Official Bulletin

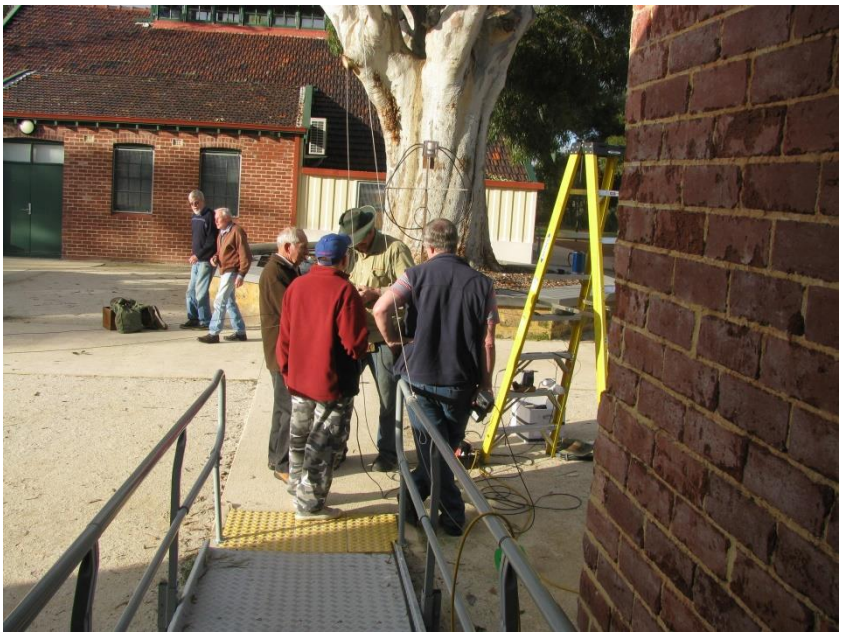
MHz to GHz

The West Australian VHF Group Bulletin

AUGUST 2017

THE WEST AUSTRALIAN VHF GROUP (INC)

PO BOX 189 APPLECROSS 6953



It's all in the concentration.

Preparation for the RD contest isolating an antenna faults. Bob VK6KW, Ty VK6HTY, Arthur VK6CY, Tom VK6ZAF

Contents

1. Editor's Comments

Another four months have passed again since the April issue. One would think that it would be cinch to generate another issue along the same lines. Well it isn't, especially if this is a year that uses up most of your spare time that precludes desired interests like AR, fishing & photography & travel. I know I've said all this before, but please forward any article of which may be of interest to members. All offers considered.

2. From the President's desk Terry VK6ZLT

Recently Steve VK6BBM connected together a new SDR receiver and found he was unable to accurately align the frequency within the software for the lack of an accurate beacon signal to tune to. Now the club Perth beacons are transmitting but how accurate are they? Phil VK6ZKO suggested the club should have at least one GPS locked beacon at Wireless Hill. Earlier on this year I obtained a *QRP Labs "Prog rock" programmable crystal* which can be used in conjunction with a 1CPS source supplied from a small GPS unit. I guess I'll have to start wielding a soldering iron to construct this unit and source a suitable GPS receiver. More detail and results hopefully will be provided in the November issue.
Proposed experimental frequency =145.000MHz.

3. Report by Denis VK6AKR Vice President WA VHF GROUP.

The Group introduced Activity Days in 2016 and they were an immediate success. From the outset, the open format attracted a diverse population - some came to "play radios" with the Group equipment, especially the Kenwood TS-2000. Others came to work on their pet projects and seek advice and comment from their peers. Once or twice there have been special talks which fit into the afternoon format where there is less time pressure than applies in the evenings - Allan VK6MST, Steve VK6VHZ and Peter VK6LB for example gave a talk on DMR.

The success of these events was such that they increased in frequency from once, to twice, a month -, the first and third Saturdays. Member feedback indicates that a great attraction of the afternoon format is that the round trip can be conducted in daylight, especially important in winter with darkness closing in early and, often, rain making driving conditions less desirable.

Apart from the activities mentioned already, some effort has been directed to tidying up and documenting the Group's shack resources. Bob VK6KW sourced a batch of sturdy cardboard component / spare parts bins and several Activity Days were dedicated to identifying discrete components and assemblies that are of potential use going forward. Newer members benefited from the implicit education of finding out "what this is" when faced with an unusual component. Importantly, some "pre-loved" items were identified and put aside for disposal at subsequent HamFests.

Steve VK6BBM proposed the idea of a satellite station and, based on a design demonstrated by Terry VK6ZLT at an evening talk, Roger VK6FRAN produced a design for a Quadrafilar Helix Antenna, affectionately known as the "paint stirrer." Tuning for good SWR on both 2m and 70cm took place over several Days to allow Roger time to produce modifications. There is still some way to go before the satellite station is finished but features such as remote operation of the TS-2000 is operational, including frequency selection (and Doppler compensation.) Cooperative satellites are also necessary :-)

At one Activity Day last year preceding a contest, Alan VK6AMH introduced about a dozen interested members to the art of contesting with many hints and tips which have proven very helpful in subsequent events. As at this writing, there is work in progress on diagnosing and repairing several of the group's instruments (signal generator, spectrum analyser.)

Members who are able to do so are encouraged to visit on the first and or third Saturdays of each month from 2PM to 5PM. Refreshments are always available and visitors too are welcome, so if you know of a fellow Amateur who is unsure what our Group is and does, invite or bring them along.
73
Denis VK6AKR

4. **Microprocessor corner** This side of amateur radio has been on the back burner of late a number. Check out the following:……..
   http://www.tucsonhamradio.org/ovarc_docs/ovarc-2013-11-15.pdf

   http://tcf.pages.tcnj.edu/files/2013/12/Homebrewing.pdf

   http://www.n5dux.com/ham/files/pdf/

   http://www.n5dux.com/ham/files/pdf/ARRL%20VHF%20Digital%20Handbook.pdf

   http://www.n5dux.com/ham/files/pdf/ARRL%20Basic%20Antennas.pdf

5. **Microwave Techniques**
   Microwave 101
   https://www.microwaves101.com/encyclopedias/microwave-amateur-radio
   Microwave Know How
   http://www.n5dux.com/ham/files/pdf/Microwave%20Know%20How.pdf
   The above although written first back in 2010. View by all means BUT DO NOT store on your hard drive.
6. **Data Corner**

Check the VHF/UHF IARU specs

http://www.n5dux.com/ham/files/pdf/VHF%20Handbook%20IARU%20v542.pdf

https://www.facebook.com/groups/FT8.Digital.Mode

Release: WSJT-X Version 1.8.0

" 1. New mode called FT8: sensitivity down to -20 dB on the AWGN channel; QSOs 4 times faster than JT65 or JT9; auto-sequencing includes an option to respond automatically to first decoded reply to your CQ.

2. New mode for accurate Frequency Calibration of your radio.

3. Improved performance of decoders for JT65, QRA64, and MSK144. MSK144 includes facilities for amplitude and phase equalization and an "SWL" mode for short-format messages.

4. Options to minimize screen space used by Main and Wide Graph windows.

5. Enhanced management scheme for table of operating frequencies, and a new set of default frequencies specific to the three IARU Regions.

6. Improved CAT control for many rigs, including those controlled through Commander or OmniRig.

7. New keyboard shortcuts to set “Tx even/1st” ON or OFF.

8. A number of (mostly minor) bug fixes and tweaks to the user interface. For example: new behavior for the audio level slider; correctly logged QSO start times in certain situations; correct control of FT-891/991 and some other radios via rigctld.

At the time of the v1.8.0-rc1 release the following tasks are yet to be completed:

1. Updates to WSJT-X User Guide.
2. Sample files for FT8.
3. Enhanced decoding using AP (“a priori”) information.
4. Signal subtraction and multi-pass decoding.
5. Option to Auto-respond to the weakest responder to your CQ.

Installation packages for Windows, Linux, OS X, and Raspbian can be downloaded from the WSJT web site:
http://physics.princeton.edu/pulsar/K1JT/wsjtx.html

Please send bug reports to either wsjtgroup@yahoogroups.com or wsjt-devel@lists.sourceforge.net. Such reports should include a full prescription of steps to reproduce the undesired behaviour. You must be a subscriber to post to either of these lists.

Brief Description of the FT8 Protocol
————————————-

WSJT-X Version 1.8.0 includes a new mode called FT8, developed by K9AN and K1JT. The mode name “FT8” stands for “Franke and Taylor, 8-FSK modulation”. FT8 uses 15-second T/R sequences and provides 50% or better decoding probability down to -20 dB on an AWGN channel. An auto-sequencing facility includes an option to respond automatically to the first decoded reply to your CQ. FT8 QSOs are 4 times faster than those made with JT65 or JT9. FT8 is an excellent mode for HF DXing and for situations like multi-hop E_s on 6 meters, where deep QSB may make fast and reliable completion of QSOs desirable.

Some important characteristics of FT8:

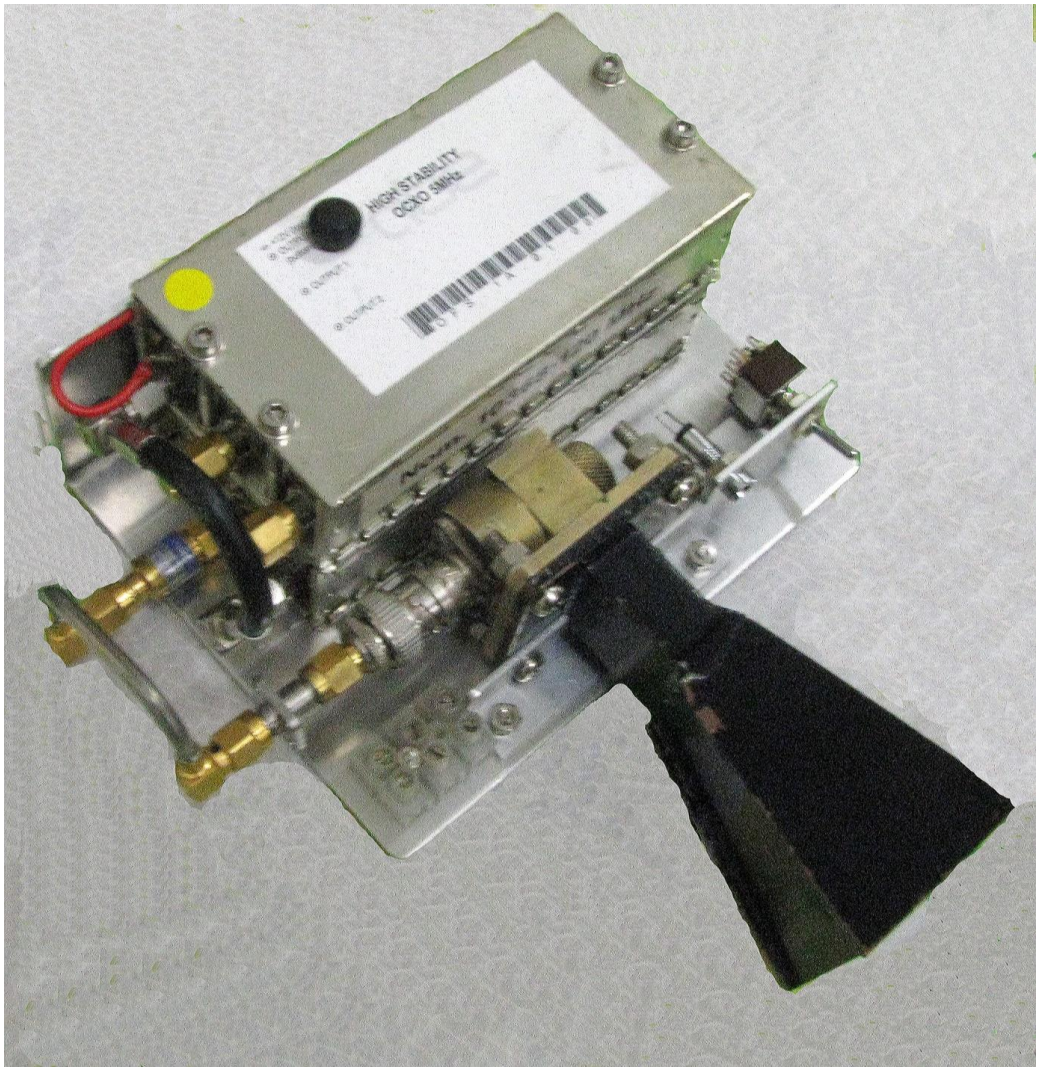
– T/R sequence length: 15 s
– Message length: 75 bits + 12-bit CRC

– FEC code: LDPC(174,87)
– Modulation: 8-FSK, tone spacing 6.25 Hz
– Constant-envelope waveform
– Occupied bandwidth: 50 Hz
– Synchronization: 7×7 Costas arrays at start, middle, and end
– Transmission duration: 79*1920/12000 = 12.64 s
– Decoding threshold: -20 dB; several dB lower with AP decoding
– Multi-decoder finds and decodes all FT8 signals in passband
– Optional auto-sequencing and auto-reply to a CQ response
– Operational behavior similar to JT9, JT65

We plan to implement signal subtraction, two-pass decoding, and use of a priori (AP) information in the decoder. These features are not yet activated in v1.8.0.

We haven't yet finalized what the three extra bits in the message payload will be used for. Suggestions are welcome!— Joe, K1JT, for the WSJT Development Team"

10 GHz reference generator built by Phil VK6ZKO



7. Contact index

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