

THE PROPAGATOR

MONTHLY NEWSLETTER OF THE ILLAWARRA AMATEUR RADIO SOCIETY.

P.O. Box 1838. WOLLONGONG. N.S.W. 2500.

I.A.R.S. is a Member Club of the Wireless Institute of Australia.

<u>PRESIDENT.</u>	<u>SECRETARY.</u>	<u>EDITOR.</u>
Jim Potts, VK2BBG, 14 John St., WOONONA. 2517.	John Doherty, VK2NHA, 7 Risley Road, FIGTREE. 2525.	Ian Bowmaker, VK2ASN, 15 Akuna St., KEIRAVILLE. 2500.

MONTHLY MEETING. Held on the Second Monday of each Month,
at 7.30 pm., at the Wollongong Town Hall Meeting Room.

CLUB STATION - VK2AMW. CLUB REPEATER - VK2RAW, 2m, Channel 5.

I.A.R.S. MONTHLY BROADCAST.

The Monthly Broadcast takes place on the Sunday preceeding
the Meeting Night each month, at 1900 Hours EAST.

Frequency used by VK2AMW for the broadcast is -
Repeater Channel 5. or Simplex Channel 40.
Relay on 28.460 MHz.

I.A.R.S. CLUB NETS.

6 Metre. 9.30 am Sunday, 52.525 MHz FM.
10 Metre. 8.00 pm Sunday, 28.460 MHz USB.

----- NOVEMBER 1978 -----

Members are advised that the Monthly Meeting of the Illawarra
Amateur Radio Society will be held at the Wollongong Town Hall
Meeting Room at 7.30 pm on Monday 13th November, 1978.

Visitors are most welcome to attend.

SPECIAL TALK FOR NOVEMBER MEETING.

A talk will be given by Mr. John Milton, VK2AQM, Wollongong
District Radio Inspector, on the subject of "Broadcast and
Television Interference - The Rights and Responsibilities of
Amateurs."

This promises to be a very worthwhile talk on a subject which
is of great importance to all Amateurs.

SPECIAL REMINDER FOR DECEMBER MEETING. --- 11th December 1978.

A reminder to members that the December Meeting is to be an
Auction Night. For this to be a success, we are in need of
worthwhile items of equipment for sale. So how about a search
through the Shack for those items of gear that you are not
using and bring it along to the December Meeting.

A reserve price may be placed on items offered for sale, and
a small percentage of the final selling price will go to Club
Funds.

We are still in need of technical articles from members for
publication in future issues.

Moonbounce Report - November 1978.

The insurance money has now been received by the Uni. of Wollongong to cover loss and damage of equipment and buildings at Dapto. Quotes have been called for removal and installation of the dish at the new site. An inspection of the new site is to be made this week to select the exact spot at which the dish would be placed.

Following a visit to the Parkes Radio Telescope a few weeks ago, details have now been received of the 'disc' type feed used in it at 408MHz. This feed is a microstripline type radiator, which would give better illumination of our dish than the crossed dipoles now used. A 432MHz version will be made up and installed if our dish move is successful.

The time and assistance given by the CSIRO staff concerned, both at Parkes and in Sydney, is much appreciated.

The Moonbounce transmitter has been reassembled at the home QTH and is being checked out. It will be modified to give maximum efficiency of output.

Satellite News.

Oscar 7- still has some problems but both Modes are generally usable, although on some Orbits it is not on.

Oscar 8- Mode A is good. Mode J could be used much more in this part of the world. On some passes there is virtually no one on. I use a means of 'pulsing' the carrier (with CW ident.) to identify my own signal and a frequency scanner to look at either 100kHz or 25kHz of received bandwidth on the CRO for signals. This makes it somewhat easier to operate via a satellite, but they are not essential by any means.

Russian Satellite RS- has been up for less than a week at the time of writing. It is intended to operate 2 metres uplink and 10 metres downlink and has a CW beacon on 29.400MHz. This beacon is being received very well. Orbit period is approx. 120.4 minutes according to my checks. It orbits in the opposite direction to the Oscar satellites. A telemetry beacon operates on 435.105MHz, but I have not heard it since the weekend. The telemetry information is RTTY.

Although contacts were made by some VK amateurs via the RS satellite during its initial orbits, its communication equipment is at present not operating, hopefully by design, at least while it is in range of Australia.

By the time that this newsletter is being ready, much more information should be available on this satellite.

See you on RS.

Lyle VK2ALU.

NEW COMMITTEE MEMBERS.

At the October Monthly Meeting, elections were held to fill vacancies on Committee.

John Doherty, VK2NHA, was elected to the position of Secretary.

Paul Gardiner, VK2ZQT, and Richard Hill, VK2NNL, were both elected as Committeemen. This followed tied voting on two counts, and a motion that Two new members of Committee be appointed.

NEW ITEMS FOR SALE - IARS STORE.

// A new batch of ARRL Amateur Handbooks has arrived. If you were unlucky previously, now is your chance to get an up to date issue of the "Amateur's Bible" at a very competitive price. //

Also now available, as promised a couple of months ago, is the 2 Amp x 12 Volt Power Supply - in kit form complete with power transformer, and case.

\$25

STOLEN EQUIPMENT.

Recently, Daryl Harman, VK2BLS, had his car stolen. Although the car was recovered, the 2 metre equipment was missing. Any information concerning possible recovery of the equipment may be given to Les Kirchmayer, VK2ALK, phone 56 3174.

- (1) Converted Commercial - VINTEN MTR/20A resprayed crackle black. Fitted with Channel 5 and Channel 40, with a S-meter added to the front panel.
- (2) 2 metre antenna - 5/8 whip.

FOR SALE.

Moving QTH, - Two masts for sale.

- (1) 30 ft self supporting Southern Cross tower.
- (2) Home made tilt over tower, with winch to wind up to 45 ft.

Price for both towers is \$350., or you can have both for \$300 if you care to pull them down yourself.

Contact Ian Miller, VK2NJM, phone 83 2653.

WANTED.

SPEECH PROCESSOR, AC/DC operation preferred, in exchange for a Universal Antenna Coupler (Tokyo Hy-Power Labs Model HC-500)

Contact Ian Miller, VK2NJM, phone 83 2653.

The Wireless Institute of Australia



Founded 1910



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THE UNITED VOICE OF AMATEUR RADIO

DOES IT SPEAK FOR YOU?

Give the Amateur Service a Stronger Voice

JOIN NOW!

DON'T STAND BY AND WATCH US LOSE OUR
BANDS.

CONTACT Geoff Cuthbert,
VK2ZHU, for further
details and Membership
Application Forms.

I.A.R.S. COMPONENTS STORE

CAPACITORS.

GREEN CAPS. .001, .0015, .0022, .0039, .0047, .0056, .0082,
and .01, each 10c.
.039, .047, .056, and .082, each 15c.
.1, .15, and .47, each 20c.
ELECTROLYTIC CONDENSERS, 25V, double ended.
4.7uF, 10c. 100uF, 15c. 220uF, 20c. 470uF, 25c.
2500uF, 50V, 2.00. 4700uF, 50V, 2.00.

TRIMMER CONDENSERS.

~~Wire wrap type trimmers, reduced to ... 5c.~~
PCB mounting trimmers, 3-13pF and 2-20pF, each 10c.

TANTALUM CAPACITORS.

.47, .1, 1.5, 2.2, 4.7, & 6.8 mF each 20c.
10mF, .. 25c. 22mF ... 45c. 47mF ... 65c.

NEOSID COILS.

Former .. 10c. Slug, F29 (VHF) ... 10c.
Cans.... Single, 10c. Double, 15c.
Small Balun Former, 15c.
Coil former and can complete, 10c.

CABLES AND CONNECTORS.

Belling Lee. ~~Sockets, 50c.~~ Connectors, 50c.
PL259 Plugs, 1.00. SO29 Sockets, 1.00.
Adaptors for RG58U cable for PL259 plugs, 25c.
CO-AXIAL CABLE. RG8U (heavy) ... 1.20 per metre.
RG58U (light) ... 50c. per metre.
Sheathed, light hook-up co-ax, lengths of 4 metres, 1.00.

METERS. S Meter 400uA 1-5/8 x 5/8 2.50.
~~Level Meter dual 200uA meters, illuminated. ... 3.00.~~
~~2" sq. 100mA centre zero meters. 6.00.~~

RESISTORS. Bag of 160 1/2 watt resistors. ... 4.00.
10 each of values 10, 47, 68, 100, 220, 470, 680,
1K, 2.2K, 4.7K, 6.8K, 10K, 22K, 47K, 68K, & 100K.

DIODES. 1N4148 ... 10c. 1N41 ... 10c.
EM404 ... 20c. EM410 ... 25c.

LED's. colour RED 35c each.

I.C's. 741 ... 85c. LM38 ... 1.85.
7812 regulators ... 2.00. NE555 ... 90c.

TRANSISTORS. MIF131 ... 85c. BC109 ... 35c.
2N3568 .. 30c. TIP32A .. 50c. BF167 .. 50c.
2N3054 .. 80c. 2N5405 .. 95c. 2N5457 .. 50c.
2N5459 .. 50c. 2N5416 .. 50c. 2N3568 .. 30c.

PCB TRIM POTS.

Values, 2K, 5K, 10K, 25K, 50K, & 100K. .. 25c each.

PRINTED CIRCUIT BOARD.

Fibreglass PC board, 16" x 10" or on one side.

Sheet sizes - 18" x 5" ... 1.50.
12" x 4 1/2" ... 1.00.

POTENTIOMETERS.

Values of 5K, 10K, & 25K. each 50c.

SUPPRESSOR RESISTORS for ignition high tension leads.
In line, screw type. each ... 50c.

SUNDRY OTHER ITEMS. Cable clamps .. 10c. ea. Plastic Tape .. 20c.

Power Cords... 1.00 ea. Wafer Switches... 1.00 ea.

Meter Leads... 20c. pair. Four Pin Plug & Socket... 10c.

Alligator Clips - large, insulated. Red or Black... 10c.

DUMMY LOAD

A simple dummy load is useful in carrying out non-radiating tests and tuning up transmitters. Currently there is available some MORGANITE type 701, 80 ohm \pm 15% non-inductive carbon resistors of at least 50W rating and experience has shown, more than adequate for tuning up H.F. rigs such as Kenwood TS820, 520S, YAESU FT101E etc.

The following is a brief description of a dummy load using a MORGANITE type 701 resistor for use at V.H.F. This is based on an article in the RS.GB Handbook, 4th Edition which describes the MORGANITE type 702 which is the same cross section but only half the length.

The physical form of the 50W dummy load components are shown in the sketch, and are that of a hollow carbon tube with an inner rod down the centre; thus it represents a short length of coaxial line and its characteristic impedance is determined by the radii of the inner and outer conductors in a similar manner. One end of the line is closed with a disc of copper, while the other end is fitted with coaxial connector. The dimensions of the coaxial line are determined by those of the MORGANITE type 701 tubular carbon resistor which forms the outer conductor. The MORGANITE type 701 has an overall length of 250mm, inner diameter of 15mm and outer diameter of 25mm. The outer cylindrical surface is plated for a distance of 25mm from each end to assist in making electrical contact to the resistor. The diameter of the inner conductor is calculated from the formula:

$$Z_0 = 138 \log_{10} \left(\frac{D}{d} \right)$$

where D is the inner diameter of the resistor and d is the overall diameter of the inner conductor Z_0 is the required impedance.

(For $Z_0 = 50$ ohms and $D = 15$ mm $d = 6.52$ mm approx.
or $\frac{1}{4}$ inch.)

The length of the inner conductor is made sufficient for it to project through a suitable hole in the centre of the shorting disc when assembled so that it can be soldered up as a final assembly operation.

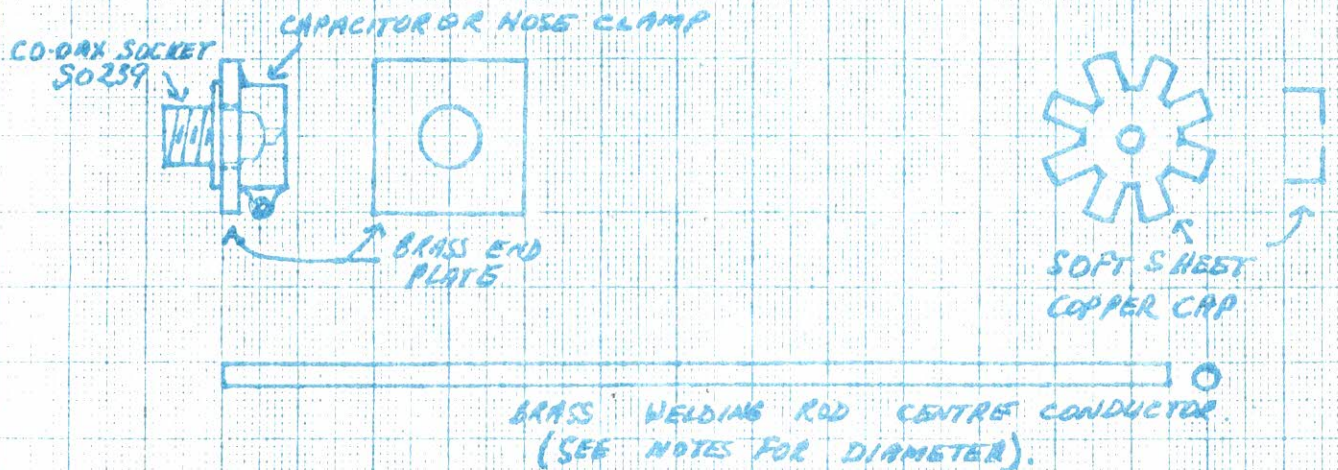
Connection to the outer conductor is made by means of a 25mm dia. capacitor or hose clamp, which is in turn screwed or soldered to a 50mm sq. by 3mm thick brass plate, referred to as the mounting plate. On the other side of the mounting plate is the Amphenol socket used to make the external circuit connections. The inner of the Amphenol connector is soldered to one end of the inner conductor of the line.

The shorting disc is soldered to the free end of the resistor using the mounting ears which are bent over so that they lie over the cylindrical plate area of the resistor. A very hot iron is required for this operation to ensure that the solder flows freely. It is not desirable to go over it more than once because the plating on the carbon will tend to lift off.

The unit can then be mounted in a suitable R.F. screen enclosure. The usual methods of heat dissipation will increase the rating of the resistor.

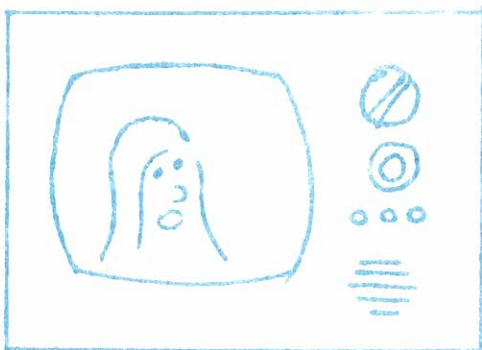
DUMMY LOAD.

MORGANITE TYPE 701 RESISTOR

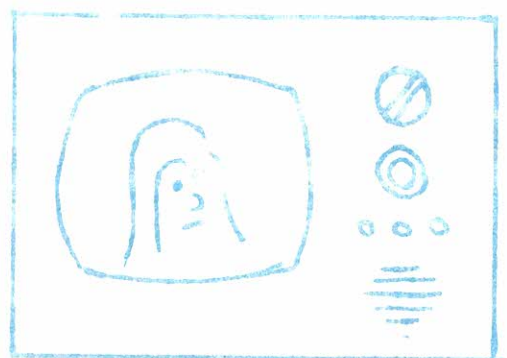


VK2NH1/258.

Television Interference ?



"O Romeo, Romeo !
wherefore art thou Romeo ?"



" ROMEO TANGO
HOTEL QUEBEK "

FROM "A READER"

20m GROUNDPLANE ANTENNA

By: Ron May, VK1PM
74 Brereton St.,
Garran. 2605
832213 (BH)

Artwork: Ray, VK1ZJR.

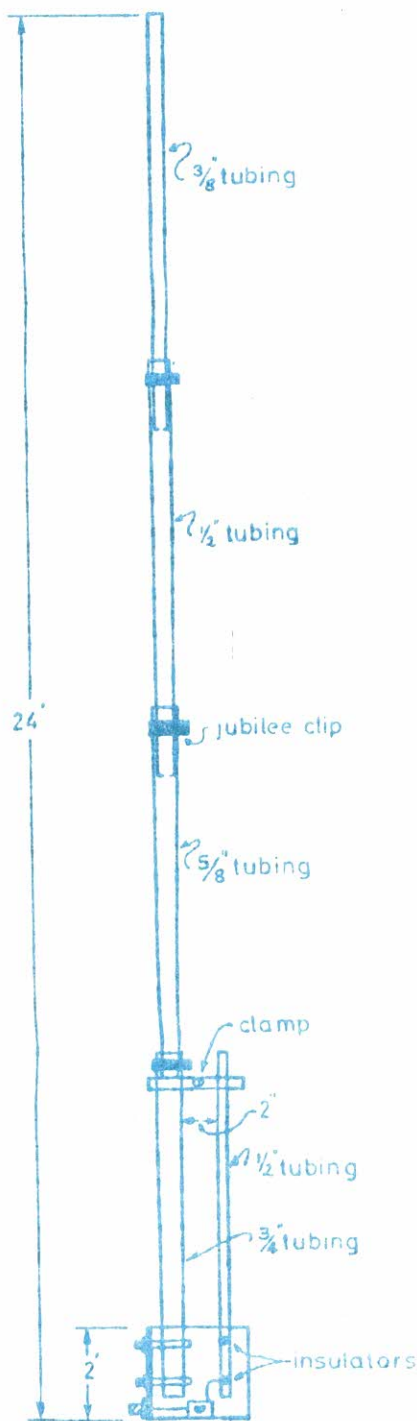


Figure 1

3/8 WAVE GROUND PLANE ANTENNA

Grounded vertical antennas with a tapped feed point, the so called gamma-match, are well known.

A gamma matched vertical antenna which is $3/8$ wavelength in height was found to have useful advantages for 20 metre band operation :

1. It satisfied the primary objective of occupying a minimum of space with maximum efficiency of radiation.
2. It was easy to construct from available materials at low cost.
3. It was more effective on 20 metres than an existing well known multiband trapped vertical antenna.

The improvement in efficiency over the usual $1/2$ wavelength vertical or trapped multiband vertical antenna is obtained by a combination of factors each small but adding together significantly.

1. The angle of max. radiation is reduced.
2. The antenna aperture is greater.
3. The base radiation resistance is increased resulting in reduced ground current losses.
4. Better impedance matching.
5. Increased bandwidth.

Referring to the drawings, the antenna was constructed of sections of $3/8$ ", $1/2$ ", $5/8$ ", and $3/4$ " aluminium tubing adjacent sections of which closely fitted each other. A pair of 1" slots are cut in each end of the sections over which "Jubilee" hose clips are tightened when the adjacent ends are telescoped for about 6 to 9 inches.

U-bolts clamp the base of the antenna to a 2' piece of 3" x 3" slotted angle steel (Dexion or similar). Two 4" pieces of $1/2$ " aluminium "U" section clamp the top of the gamma section to the antenna for an outside spacing of 2". The standoff insulators are cut from $3/4$ " fibre glass rod and attached between the angle steel and gamma section by self tapping screws inserted in holes drilled co-axially in the ends of the insulators.

The slotted angle steel can be bolted to a similar horizontal section as a base for mounting to any convenient chimney, post, etc. In this case, the base was mounted on a carport metal roof using a left over piece of steel decking (Stramit, Monodek, etc) to which the antenna base was bolted. The piece of steel decking was then clipped over the carport roof decking so that holes were not made in the roof.

Soldering or other direct connections are not required between the base and ground plane steel decking because of the small antenna base current, or in other words, the relatively large antenna base impedance.

Four $1/4$ wavelength radials (16'8") could be used if

cont. over

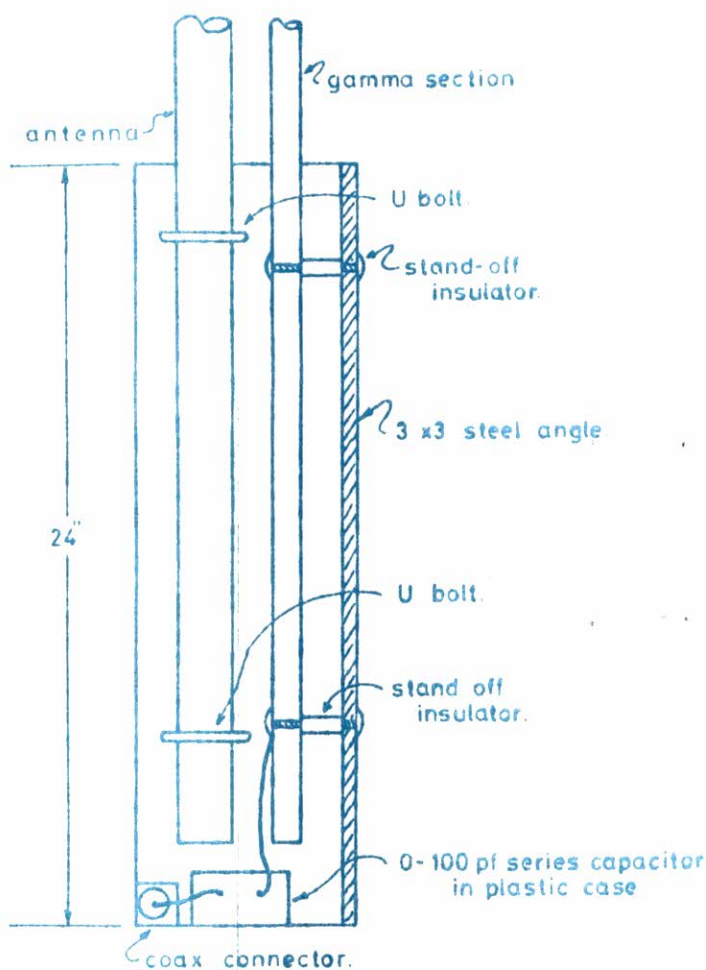


Figure 2

DETAIL OF BASE

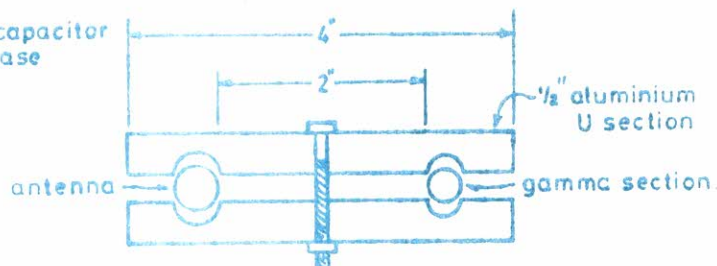


Figure 3

CLAMP

the ground plane if more convenient.

The series air-spaced variable tuning capacitor should be covered against rain and dew by a small plastic container.

To tune the antenna, the transmitter is tuned to the centre of the 20 metre band on a dummy load of the same impedance as the co-ax line to the antenna. This can be done on low power with a few 1 watt non-inductive resistors in parallel to give the right value. The antenna is then connected in place of the dummy load. The series capacitor in the gamma section is tuned for minimum SWR, which should be 1:1 at approx. 80 pF. If a satisfactory SWR is not achieved, the length of the antenna should be adjusted and the capacitor retuned.

It was found convenient to connect the SWR bridge at the antenna end of the co-ax line and to make the adjustments while remotely keying the transmitter on CW at the minimum power required to operate the meter.

The antenna could be scaled down to 15m or 10m operation by taking resp. 3/4 or 1/2 the lengths shown for 20m for the antenna and gamma sections.

STOP PRESS

CIRCUIT DIAGRAMS AND CONVERSION
DETAILS FOR MTR 25-131 RECEIVERS
FOR LOW BAND FM. (52.525) WILL
BE AVAILABLE AT THE MEETING OR
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KENWOOD BS5/BS8 Panoramic Adaptor for above.....	\$ 57.00
KENWOOD TS820S - The Ultimate -	\$1175.00
KENWOOD TS520S - Most Popular -	\$ 699.00
KENWOOD TR7500 2 Metre P.L.L. Mobile.....	\$ 275.00
S.B.E. "Sidebender" 10 Metre Mobile.....	\$ 150.00
KENWOOD R300 All Band Communications Receiver.....	\$ 260.00
KENWOOD AT200 Antenna Coupler - S.W.R. - Power Meter- Coax Switch.....	\$ 173.00
HANSEN Transformer Coupled Power Meter Reads True P.E.P. and R.M.S. to 200 Watts.....	\$ 82.00
NAGARA V5JR Trap Vertical 80-10M.....	\$ 150.00
CUSHCRAFT ARX-2 2 Metre Ringo Ranger.....	\$ 49.00
HANSEN Dummy Load 30 Watts up to 150MHZ.....	\$ 15.00
DAIWA FD30LS Low Pass Filter Cut Off Rrequency 32MHZ 3 Stages - Top Quality.....	\$ 20.00
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HI-MOUND HK702 Morse Key Marble Base.....	\$ 38.00
KENWOOD DG5 Digital Display for TS520S.....	\$ 187.00
DAIWA DR7500 Med Duty Rotator Fully approved C/W Circular Scaled Indicator.....	\$ 189.00
DAIWA DR7600 Heavy Duty Version of above.....	\$ 259.00
KENWOOD HC2 Hamclock.....	\$ 34.00
KENWOOD TS7005P All Mode 2 Metre Transceiver AC-DC Full Digital Readout.....	\$ 812.00

** DUE FOR RELEASE NOVEMBER **

KENWOOD TS120V 80 Thru 10 Metre Mobile, Styling Similar
to TS820 but Much Smaller. Digital Display - I.F.
Shift - Noise Blanker - Analog Dial 25KHZ Per Rev -
Vox - R.I.T. 30 Watt P.E.P.....\$ 604.00

CONTACT BARRY HARTLEY VK2FE

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Prices Subject To Alteration Without Notice.
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THE PROPAGATOR

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Amateur Radio Society

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CATEGORY B.

MR. L. PATISON VK2ALU
98 HEASLIP STREET
WOLLONGONG
115 2500

I.A.R.S.

P.O. Box 1838,

WOLLONGONG, NSW 2500

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