

# Official Bulletin



## MHz to GHz

The West Australian VHF Group Bulletin

### APRIL 2014 PART - 1

THE WEST AUSTRALIAN VHF GROUP (INC)  
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### 1. **Editors input.**

There is no doubt the depth to which radio amateurs get to experiment with the digital and sophisticated computers in the analog world. Examples such as the FLEX series of SDR transceivers versus uniquely small micros like Arduino Uno or Raspberry Pi. Just to whet your appetite why not check up on the range mentioned in topic -4

### 2. **Across the Presidents Desk by Tom VK6ZAF**

The Group has a planning task, or maybe a muddling on, with the shack at the Wireless Hill site. Ten years on we will expect to use a screen/computer probably a choice of touch, keys and rotary encoders. There will be a thin cable/fibre to the Equipment Building (ex toilet block) and, possibly, to the masthead for the computers configuring the gear, feeders and aerials for the jobs underway. For now we have to assemble a jigsaw puzzle striking a balance of cost and effort using items on hand if possible.

Please add your thoughts to the mix; we will soon have a fine multi-operator station on the air.

*ED. Note Club transceiver is a Kenwood TS2000 spanning 160m to 23cm. Remote operation is already possible, but which type?*

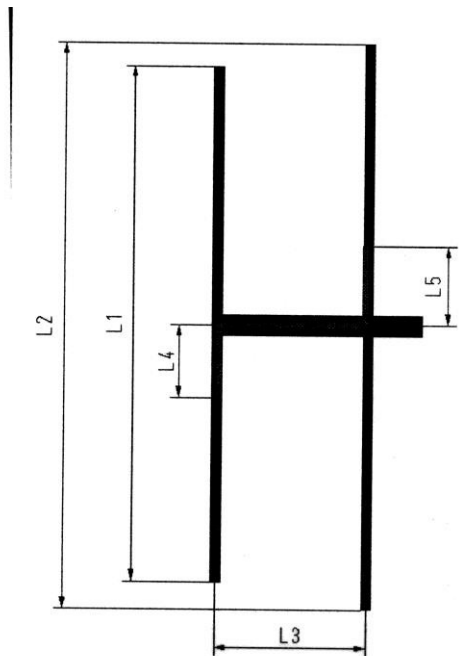
### 3. **HB9CV 2 element directional Aerial**

With revival of fox hunting in the Metro area of Perth many aerials tuned to VK6VF frequency 144.6 MHz. Some are quite ingenious utilizing such things as steel tape measure lengths for the elements. If you are stuck for an aerial design why not try one of these proven designs like the HB9CV aerial. To help you with your design at the desired frequency, why not check out the following :-----

<http://www.changpuak.ch/electronics/HB9CV.php>

Plug in the desired frequency, press calculate, and wa-llah you have your dimensions.

For those looking for a simple 23cm aerial why not try this one.....



Frequency [MHz]	1296
$\lambda$ [mm]	231.48
Length L1 (Dir.) [mm]	106.5
Length L2 (Ref.) [mm]	115.7
Length L3 [mm]	28.9
Length L4 [mm]	14.45
Length L5 [mm]	15.6
Boom Diam. [mm]	2
Radiator Diam. [mm]	1
Spacing [mm]	5

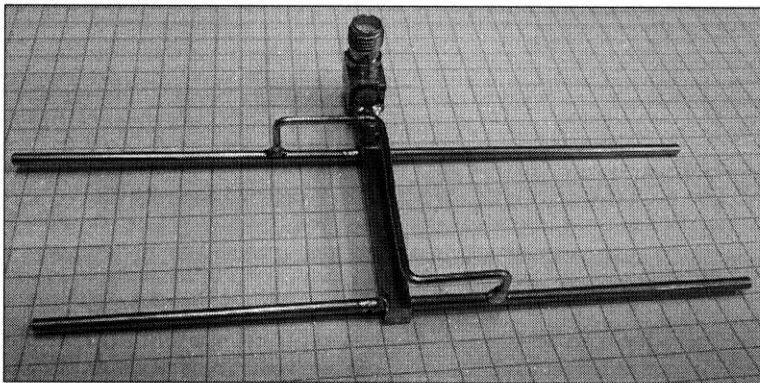
**CALCULATE**

**Notes:**

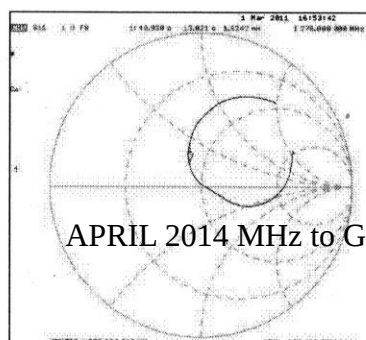
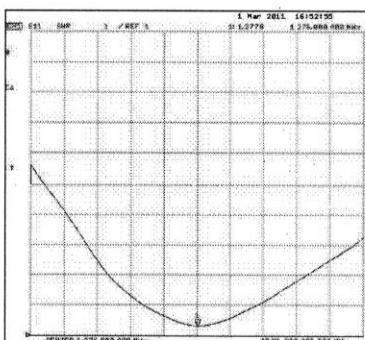
- Spacing is the Distance from the Boom to the 'Gamma-Match'.
- Feeding the Antenna can be done at the Director or at the Reflector.

(If you are a HAM): Design and Adjustment is easy, as with the Capacitor you can tune the Resonance by some MHz with no effort.

(If you are my boss): Design and Adjustment is very tricky and can only be done by smart engineers with sophisticated Measurement Equipment.



A HB9CV designed for 1276 MHz, C = 1.8 pF (Hi-Q), optimised empirically.



There is an enormous wealth of detail on a large amount subjects within this site not just aerials.

For another perspective on the HB9CV aerial try the following

<http://www.qsl.net/dk7zb/HB9CV/Details-HB9CV.htm>

## **5. Micro's for the Amateur Radio enthusiast.**

**By Terry VK6ZLT**

In the last couple of years the generation of new microprocessors combined with bulk output have reduced the price, increased availability and computing power of the individual chips to point not even dreamed . When I look back on my past notes, that in 2001 I presented a talk on a radio beacon utilizing a single chip PIC 16F84A running at 20MHz xtal and some resistors compare this to the ARM1176JZF-S 700 MHz processor contained in a Raspberry Pi microcomputer with all the ancillary material with 500MByte of memory The other micro to make its mark is the Arduino Uno. Each micro has it strengths and weaknesses so much so that the Raspberry Pi can now be connected directly to an Arduino to enable the Pi's Linux/Python programming language can command the Arduino bypassing the need to operate the Arduino C++ software.

Why not check out the following to get some ideas :.....

<http://www.rmham.org/wordpress/wp-content/uploads/2013/06/Raspberry-Pi-Hamcon-Colorado-6-29-2013-FINAL.pdf>

<http://www.scribd.com/doc/144142796/GRARA-Meets-Arduino>

Just to give you some idea Terry VK6ZLT with the assistance of Denis VK6FADF installed a new Arduino based (Leostick) beacon controller in the 10GHz driver for the Albany Beacon VK6RST. Denis by the way will be giving a talk on the Arduino microprocessor as the May 26th evening activity.

## 6. Local update

Rob VK6LD has successfully generated a Perth 23cm net to stimulate on air activity, usually held on a weekly Thursday evening 7.30PM local time (1130hrs UTC)

Net Frequency is 1294.100MHz, FM mode (Vertical Polarity)

Later we try USB for those with SSB equipment on 1296.150MHz. (Vertical & Horizontal Polarity).

Alternate/Liaison frequency will be 146.575MHz FM.

*(Ed note: On air reports from participants is encouraging, with new masts, aerials and equipment being bought or made. Thanks Robert)*

## 7. PSK31 possible Beacon addition

Recently in a British (PW) magazine a radio amateur wrote that low power ssb could be better utilized by adopting a digital mode such as PSK31 which is simple, sensitive (rivaling cw), robust and, unlike the WSJT modes **conversational**. To grasp the impact of say a ssb 20W signal being received by a receiver the same signal reception strength could be achieved with only 3W psk31 transmission.

As many VHF Group members on their field day contests could extend the radius of their transmission by utilizing psk31 and still maintain a conversational response between two members. All achieved without precise timing locked by GPS etc..

Extend this concept to being incorporated into a Radio beacon either personal or universal propagation beacon. The beacon could announce its own call sign and geographical position.

Why not check out the following

<http://www.aintel.bi.ehu.es/psk31.html>

<http://www.dxzone.com/catalog/Software/PSK31/>

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