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The Journal of

Horsham Amateur Radio Club

March 2010

Sponsored by:



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Cover photo: Looking across the water in Nice

Editorial

Welcome to several new readers now taking this magazine in the electronic PDF version. If you should find that the pages are too big go to the zoom feature in your PDF viewer and adjust accordingly. It is recommended to use the latest version so if you have Adobe Reader installed it is currently 9.3 but any other PDF program can be used.

This month is the Junk Sale and you are invited to bring those items you would like to sell or anything else to donate to club funds. The proceedings will be in the same format as last time and there will be bonus boxes, raffle and food available. Viewing will take place as items arrive from 7.30pm. Parking is available in Denne Road itself, the car park up the road and Normandy.

Congratulations to Jeremy Thompson who now holds the Intermediate callsign 2E0TJT. We had a splendid time at the Haldi Indian restaurant in Southwater at the end of January. A variety of various dishes were had starting with popadoms right along to the deserts. At the end of the table where I sat there was a 'video jukebox' which was going until we silenced it near the end of the evening!

David G4JHI

HARC Subscriptions

A reminder that subscriptions are now due for this years club membership.

Please forward £15 to the Treasurer which can be paid by cash or a cheque payable to H.A.R.C. Alternatively payment direct to Paul Barnett, 8 Parsonage Road, Horsham, RH12 4AR.

HARC February Meeting:

The History of Mr Polley, Part 3

by Ron Polley, G3PYC

In 1966 Ron left MRL (Mullard Research Laboratories) and joined Roband, a general electronics firm run by a Mr Gold. At the loss of a contract Mr Gold fired The Accountant, the General Manager, and Ron. With 5 children and a new house he fortunately found a job at another firm owned by G3FRV. However this did not last because Mr Gold shortly invited Ron back again and he got involved with development of 70MHz oscilloscopes!

His next move was to Lintott where he started in the Special Projects dept. working on submersibles being developed to find torpedoes after their test runs in the Gareloch. Control circuitry for superconducting magnets followed but then a new chief was appointed to supervise the Special Projects dept. He turned out to be an idiot so Ron saw the General Manager and resigned.

He approached Link Miles, Lancing, who wanted a 'qualified engineer' but despite Ron's lack of paper qualifications he got an interview. They asked Lintott for a reference, which ended with 'Mr Polley does not take kindly to fools especially management ones'. He started in the Cockpit Interface section with 3 engineers.

He worked on the DC10 for American Airlines and then a bit of work on the Jaguar fighter. He was then given a new inertial navigation unit straight from the manufacturers to evaluate. This was to be tried in the Harrier but with its Meccano-style chain drives, Ron found it to be poorly engineered. Link Miles was bought by Redifon. His next move was to KDG Instrumentation at Rustington where he mainly did printed

circuit layouts of various instruments.

Ron's original training had been in mechanical engineering, principally structures, and his next move was on Nov 1st 1975 to the Structures Section of Babcock Woodall Duckham (BW-D) in Crawley. A couple of months later he was transferred to the Piping Section and sent to the site of a major expansion project of the ICI petrochemical works at Wilton, Middlesbrough, as Assistant Engineer.

The drunkard Engineer had lost his driving licence so Ron was to be his chauffeur. The site was very spread out, involving both sides of the River Tees, and drives of up to 17 miles could be needed. The industry was very much still reeling from the Flixborough disaster so formalised Safety Procedures dominated the engineering.

Meticulous adherence to the procedures was vital on this type of project where construction proceeds on a working plant and connections sometimes have to be made to 'hot' pipelines. A veteran gave Ron the memorable advice: "Walk the line" meaning: Don't trust the drawings, go out and see the actual situation.

ICI recognised Ron's performance in this field and granted him the status of Safety Officer after an ICI engineer cut into a pipe according to the drawings rather than the one selected and marked by Ron in the field. In this case disaster was just avoided. In another incident an ICI engineer lost his arm through not following correct procedure while pigging a new 7 mile long pipe.

Some of the pipes were installed in a tunnel under the R Tees. Some of the project works were on jetties with means to connect to tanker ships. Ron told of his helping a Russian tanker captain turn his ship end for end using bow thrusters and winch so avoiding the need for starting his main engines or calling in the tugs. The final anecdote related to a near miss with an acetylene ship getting snagged in the loading arms. There's more to come in the next episode!

Dish Mania Follow Up

by

David G4JHI



It appears that the article last month about the Wave Frontier satellite dish has sparked off a new interest for some HARCNEWS readers. So here is a question and answer session based on what has been asked.

Q: I can now get CNBC on my Sky box although it is not in my package but was reported in your article as a pay channel.

A: It appears that they have decided to go free to air most likely so that the channel can be viewed on Freesat.

Q: Do I watch Scandinavian TV since it can be received in the UK?

A: Canal Digital broadcasts from Thor @ 0.8° west but my dish cannot see this satellite and virtually all the channels are on a pay platform. The Viasat package is on Sirius @ 4.8° east, requires a much larger dish and is on pay TV.

Q: Does Channel4 transmit in HD?

A: Yes it is available subscription free but needs at least an active Sky viewing card as well as a suitable receiver.

Q: Was the alignment of the LNB's difficult?

A: Yes! But having had previous experience of satellite dishes it was feasible to pursue setting them up.

Q: I am thinking of getting Freesat from the BBC/ITV. What type of dish do I require?

A: The Sky minidish will receive the service which can be easily put on a wall and needs to point at 28.2° east and elevation around 26° or you can fit a larger dish such as 60cm

for better protection of 'rain fade'.

Q: Before my analogue receiver gave up the ghost I could watch Eurosport with English audio. How can I do this with digital?

A: Eurosport Deutschland is transmitted free to air in Digital on Astra1 at 19.2° east. Any free to air digital receiver will pick this up on this bird. Parameters are Freq 12226 Pol H SR 27500 Fec 3/4. Unfortunately there is only German audio available. Alternatively subscribe to the News and Events pack on Sky for British Eurosport.

Q: I have lost some of my channels on 16° east

A: There was a major problem with the W2 craft at this position. Eutelsat have been working on the issue and channels have returned but on lower power or different beams.

Q: I read that ITV was thinking of making their spin off channels subscription only, is this true?

A: Yes ITV have been in talks with Sky which could mean that ITV2, 3 and 4 become available to subscribers only. This would mean that they are no longer available on Freesat. Also their place on Freeview is under threat as they could disappear from this too. If this happened a possible new pay TV service might be created on the terrestrial platform.

Q: I have a holiday home in France and tried to get terrestrial reception of British TV from Rowridge on the Isle of Wight without success

A: BBC and ITV channels can easily be received in northern France via the Astra 2 satellite.

Q: Every time I turn on my Sky box a message is on the screen advising that the viewing card has expired and I have to press BackUp to clear it. I used to subscribe but don't any longer

A: There are three options; you need to re-subscribe to Sky and they will issue a new white card, purchase a new FreesatFromSky card or remove the card completely. With the latter option after a period probably 48 hours or so the message

will disappear and the box should forget about any card.

Q: My receiver's power supply appears to be giving up

A: You can get new and re-furbished power units for popular manufactures; alternatively reliability kits can be purchased.

www.satcure.co.uk (Reliability kits)

www.lyngsat.com (Satellite channel listings)

www.astra2d.com (Information on transmissions from the narrow beam services from Astra 2)

IMD - a cautionary tale!

by
Mike G8CKT

Intermodulation distortion (IMD) reports can be extremely useful for amateur radio but they can also be somewhat unreliable. I recently received an IMD report of only -12 dB from a friendly HB station when using 25W of BPSK on 80 m. This sent me into panic – why had my equipment gone so far out of adjustment?

The IMD value is computed as the ratio of the sum of the power levels of the intermodulation components to the sum of the power level of the two principal tones (f_1 and f_2) present in a BPSK signal. The significant intermodulation components (i.e. those that fall within band) include $f_1 - (f_2 - f_1)$, $f_1 - 2(f_2 - f_1)$, $f_1 + (f_2 - f_1)$, $f_1 + 2(f_2 - f_1)$, and so on.

You may well have noticed how the width of a badly adjusted BPSK signal extends well beyond the usual narrow bandwidth associated with such signals. IMD values in the range -20 dB to -30 dB are common and -23 dB is often regarded as

the threshold between an acceptable and a good signal (i.e. around Q8 on the RSQ scale).

It was time to take some action so, rather than rely on variable reports received from other stations, I set up my trusty FT-817 with laptop and Digipan in order to attempt to measure my own transmitted IMD. The main station FT-897 was operated into a dummy load under idling conditions with the power output adjusted for 25 W carrier and the FT-817 adjusted to produce an S9 signal with a paper-clip antenna.

Next, the received signal-to-noise ratio was adjusted to around 20 dB (typical of an RSQ 599 signal). At this point Digipan reported an IMD of around -23 dB which is considerably better than -12 dB but still not quite good enough! Reducing the audio output from the FT-817 to the input of the laptop improved the measured IMD to better than -28 dB.

Carefully adjusting the received signal level to produce a signal-to-noise ratio of better than 28 dB (typical of an RSQ 599 signal) produced a further 5 dB improvement such that the final value of measured IMD was around -33 dB (a massive 21 dB better than that reported by the HB station). On reflection, all of this was a rather useful exercise if only because it forced me to check that my signal really was clean!

So, for anyone needing to give IMD reports or attempt IMD measurements, it is important to remember the following:

1. The signal being measured must be relatively noise free (typically this implies a signal-to-noise ratio of 26 dB, or more)
2. The measuring system must be linear and not over-driven at any point
3. The two-tone signal must be idling (i.e. not carrying any data modulation)

4. AGC, clipping and other forms of signal processing should be disabled. The second of these criteria suggests that at no point must the receiving set-up be driven into non-linearity. Hence the need for careful adjustment of signal levels and particularly the baseband audio signal that is output to the sound card when a PC system is used for the measurement.

To ensure that the transmitter is correctly adjusted it is important to ensure that the ALC remains inoperative. As a rule of thumb, with most modern solid-state rigs this suggests that the transmit audio level should be kept to between 30% and 50% of the level at which the ALC becomes operational.

It's also worth remembering that an RF power output of around 30 W should be perfectly adequate to work DX on 30 m and the upper HF bands. Finally, a few key points inally, a few key points worth noting:

- Measured IMD can never exceed the signal-to-noise ratio
- An IMD of -23 dB (or better) is usually considered acceptable but significantly better levels can be achieved with modest power and careful adjustment
- If you are providing another station with an IMD report this will be of limited use unless the signal-to-noise ratio is greater than about 26 dB. This suggests that it is unwise to provide IMD reports when the band is noisy or when a weak signal is being received!

Wanted from you!

Articles, snippets, problems, solutions to EMC issues. In a future edition of this magazine it is my intention to have another occasional section about EMC. Many Radio Amateurs are suffering noises on both LF, HF and VHF/UHF and in order to help each other lets hear about your noise problem. Tell us how you solved it or perhaps it is still there and others may be able to help. Maybe you built an anti EMC antenna! We want to know!
(G4JHI)

Web Trawl

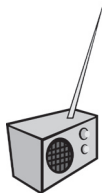
WebSDR on seven bands by Ian M0YMK

<http://websdr.ewi.utwente.nl:8901> is a site that HARC members may find interesting. – even if it's only to monitor how your signals are getting into Holland. From your own PC the SDR can be tuned, Rx mode selected LSB/USB/CW etc and bandwidth varied. On the main page you can listen to and control a short-wave receiver located at the amateur radio club ETGD at the University of Twente.

In contrast to other web-controlled receivers, this receiver can be tuned by multiple users simultaneously, thanks to the use of Software-Defined Radio. Note that the setup is rather experimental, and neither continuous service nor good performance are guaranteed. Comments are welcome; they can be mailed to PA3FWM and/or typed into the "chatbox" at the bottom of this page.

Note: you need both Java and JavaScript enabled for this page to work properly. If you don't hear anything, probably Java is disabled in your browser's settings, is not installed at all, is a too old version, or is not functioning properly.

More WebSDRs can be found via <http://www.websdr.org>



Copy deadline for April edition 20th March

For items sent by email please send to this address:

harc.news@g4jhi.co.uk

Diary

Mar 1st, 80m Data Club Championship 20:00 - 21:30

Mar 4th, Club Night: Junk Sale

Mar 7th, Bournemouth Radio Society Annual Sale - Kinson Community Centre 09:30 www.brswebsite.org.uk

Mar 10th, 80m CW Club Championship 20:00 - 21:30

Mar 13th, Dutch National Flea Market - "Autotron" in Rosmalen 09:00 CET* www.radiovlooiemarkt.nl

Mar 18th, 80m SSB Club Championship 20:00 - 21:30

Mar 25th, Social Evening - The Blue Ship - The Haven

Apr 1st, Club Night: The Beginning of Airborne Communication and Navigation

Apr 5th, 80m CW Club Championship

All above times are UTC except*

Committee/Club Meetings and Socials start at 8pm

