

Official Bulletin



MHz to GHz

The West Australian VHF Group Bulletin

AUGUST 2011

THE WEST AUSTRALIAN VHF GROUP (INC)
PO BOX 189 APPLECROSS 6953

e-mail for editor to: secretary@wavhfgroup.org.au

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1. Comments from the editor.
2. The first indestructible transistor
3. Ben VK6IC new Beacon microcontroller
4. Vale members of interest.
5. LFA or OWL vhf antennas.
6. towards the AGM.

EDITORS INPUT

Hi there all.

August issue rolls on. This production is essentially all my own work as I have received little or no assistance from any body as to the content of the magazine. The magazine is really in need of new fresh input of material. The magazine is the ideal platform to ask radio questions as well as “show and tell” areas of ideas and equipment. Questions arise all the time such as:.....

What have you built recently? Was it a receiver or a transmitter or an aerial? What was the source of the materials?

Who is your last long distance contact? On what frequency was the contact made? Is there any possibility of further openings? Was it by ssb or digital means? Was it from the home QTH or out in the field somewhere?

Have you contacted the ISSS? Who was the astronaut/cosmonaut? Have you spoken since the first contact?

When was your last satellite contact other than the ISSS?

So the questions keep coming, can you answer any of the above?

Let the committee know

If you haven't, do you want to learn? **Let the committee know.**

It's imperative that a continuous flow of various activities be made available to the benefit of most members. Your input is absolutely necessary

Let's hear from you soon.

As a post Hamfest observation, I noted that the number of tables available was somewhat down in comparison to 2010. Also the amount of old radio material on display for sale was considerable with only a couple of sellers providing new equipment & aerials etc. The standard of the homebuilt exhibits was superb; the finished products were of a really high standard that the judges would be scratching the heads to decide which one. As I recall there were there were only four entries. I didn't hear which one was the successful one.

Terry VK6ZLT

So technology rolls on, check out this article with the **YOUTUBE videos**. Although the power supply is designed around 30V, but what could one expect when power rating of around 1.2 Kilowatts and NXP are not resting on their laurels and are advancing into 50V power supply systems and amplifiers in the GHz regions.

The first indestructible transistor?

Extremely rugged 1,200-W RF MOSFET survives live short circuits and open outputs

Publication date: 22 July 2011



Semiconductor manufacturer NXP is mighty proud of its new high-power transistor, called BLF578XR, which is good for 1.2 kilowatts of RF power output. The device is suitable for use in RF amplifiers operating within the in the 10 to 500 MHz frequency range and has proved it's up against extremely adverse operating conditions.

NXP is so proud of her latest result of outstanding engineering achievement that they released a video demonstrating the load disconnected and even the output shorted with the RF amplifier in full operation, without so much as harming the transistor. Typical applications for this power semiconductor include the control of industrial lasers, etc.

Check out these videos

<http://www.youtube.com/watch?v=8ziYqjMQGEQ>

<http://www.youtube.com/watch?v=tJuZoljd5Kg&NR=1>

<http://www.youtube.com/watch?v=OSWruCmiae8&NR=1>

Check out the "YouTube" addresses above for an amazing demonstration of just what this transistor can do.

Advances in the New Beacon microcontroller by Ben VK6 IC wrote;

I've quickly had a look through the existing keyer files and came up with a rough overview of what might be on the board:

- Atmel ATMEGA32U4-AU TQFP44 (USB AVR) \$6.64
- Microchip MCP4921-E/SN SOIC8 (12-bit DAC for FSK) \$2.59
- MAX485 SOIC8 (RS485 Driver) \$3.53
- 7805 or similar regulator (SMT) < \$0.50
- USB Plug (SMT) < \$1.00
- Commercially Manufactured PCB (double sided, through hole plated and silkscreened) < \$4.00

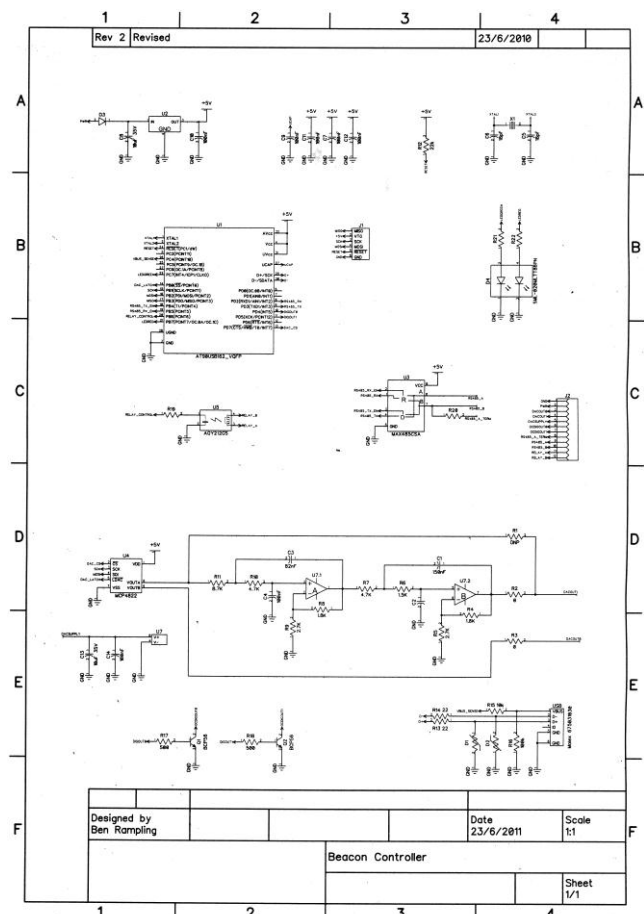
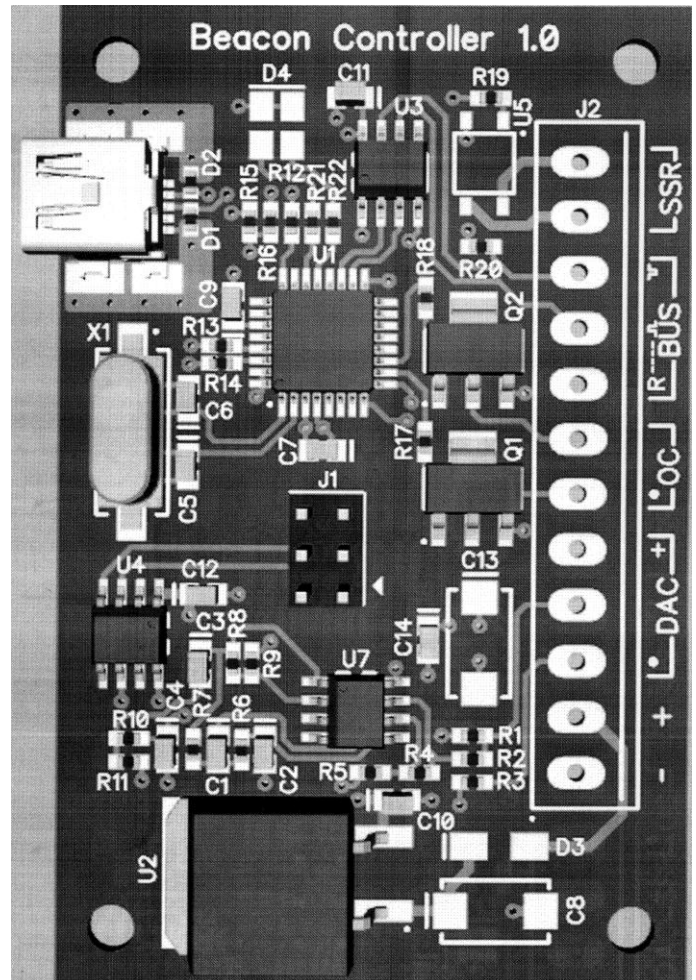
Total cost per board is likely to be around \$20 (for about 20-30 boards).

The boards would have:

- * USB for programming; plugging the USB connector in to any Windows XP or above machine would work without drivers, and HyperTerminal (or any terminal program) would access the menu system to configure the keyer.
- * RS485 to synchronise keying between multiple keyers (or for other uses). Rather than combining the output of keyers, a two wire RS485 bus would be used to synchronise them before the output stage, allowing (for example) two or more keyers with FSK outputs with different deviation adjustments.
- * A DAC to drive the FSK transmitters.

Callsign, keyer speeds and delays and so on would all be software controlled and stored in Flash.

All of the parts would be SMT (0805 or bigger passives, and SOIC/TQFP IC's) and are widely available from Farnell and Digikey. The board is likely to be substantially smaller than the existing PCB.



Programming AVR's is quite simple; there is a 6 pin 0.1" header on the board, and you can use a parallel port and a few resistors, or one of any number of cheap USB programmers.

If we need Internet or SMS connectivity it could be done with a site controller of some kind those talks to the individual keyers over the RS485 bus (we can worry about that later and not have to update any hardware on the keyers).

Thanks Ben for the update.

(Note)

The go-ahead to purchase 3 x experimental multilayer boards for proof-of-project was approved by members at the June meeting held at Wireless Hill.

We look forward to the testing and programming the new boards when they arrive.

A member suggested that beacon boards could be made available to club members to be programmed with their own call sign that could be utilised for long distance aiming of antennas. The sample boards were due any day soon.

Over the past few months a number of members have of since passed away. They are

Ralph Deverell VK6ZAD relayed by Don VK6HK

For your info the following sad news about the passing of Ralph Deverell VK6ZAD was received from Colin VK6CK. Ralph of course was one of the early members of the VHF Group in the mid 1950's and in the early days was very active on 2mx AM with the then new batch of "Z" calls. He was instrumental in arranging access to the DCA workshop premises in Guildford Road, Mt Lawley for a Group meeting place and I suspect in the then DCA Superintending Engineer the late Frank Dawson accepting the role of Group Patron.

So vale Ralphie,

Ross VK6KAT, Former workmate of Steve VK6SQ and regular morning contact of Phil VK6ZKO and Glen VK6IQ.

Bill Hockley VK6AS ..Bill will be sadly missed as the keeper of the Groups Esperance beacon. A new contact person in the Esperance region will be required to monitor the performance of the beacon and report to the club any problems incurred.

Roy Chamberlain VK6BO:.. Roy was awarded his OAM (for services to the community?) after more than 25 years as Net Control for the Australian Travelers Net on 20 metres. Roy also ran the daily 20m Indian Ocean Maritime Net at 11:15Z. He retired from these positions on 26 May 2010, the day before he moved into retirement accommodation.

Roy was a Life Member of the West Australian VHF Group, and although not a active member in recent years, has left a tremendous legacy in Wireless Hill and AR in general.

VHF Yagi Aerials

I have been rather long winded in refurbishing a 15 element ZL special 144.1 MHz antenna which has been on the ground for about 2 x years. One of the off-putting facets is the method by which the co-ax cable is coupled to the aerials twin phased connected folded dipoles. The tuning method used requires a air spaced shorted stub with a variable tapping point for the co-axial feed. This method although it works quite successfully it is very fiddly to tune.

As a consequence I started looking around for a modern alternative antenna which had a simpler tuning method along with a different view of what constitutes a high gain yagi antenna.

Whilst cruising the internet I came across a site in Britain by Justin GOKSC <http://www.g0ksc.co.uk> I came across two types of antenna the **OWL (Optimised Wideband Low impedance)** yagi antenna along with a **LFA (Loop Fed Array)** yagi.

What set these antennas apart from the antennas I had previously constructed was

1. .. The antenna elements were insulated above the boom.
- 2... The antenna elements were wide spaced compare to my previous antennas.
- 3... The antenna driven element is coupled to the 50 ohm co-ax via a number of different baluns from a simple rf choke to a number of styles of the ubiquitous Pawsey Stub”
- 4... The LFA antenna provided a unique driven loop which was laid horizontal to the boom and could be adjusted to 50 ohm making co-ax coupling relatively simple.

The list goes on as to the advantages more on the website to explore. Take particular notice of the articles on building Yagi antennas & Baluns.

Taking all of the above into account, I embarked upon a “proof of project” exercise. Although the decision to construct a 5 x element LFA antenna which was mainly due to what materials I had on hand. Aerial element insulators were made out of thick plastic sheeting from old retail display stands. The aerial elements were made from 10mm tubular aluminium (from Bunning’s). As the source of 13mm tubular aluminium seem to have disappeared for the moment & the 9mm tubing to slide inside it is virtually non-existent, the driven element was constructed from copper tubing.

Construction is time consuming especially the insulators, the metal tubing is very straight forward with appropriate roller cutting tool. Adjusting the LFA loop to the correct dimensions and the antenna connected by a simple RF choke and magnetic filter the active side of testing was started.

However, as I have run out of time for this issue the results of the various coupling experiments and of course the performance of the aerial itself is will have to delayed till the next issue of the magazine.

Terry VK6ZLT

Once again **memberships are due as of the 1st July 2011**. To renew your membership please return the completed form, shown below, with your subscription fee. If you know of any new members who may be interested pass them a copy of the renewal notice. There has been a slight increase this year to cover costs plus project but I trust you will still find the overall value very good. Note the hire of the meeting room has now risen to \$42 per night

**TO: THE TREASURER
THE WEST AUSTRALIAN VHF GROUP INCORPORATED
PO BOX 189 APPECROSS 6953**



I VK6 _____ NAME _____ |

ADDRESS _____ |

POSTCODE _____ |

Email address. _____

ENCLOSE my ANNUAL SUBSCRIPTION \$ _____ +DONATION \$ _____ |

2011/2012 Subscription = \$25 per Annum. Country = \$22

In addition to renewals,

Notice of the Annual General Meeting.

Monday 26th September 2011

As with most Annual General Meetings all positions of office are declared vacant.

What can you contribute to the advancement of the club?

The group is looking for members who can play an active and supportive role by being office bearers and committee

Why not start sounding out prospective candidates that you know will endeavour to develop the future interests of the club,