

THE WEST AUSTRALIAN VHF GROUP BULLETIN

JUL 1995

THE WEST AUSTRALIAN VHF GROUP (INC)
P.O. BOX 189 APPLECROSS W.A. 6163

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ACTIVITIES	TERRY	VK6ZLT	MUSEUM REP	TOM	VK6ZAF

JUL	17	COMMITTEE MEETING	AUG	21	COMMITTEE MEETING
	22	FOXHUNT		26	FOXHUNT
	24	GENERAL MEETING		28	GENERAL MEETING
SEPT	18	COMMITTEE MEETING	OCT	16	COMMITTEE MEETING
	23	FOXHUNT		21	FOXHUNT
	25	GENERAL MEETING		23	GENERAL MEETING
NOV	20	COMMITTEE MEETING	DEC	19	COMMITTEE MEETING
	25	FOXHUNT		24	FOXHUNT
	27	GENERAL MEETING		26	GENERAL MEETING

Western Australian VHF Group Newsletter P.O. Box 189, Applecross W.A. 6153.

Circulation is 66. This consists of 36 city and 9 country fee paying members, 15 life members some of whom have donated \$10 to the club for the bulletin costs and 6 courtesy copies of the bulletin.

Beacon Committee

The Beacon Committee are arranging to move the beacons to a new site. An arrangement has been made with Channel 9 to site the beacons at the 70 foot level on one of their masts. This is for a very reasonable rent of \$52.00 per year. In order to accommodate this move the club has purchased some new coax at \$350 and various assorted mounting plates and antennas connectors and mounts will complete the work. Testing by the SMA will be \$91 and the license \$72 annually.

Another VK5 2.4 GHz Receiver Working.

Ron VK6AKI is now using his new VK5 2.4GHz receiver on mode S on AO-13 with a one meter dish successfully. He has had several contacts with Arnold VK6VV. Some slight teething troubles due to the use of SMA connectors and corrosion of these had to be overcome. Both Arnold and Ron have now changed the final connector to the helical feed to an N connector and this have resulted in much improvement and consistent operation. Arnold has also changed from a 2 metre dish to a 1 metre dish so that he could mount it on the same boom as his cross yagi 70cm and 2m antennas and he is happy with it.

MICROWAVE COMMITTEE COMPONENTS SERVICE PRICE LIST FEB 95

DESCRIPTION	RSGB MEMBER PRICE	NON MEMBER
1152 MHz LO PCB G4DDK001B	5.74	6.77
PHOTOCOPY OF G4DDK001B ARTICLE	1.00	1.18
TRIMMERS FOR G4DDK001B (5X5PF)	3.66	4.30
1152MHz AMP PCB G4DDK002	5.47	6.45
2-2.6GHz LO PCB G4DDK004	6.86	8.09
PHOTOCOPY OF G4DDK004 ARTICLE	1.00	1.18
TRIMMERS FOR G4DDK004 (8X5PF)	5.55	6.52
ATC DECOUPLING CAPS FOR G4DDK004 (2)	3.26	3.85
CRYSTAL HEATER	3.52	4.14
5.7GHz DB6NT 8W PA PCB (DUBUS 3.92)	10.50	12.39
10GHz X4 MULTIPLIER/PA G3WDG001	29.83	35.20
10GHz RECEIVE CONVERTER G3WDG002	42.70	50.38
10GHz TRANSMIT CONVERTER G3WDG003	49.03	57.86
10GHz 1dB NF HEMT PREAMP G3WDG004	35.48	41.86
10GHz 300mW PA (60mW DRIVE) G3WDG006	58.93	69.53
10GHz 1W PA (200mW DRIVE) G3WDG007	131.68	155.38
10GHz DB6NT 4W PA PCB 2-STAGE (DUBUS 4.91)	10.50	12.39
10GHz DB6NT 4W PA PCB 1-STAGE (DUBUS 4.91)	10.50	12.39
12/24GHz DB6NT DOUBLER PCB (DUBUS 1-2.92)	7.00	8.26
24GHz DB6NT HEMT AMP PCB (DUBUS 4.93)	10.00	11.80
24GHz DB6NT PA PCB (DUBUS 4.93)	10.00	11.80
24GHz DB6NT HEPA PCB (DORSTEN 2.95)	11.00	12.98
24GHz DB6NT Mk2 TRANSV. PCB (DUBUS 1.93)	12.50	14.75
KIT FOR ABOVE (2 X BAT15 DIODES & 1pF CAP)	10.00	11.80
TRANSVERTER SWITCHING UNIT G4JNT001	24.88	29.36
2SK1844 HEMT (0.7dB NF/12GHz)	13.78	16.26
MGF1302 (use in place of "Black Dot" FET)	3.50	4.13
MGF1801 GaAsFET (250mW - 10GHz)	38.27	45.16
UPB582C 2.6GHz PRESCALER (DIVIDE BY 4)	7.43	8.73
CUCLAD 233 0.79MM PCB (TEFLON) 2X1 INCH	2.32	2.74
LLOSSY RUBBER (2X1 INCH PIECE)	1.50	1.77
WG20 WAVEGUIDE (PER FOOT)	10.46	12.34

CHEQUES WITH ORDER PLEASE MADE OUT TO P SUCKLING. POST ADDRESS: 314A NEWTON ROAD, RUSHDEN, NORTHANTS, NN10 OSY, UK. TEL +44 - 1933 - 411446 (01933-411446 NATIONAL).

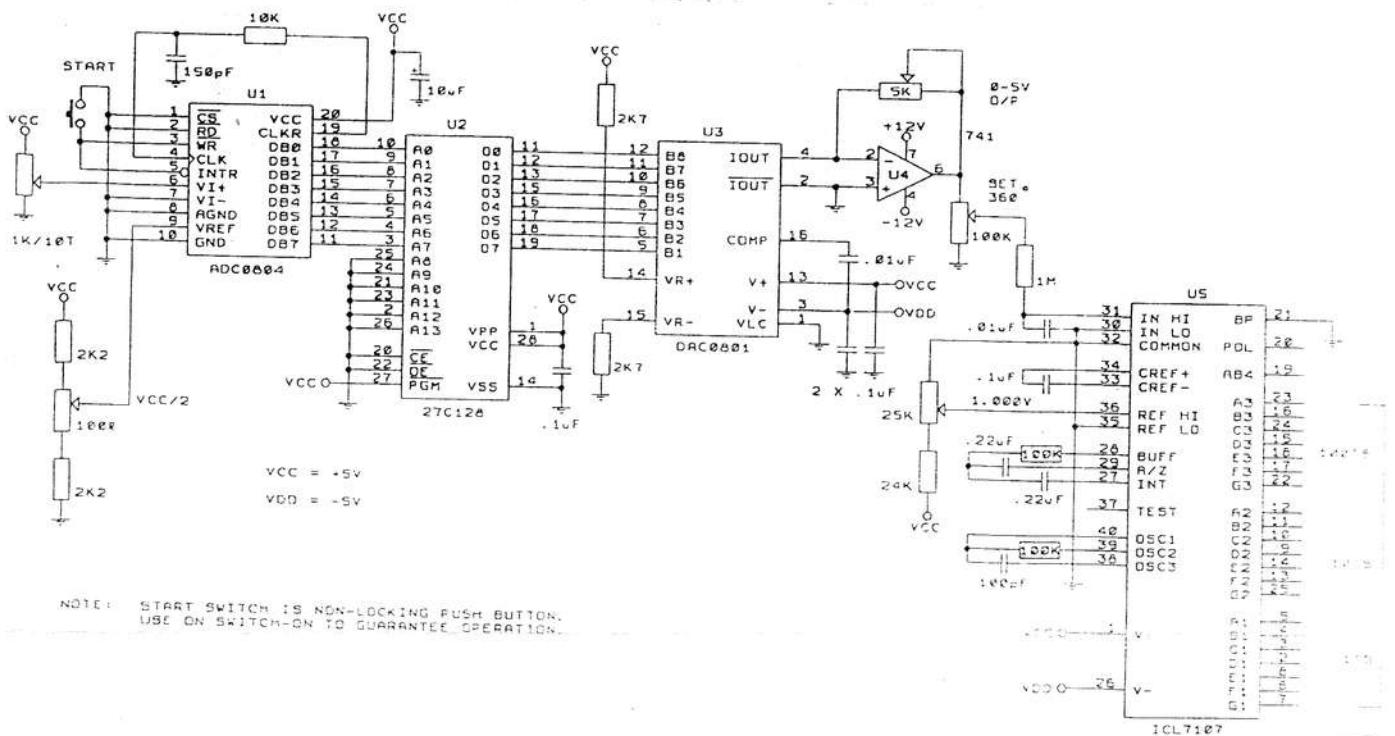
ALL PRICES INCLUDE UK POST AND PACKING. FOR ORDERS FROM REST OF WORLD ADD 10% TO COVER AIRMAIL CHARGES, TO TOTAL ORDER VALUE. PAYMENT BY EUROCHEQUE, STERLING TRAVELER'S CHEQUE, OR STERLING CHEQUES DRAWN ON A UK BANK.

AZIMUTH AND ELEVATION ROTATOR DIGITAL READOUT by CES VK6AO

When I started putting together ideas for a dish for EME and Satellite, I decided that I wanted digital readouts for the azimuth and elevation. One reason for this was that I had a heap of LED 7 segment common anode displays and suitable display drivers were available that only required an analog i/p. The elevation presented no problems but I could see that there would be for the azimuth readout, at least for me anyhow. I decided that south would be the no-go point, the place to put the limit switches, and the dish would swing through north. Position indication would come from a multi-turn pot geared to the rotator drive shaft and the o/p voltage would vary from 0 volts at south up to +5 volts back at south again.

My problem was that at the half way point with dc voltage at 2.5 volts, the digital readout had to swing from 001 degrees (coming up through east) to 360 degrees and then on down to 180 degrees when the voltage reached its maximum of +5 volts. I presented my problem to one of the engineers in the R&D section at the Salt mine. Without much thought on the problem he suggested using an A/D, an EPROM and then a D/A, doing the required conversion in the EPROM. These blokes work amongst μ P's and EPROMs all the time so I suppose the answer was to be expected. My working life has been nearly all analog.

In the schematic it can be seen that I used a 27C128. This is a case of using what was available. A 2716 would be more than big enough. The A/D and D/A are 8 bit, anything else is too expensive plus 256 bits of data for 360 degrees gives a resolution of 1.4 degrees per step. My dish will have 3db points of 4.5 degrees. Producing the HEX file for the EPROM was easy using NORTON's DISKEDIT. If anyone wants a copy of the file I'll be only too happy to supply one.



AZIMUTH DIGITAL READOUT

15-04-85

HINTS FOR VHF/UHF PORTABLE OPERATION by Walter J Howse VK6KZ

Experience suggests the following.

1. Don't Leave Anything Home - Make sure you leave no part of your gear at home. For example, it is very difficult to operate without a microphone, a connecting power cable or the coax! My portable gear is built into a rack so that to operate it from the field requires a minimum of external connections. ie to the power source (12 volts) and the antennas. There is a minimum of setting up required and the equipment can be operated in the home station situation as well as out in the field. In my case the equipment is actually the home station although there are linears between the rack and the antennas. Hopefully any faults that develop will arise at home rather than in the field! This arrangement also saves money!

2. **Think Of Safety** - For many years, I operated from a car. More recently I am able to operate from a campervan. The following comments apply to the car but the general principle is the same! For reasons of safety and security, the portable equipment was carried in the boot of the car. This had a major disadvantage in terms of operating comfort as one was in the open air, but this was not found to be a major disadvantage until it rained. Of course I wore very warm clothing for night operation particularly on the south coast of Western Australia where the winds are usually strong from the ocean! From a security point of view, equipment which is out of sight is safer than where it is to be visible to the casual passer-by. The mounting of the gear in the boot also provides that added comfort of knowing that, if a vehicle accident were to occur, there are no pieces of equipment to act as missiles within the car itself. In the campervan, the equipment remains in its steel frame and this is placed inside one of the cupboards and then bolted down. Don't forget that if you have a second battery bolt it firmly to the vehicle so that in case of accident it will not be a heavy missile and shower sulphuric acid over everything (including people in the vehicle if the battery is inside the passenger compartment).

3. **Mount Antennas On The Vehicle** - Usually the point chosen for portable operation will not provide the necessary poles or other means of support for masts for antennas. For the car I had a roof-rack which had three sockets - made from 25mm waterpipe and appropriate aluminium tubing was placed in these to act as the mast for the antennas. A bolt was tapped through the socket so that the tubing could be prevented from turning. No longer is there the need for one tall son who in 1976 held the 432 Mhz antenna for my first contact across the Great Australian Bight!! The current arrangement on the campervan follows the same system. Appropriate sockets are mounted on the roof bar, on the tow bar and the rear-end protection pipe has a socket welded on both the left and right hand ends. The aluminium tubing is in short lengths (approx 1 metre) with a "V" filed in each end, and 150 mm lengths of slightly larger tubing with two self tapping screws is used as a joining piece for successive lengths. The screws fit into the "V" slot and lock one length with the next. I have found it possible to mount the antennas in one of the sockets at a height just above the roof line of the car and the campervan (in what I call the fox-hunting position) and to drive with them in that position from the home QTH to the portable location. In the early days I carried a spare length of aluminium tubing from which I could cut a new element if vibrations caused an element to break. However this has turned out as unnecessary with my 144 Mhz 5 element beam having now travelled well over 10000 Km at speeds up to 110 Km/hour in that position without damage. I also leave the coax connected to both the 144 and 432 Mhz beams so that it is possible to stop, quickly add a length of masting and listen or transmit from the side of the road.

4. **Don't Forget The Spares** - The portable operator should carry a number of either back-up components or alternatively design some redundancy into the components which are being used. For example, coaxial cables to the antennae can be interchangeable so that if one cable fails on one band then operation can continue by changing the second cable from one antenna to another. Some tools and a multimeter also help. Had it not been for a 12 volt soldering iron which could be plugged into the cigarette lighter socket of the car, the world record for 1296 Mhz between VK6KZ portable at Walpole and VK5MC at Hatherleigh in 1979 would not have been possible.

5. **Study Maps** - Success on VHF and UHF is facilitated by the study of maps, particularly those containing contours, prior to departure for a portable location. These were readily available from the Western Australian Department of Lands Administration - although not all portions of this State are covered by maps carrying contours. No matter what the cost of the maps, you can save that cost in reducing distances driven. Search for good operating sites in daylight hours rather than at night. It is very frustrating to find a high point with trees obscuring the take-off or high voltage power lines with noisy insulators which are not shown on the map. Daylight gives you a chance of searching out an alternative spot or the least troublesome position on the high point.

6. **Light The Equipment** - The long haul contacts between the south-west of Western Australia and South Australia and Victoria usually occur between the hours of 1600 hours local WA time and 1000 hours the following morning. This means that equipment should be designed to be operated at night and this means that illumination may be necessary for operating the equipment and for making entries in the station log. Those entries will be facilitated by a pen or pencil tied to a string which is then tied to the rig to avoid losing it.

7. **Be Self Sufficient** - The unpredictability of propagation means that a portable operator cannot always judge when the openings will either occur or when they will cease, and hence it is highly desirable to be as self contained as possible with food and water so that it is not necessary to leave the site for a meal break. Don't forget to have a rubbish container so that you can leave a site clean. Have the car fuel tank topped up to retain mobility outside of the normal opening hours of service stations. Attention needs to be given to the power supply used for the portable station. A second 12 volt battery is highly recommended so that a car does not have to be abandoned because the battery is flat. My experience suggests that the most favourable locations for portable operation are isolated and it is not likely that another traveller will visit the spot to assist one to jump-start an automatic transmission car. I monitor the battery voltage and can readily switch between batteries.

8. **Practise portable operation** - It is only by experience that you will find out smooth operating habits and find convenience and comfort in this mode of operation.