB charged (not supplied) and has a small 3 inch by 2 inch colour display. There are two versions, and the one I have covers 1MHz to 180MHz. The De Luxe version scans from from 1MHz to 250MHz and has more features.

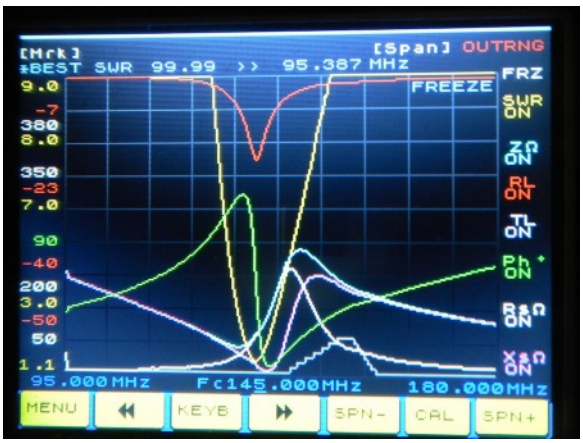
Download the manual with this link:-
https://www.metropwr.com/Download/MANUAL/ENGLISH/MANUALE_METROVNA_PRO%20English.pdf

The connectors are BNC, but you can get various adapters to fit just about anything. The device gives an indication of the frequency for the lowest SWR of the connected antenna as soon as an approximate centre frequency is entered. On start up, this may be further up or down the frequency range, so the display range is adjusted to find it. As no power being used, the antenna can be adjusted as one reads the display. Just moving location, fiddling with the leads or just touching the antenna is indicated by the graphs changing. After connecting to an antenna, it is best to input the approximate. frequency estimated to give a low SWR, then adjusting the span or range of the display to centre the graph. or increase the span until you can see where the SWR dips low, then narrow in on that with the frequency and span buttons.

For a radio novice like me, it gives a very quick indication of where things are going wrong in adjustments.



SWR Graph of a 2 Metre flexible antenna, manufacturer marked as FM. 136-174MHz and 400-430 MHz. showing a SWR around 1.25 at 140.736 MHz.



Same antenna but showing all graphs.

The **SWR BAND METER MENU** permits up to four different frequencies to have their SWR measured at one time, making it possible to adjust a multi band antenna and it appears to update in about half a second which is more than adequate. The **AUTO SWR** also permits the user to step through various bands to see the SWR for each one. The device can also be used as a **FIELD ANALYSER** .

It reads the following values:

SWR,
Best SWR, when range is set correctly it tells you the frequency for the lowest SWR.
Impedence Z.
Resistance R.
Reactance X.
Phase.
Return Loss.
Transmission Loss.
RF level in dB.

It has two modes: **Reflection mode** to measure an antenna, and **Transmission mode** where it can be connected in series with a circuit, via a second BNC. (I haven't used this part yet but it could be very useful in building filter circuits without the need for an oscilloscope)

Accuracy: The result (lowest SWR) differs slightly from the reading on the analogue meter on the MFJ unit I possess. The MetroVNA can be externally connected to calibrate for frequency.

Bluetooth: The device can be paired to a PC, or Android phone to give a more detailed graph which can be stored as a PDF and printed. In this case it does not operate in real time, but as one calls up the data from the device to the phone, the device display freezes and has to be reset. The external view on the phone seems to give a more accurate plot, showing more detail, but this may be quirks of the scanning frequency generation. The website shows where to obtain the software required to do this. Firmware can be updated on-line from the mini-USB.

I found it gives interesting and gave accurate enough graphs, The build quality is 'average consumer', quite expensive, but most others offering similar features to it are twice the price.

Martin Lynch & Sons link:

https://www.hamradio.co.uk/accessories-antenna-analysers/mydel/metrovna-180-analyser-pd-7723.php
at £245
and
https://www.hamradio.co.uk/accessories-antenna-analysers/mydel/metrovna-250-analyser-pd-7724.php
at £275

Practical Wireless 4 Metre Contest - 24th September 2017

By Gary, M0XAC

This year club members once again entered the Practical Wireless 4 Metre Contest. The impetus for this event is Arron M0HNH who has a particular interest in this band. The callsign used was G2HX/P. This years team comprised Arron M0HNH, Mike G4IZZ, Matt 2E0MFH and myself. The venue was the same as last year, the coach park at Crickley Hill Country Park which was kindly organised by Anne 2E1GKY. This site, as members will know is some 273 metres above sea level, so a good take off for vhf.

The contest was an hour shorter than last year so only 3 hours long but of course that makes no difference to set up time. I arrived at about 11.45 am to find that cars were parked across the gate to the coach park, blocking access and for a short time and I feared that we would be scuppered but after I obtained the parking tickets from the cafe, I returned to the coach park to find one car about to move off. I went to impart some well chosen words but they drove off as I approached. Probably just as well really! They obviously did not want to pay for parking.

Set up commenced just after midday and it actually went very well but I am always surprised at how much stuff you need to set up a radio station from scratch. It always seems less when you are thinking about it! However, Arron is well practised at setting up his mast so that went well and we had plenty of time to set up what else we needed. This year we used my FT-991 and Arron brought the transverter and linear amplifier so that we could run 160 watts which is maximum for the band. Arron had a new aerial to use this year (some may have seen it on the August Bank Holiday operating) - a 3 Element Quad from Innovantennas. I also brought my headset that I use at home with push-to-talk switch to make operating a little easier. We also made use of the club's generator. Mike brought an excellent pop up Gazebo in case of rain and that went up really quickly. A definite keeper for future events! Another innovation for this year was computer logging using N1MM+. This went very well and all operators adapted quickly. We also kept a manual backup log which proved its worth at the end. Rotating the beam was by the armstrong method and shouting at which we all took turns at.

The result of the day was 57 unique qso's (we had one duplicate) and 14 locator squares which is one less than last year on both counts. We had contacts from Scotland, Guernsey and Belgium but our best direction was north east. Not a surprise really. It was a very enjoyable day and nothing like as cold as last year which made a big difference. It will be interesting to see the results in December but from an enjoyment perspective it was a great success. Thanks to those members who worked us and those that paid us a visit.

Should I sign /P or /M?

Following a recent 70cm Friday evening Club net where I signed G4CIB/M I received an email from Anne 2E1GKY querying whether I should have signed G4CIB/P. On digging into the subject I realise that there is much ambiguity in our licence conditions.

So I am sat in my car, parked up in a layby. I have a mag mount antenna on the roof of the car and my small rig is mounted in the centre console of the car and I am chatting for half an hour or so on the club net.

Should I have signed G4CIB/M or G4CIB/P? I would be interested in your thoughts and the reasons why you came to that decision?

QSO Workshop - September 2017

Andy, M0RON explaining how to set up a transceiver in preparation for a simplex QSO on 2 metres

Now it's the student's turn!

G4CIB and G4RHK on Lundy 9th-16th September 2017

September 2017 will be remembered by many for the succession of low pressure systems which swept across all parts of the country also for the terrible destruction caused by the hurricanes in the Caribbean.

Our sailing this year was from Bideford and we took the opportunity to spend a few days there beforehand and were pleased to note the steamship “Freshspring” moored at the jetty. This vessel, the only surviving example of the 14 Fresh class water carriers built by Lytham Shipbuilding and Engineering for the Royal Fleet Auxiliary, languished for many years in Bristol docks. Our Chairman remembers going to a party on board, the then owner working in the same office as Dave at British Aerospace. The vessel was then acquired by the Freshspring Preservation Society and for a few years was moored at Larkham's shipyard at Bullo Pill near Newnham on Severn before coming to Bideford last year where a dedicated band of volunteers are now undertaking restoration work.

Saturday 9th September
The inshore water forecast for the Bristol Channel was very rough (waves 4-6m high) to high (wave 6-9m high). We set sail from Bideford under leaden skies a few minutes after 8.00am and the first 20 minutes or so of the journey is down the calm River Torridge. However you are being lulled into a false sense of security for as soon as you cross the Bideford Bar you meet the full force of the Atlantic. The forecast was correct and very few people on board survived the crossing without being ill. Leta and I were in that select group but we did end up thoroughly soaked to the skin. It is under these conditions that you realise the limitations of so-called waterproof clothing. Instead of the usual hour and three-quarter crossing the duration of this crossing was nearly two and a half hours such was the strength of the wind and tide against us.
On arrival the Marisco Tavern beckoned us not only for lunch but for warmth to dry out. By late afternoon we were in our accommodation for the week – Stoneycroft – a small cottage adjacent to the Old Lighthouse on the highest part of the island. A quick check of the various 70cm antennas I took was carried out using the Cornish beacon GB3MCB as my reference signal which was S8 on the 7element ZL Special, S7 on the HB9CV and S3 on the Moxon loop. As the wind was still pretty strong I decided it was too rough to erect the 80 metre dipole so we retreated to the Tavern in the evening for a meal.

Sunday 10th September
Heavy rain and high wind in the morning so I erected the vertical antenna suitably guyed against the wind and managed a few QSOs on 40 and 20 metres. The rain eventually stopped around midday so I decided to put the dipole up and ventured on to 80 metres and amongst others worked Mike G4IZZ. As the wind strength increased again I decided to lower the dipole antenna and then spent some time programming into my Kenwood hand-held the various marine channels in use in the Bristol Channel.

Monday 11th September
My notebook recorded at 0645 “wild north westerly wind” and sure enough the Maritime and Safety Information broadcast from Milford Haven ten minutes later warned that a Force 8 gale was imminent in sea area Lundy. No HF antenna erected today as the weather was too atrocious. My mobile pinged a message late morning and Dave G4BCA wanted to try a 70cm contact from the Isles of Scilly where he was staying for a few days. I managed to erect the 7 element ZL Special on my glass fibre telescopic mast and point it in the right direction. After several calls on the selected 70cm frequency and exchanged texts we decided on this occasion that the conditions were against us. See the report of this attempt from Dave G4BCA.

Tuesday 12th September
The wind had subsided sufficiently to erect the 80m dipole although the forecast for later in the day was dire. I joined the Vintage Military Amateur Radio Society (VMARS) Amplitude Modulation (A.M.)

morning net on 80 metres and renewed some old acquaintances including Keith G3XGW, Brian GU4LJC and Martin G3YJO. As the weather was deteriorating quickly I lowered the antenna after breakfast. It was a shame that the forecast was so bad as I had hoped to erect the 7 element ZL special for the 70cm UKAC contest in the evening but the wind was so fierce any thought of even venturing outside was dismissed. In the end I propped the antenna on top of the wardrobe in the bedroom and worked GW0RHC/P operating from a camper van on the Gower. That was my one and only QSO. I subsequently put an entry in and was pleased to note that I did not come last!!

Wednesday 13th September
The weather is an all important topic on Lundy and this week it was doing its worst! No antenna erected until the late afternoon and on 80 metres I managed to contact Barry M0HFY, Gary M0XAC and Alan G4MGW. The low 80 metre inverted V dipole, which I think would be defined as a Near Vertical Incidence Skywave (NVIS) antenna, seemed to work very well on this band for distances in the 50 – 300 mile range. The centre was about 4 metres above the ground.

Thursday 14th September
The weather slowly improved and early in the morning I erected the 80m dipole and joined in the VMARS AM net. After breakfast we ventured out for a walk heading for the east side of the island. Sitting in a sheltered spot near the old granite quarry I noticed that GB3WR was end stop on my Yaseu handheld and was pleased to have a qso with G(W)KNA/M Andy, one of the South Bristol ARC members who in the past have regularly visited Lundy using the call sign GB2BLE. Just as I finished with Andy I was delighted to be called by GARES member Richard 2E0RKD in Stroud. Later in the afternoon back in our cottage I had a qso with Les G0ULH confirming that I would be on the Club on the Air net later that evening. Finishing our evening meal just in time I tuned in to 3.695MHz and was amazed at the signal strength of all the club members on the net – Les G0ULH, Arron M0HNH/P, Gary M0XAC, Tom G3XMM, Anne 2E1GKY, Barry M0HFY and Ray G1NVS. This really was the highlight of the week working the club members. I nearly forgot – Thursday night – 2nd Thursday of the month – 50MHz UKAC. Quickly retuning the antenna I had my first QSO with G3WAG/P in IO82QE when suddenly a massive bolt of lightning followed by a clap of thunder forced me to promptly close down. That proved to be the only contact I had. I still put an entry in and was pleased to note that I did not come last in this contest either!!

Friday 15th September
Our last full day on the island and the weather was very wet although the wind had subsided enough for me to leave the 80 metre dipole up overnight so the day was spent dipping in and out of the 80m band working all over the UK, the final qso of the afternoon being with Malcolm G0UYN on the Isle of Wight, who was an ex-de Havilland engineer. At about 1700 the station was dismantled ready for loading on the “Oldenburg” on Saturday for the journey back to the mainland.

Saturday 16th September
A dull, damp, dreary morning and the sea state was described on the Maritime and Safety Information broadcast as smooth to slight. We kept up the tradition of partaking of breakfast in the Tavern on the final day before spending the rest of the morning saying our farewells to the staff on the island we have got to know over the many years of staying there. Late afternoon we made our way down to the jetty to board the “Oldenburg” for an uneventful crossing back to Bideford.

Summary

This trip was probably one of the most challenging we have made to Lundy as the weather was very unsettled for the whole duration of our stay. The 80m dipole was only left up overnight once on the Thursday night when the wind had dropped to a reasonable level. The highlight of the trip was the GARES Club On The Air net on the Thursday night, and the disappointments were all weather related – the 70cm UKAC, 50MHz UKAC and the attempted 70cm link with G4BCA on the Isles of Scilly. Many thanks to Gary M0XAC for the loan of the FT857 for which he has received the Lundy "Old Light" Award for 2017. Over many years of operating /P whilst on holiday I have formulated a rule that whatever lists you create or whatever pre-journey checks you do, there will either be an item you forget to take or an item which is not compatible with another piece of kit. This year? In my haste to remember to take my CW paddle key I forgot to check that the key lead (terminated with a standard ¼ inch jack plug) was not compatible with the key socket (3.5mm miniature jack) on the FT857 borrowed from Gary M0XAC. Doh!

Equipment

Yaseu FT857 (loaned by Gary M0XAC)
Kenwood TH-F7 dual band 2m/70cm hand-held
Heath ATU-9 antenna matching unit
80m dipole fed with ladder line feeder.
7 element ZL Special (70cm)
HB9CV (70cm)
Moxon loop (70cm)
6m telescopic fibreglass mast

2018?

Next years' trip to Lundy is in the early planning stage and will be at a similar time of the year. The accommodation is booked and it is at a different location, namely Castle Cottage high on a cliff on the south-east tip of the island with an excellent 180 degree take off to the north through east to the south. We last stayed here in 2002 when I took my Heathkit HW8 2 watt CW rig and an 80m dipole!

We are also planning to visit another UK offshore island in 2018 but this has still to be confirmed – more details in a future "Ragchew".

G4CIB outside "Stoneycroft" with the "roach pole" dipole support

70cm Contact Attempt Isles of Scilly to Lundy

By

Dave G4BCA

I set up my station up on Halangy Down on the NW corner of St Mary's, the largest of the Isles of Scilly. This is the highest point in the north of the island at about 45 metres ASL. My station consisted of an FT-817 supplied by a 7 Ah battery and battery conditioner to give a supply voltage at a constant 13.8 V, to avoid the rig automatically reducing the output power from 5 to 2.5 Watts when the battery voltage falls below around 11 V. This all worked very well!
The antenna was a nice and compact 70cm HB9CV fed with Ultraflex 7 low loss coax, and should have provided about 3.5 dBd gain. It was erected on a 4m pole which needed guying in the strong winds. This was a difficult job with the guys being blown around and entangled with themselves and brambles! At least the herd of Highland cattle were disinterested in my effort and maintained their distance. I was rather dismayed to find that the mid-Cornwall beacon, GB3MCB, was rather weak at a distance of 117 km but later realised that 'MCB beams NE so the signal would have been received off the back of its beam. Unfortunately nothing was heard either way on the attempted QSO between Scilly and Lundy (a distance of 180 km) and this may have been due to to the lack of troposcatter. The weather on the day would have also not favoured the conditions for ducting over the direct sea path.

CAPTION COMPETITION

Sadly only one entry - but a very amusing entry nevertheless - and the prize goes to Mike G4IZZ, who wins a free cup of tea or coffee at club

"One of these MUST be the "On" switch"

"Damn, I forgot my log! Where on earth will I find a log?"