

Q S X
P E

*Port Elizabeth Branch of the
South African Radio League*

P.O.Box 462, Port Elizabeth. 6000.



National Call	145.5 Mhz
P.E. Repeater	145.05/65
Grahamstown	145.15/75
Lady's Slipper	145.10/70

ZS2PE

Bulletin: Sunday 08h40
HF: 40m – 7098 KHz
VHF: FM-145,700 MHz



Port Elizabeth Branch

NOTICE OF MONTHLY MEETING

THE NEXT GENERAL MONTHLY MEETING OF THE BRANCH WILL TAKE PLACE ON FRIDAY 17th JUNE, 1983, AT THE Y.M.C.A. HAVELOCK STREET, PORT ELIZABETH AT 8P.M.

We hope to have a talk and show on some of the latest electronic medical equipment.

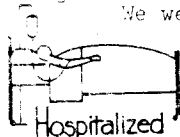
COMMITTEE MEMBERS.

Chairman: Dick ZS2RS (322111)	Vice Chairman Trevor ZS2AE (321746)
Secretary Marge ZS2OB (303498)	Treasurer Brian ZS2AB (303498)
Projects Lionel ZS2DD (321770)	Special Events Colin ZS2AO (312471)
P.R.O. Fred ZS2EQ (0422-31419)	Awards Attie ZR2DY (325349)

QSX-PE - ZS2OB and ZS2AB

NEWS

TRAVELLING ABERCAD: At the moment, Cyril ZS2CK and Bette ZS2LG Goodman are visiting the warmer climes of Spain, Portugal, Morocco and environs and we trust they are enjoying themselves and not picking up any Spanish germs. Also away from home for about two months, but unfortunately on business not pleasure, is John St. Clair ZS2JR. Did you take the portable organ, John? WELCOME: To Jenny Bankier of Sedgefield near Khynsa who has recently joined the Branch. Jenny is studying for the FMG exam in November and hopes to get her licence for use on the yacht she and her husband are building. Welcome and good luck Jenny.



We were sorry to hear that Neil Holmes ZS2AI was in hospital for an operation in East London, but very happy to hear from the latest news that the operation was not necessary and that Neil is back home again. Keep up the exercises Neil and you will soon be 100% again. Good luck and good health.

MOVED QTH: Kevin Eastwood ZR2EH has made a short move from Witenhage to Port Elizabeth, in fact very close to the Y.M.C.A. We hope that you have settled in well, Kevin and that we will see you at meetings often. Also moved to somewhere I can't find on any map, is James Crichton ZR2CZ and family who were originally in Grahamstown. The new QTH is Bayswater, given with a P.E. post code, but I am at a loss to find it here. Any help would be gratefully accepted!

BRANCH A.G.M. AND BRAAI: Peet van Heerden ZS2BX of Nieu Bethesda has reminded members that he will be providing a spit braai of delicious Karoo mutton for the event, and he hopes that as many members as possible will be able to attend.

BRANCH BULLETIN ON 80 METRES.

As members are no doubt aware, - those that listen to the Branch bulletin on Sunday mornings - our position at the top end of 40 metres has become somewhat untenable of late with the commercial QRM which has plonked itself spot on 7100. It is not too bad when they are just talking, but once the music starts, it is sometimes almost impossible to copy. It was therefore decided at the last Committee meeting that a relay from 2 metres of the bulletin would be made on 3640 KHz by Brian ZS2AB and if anyone would like to listen there and report in afterwards we would appreciate reports of reception. As you can see further on in QSX-PE an article on shortened 80 metre antennas has been printed. This is the work of Bill Browne ZS2BY who has much experience and success with shortened antennas after his work on Total Rally communications. Perhaps Div 6 hams could get more joy on 80? We seem to have lost touch with Div 6, Div 4 and 3D6. Hope it works.

MINUTES OF THE GENERAL MEETING OF THE PORT ELIZABETH BRANCH OF THE
SOUTH AFRICAN RADIO LEAGUE HELD AT THE Y.M.C.A. ON FRIDAY 20th MAY,
1983.

The Chairman welcomed all to the meeting, especially Lyn Crothall, Christopher Scarr, Alan ZS2AJ and Vicky Ansell, John St. Clair ZS2JR Trevor Elliott ZS2TJ and the Knapp family, Gordon, Joan and Bobby.

PRESENT: 21 members and visitors.

APOLOGIES: ZS2DD, ZS2RT, ZS2VM and Pat Richards.

MINUTES: The Minutes of the meeting held 15th April, having been published and circulated in QSK-PE, were taken as read and proposed by Attie ZR2DY and seconded by Colin ZS2AC.

ARISING: The question arose whether the statement that the chairmen of the 5 biggest branches would take over editorship of Radio ZS. The Chairman explained that this had been proposed but at the AGM they had decided to hand over to ZS6AKV.

FINANCE: The Treasurer reported that he had paid an electricity account and R31 to Headquarters. There was very little money coming in. The Chairman reminded members that they had been asked to contribute, wherever possible, the small amount of R2 per month, otherwise we would have to have other fundraising ventures, but it was vital for the success of the 1984 AGM that we raise the necessary funds. Subs were due at the end of June and perhaps members would include donations at the same time.

CORRESP: The following correspondence was tabled:
(1) Various branch newsletters.
(2) Municipal regulations and by-laws re antennas.
(3) Letter from Bandplanner re AGM motion No. 36.

GENERAL: The Chairman mentioned that Cyril ZS2KX and Bette ZS2LO had left for Spain and various other countries on 14th May. He also wished those who had written the FM3 exam in May every success and hoped to hear they had licences soon. Lyn Crothall mentioned the newspaper article regarding the ham who hoped to operate from the space shuttle later this year. The Chairman then told members of the proposed trip to Bushmans River to the holiday qth of Trevor ZS2AE for a social get-together in place of the trip to Grahamstown which had proved somewhat expensive. Anyone interested to let the Committee know. Gordon Knapp mentioned the possibility of having a monthly auction of parts, etc. with 25% going to Branch funds. The four boxes of canned pineapples donated by Jeff ZS2GJ to AGM funds were available at the meeting and tins would be sold for 25c each. Brian ZS2AE passed on 73s from Jeff to all. Colin ZS2AC had been approached by Ian Ritchie for the Branch to provide communications for the Interberg Enduro Rally in August. It was to be bigger and longer than before and the furthest point would be 130k away. 6 or 7 stations would be required to assist on the Friday and Saturday. It was hoped to get a donation for the AGM fund.

There being no further business, the meeting was closed. John St. Clair ZS2JR showed two very interesting and informative slide shows on outer space and the planets and particularly the photographs taken by the Voyager 1 and 2 space vehicles. These were very well received and Dick thanked John for the show.

sgd:
R.W. Schönborn ZS2RC
Chairman

sgd:
M.T. Jeller ZS2OF
Secretary.

A SHORTENED CENTRE-FED DIPOLE ANTENNA FOR THE P.E. NET ON 80.

The length of a half-wave antenna is given by the equation

$$\text{Length (metres)} = 142,5/\text{Freq MHz.}$$

On 3,64 MHz this means that the required length is 39,15 metres. As we don't all have space for this size of antenna, we must go for a shortened form. While there are other forms of antenna, we will consider only a simple coil loaded version in this article.

Whenever an antenna is shorter than the length required for resonance it becomes capacitive and in order to make it take load this capacitive reactance must be tuned out by a corresponding inductive reactance or coil.

Out of the many possible positions for the coil I have chosen the centre of each side for convenience. The length "A" in the following table is therefore one quarter of the total length of the antenna. All measurements are made from the middle of the centre insulator to the middle of the coil, etc.

The feedline should be 50-75 ohms and coax can be used. A balun at the antenna is desirable, but not essential.

The antenna top can be either horizontal or drooping as long as the feed point is as high as possible.

The table also includes details of possible loading coils. The former should be low-loss. I haven't tried PVC for this use because PVC is lossy at R.F., but it may be worth a try. The turns should be evenly spaced over the winding length. Final tuning of the antenna is done by squeezing turns together or vice-versa after which the coil should be sealed with a low-loss sealer. Even shellac will do although it doesn't weather very well. PVC tape would be possible, but watch for losses.

TABLE

Length "A" metres	Coil Inductance microhenries	Coil (A) (1) turns	Coil (B) (1) turns
5,5	35,7	58 (2)	32
6,0	30,5	53,5 (2)	29,5
6,5	25,7	49	27
7,0	21,3	44,5	24,5
7,5	17,2	40	22
8,0	13,2	35	19,5
8,5	9,4	29,5	16,5

Note (1) Coil (A) has a former diameter of 25 mm. and Coil (B) has a former diameter of 50 mm.
In both cases the former should be about 70 mm. long and the winding evenly spaced over a length of 50 mm.

Note (2) Wire diameter is 0,8 mm. All other coils are for 1 mm. wire.

Finally, the antenna wire can be 1,5 to 2,5 mm gauge. You should use the highest value of "A" that you can accommodate.

Bill Browne ZS2BY.

TECHNICAL NOTES “WALKIE TALKIE ANTENNAS”

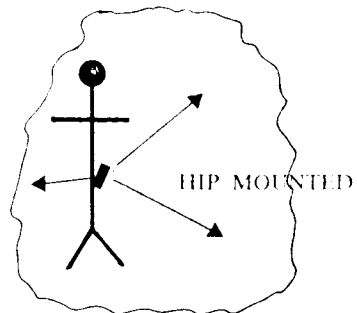
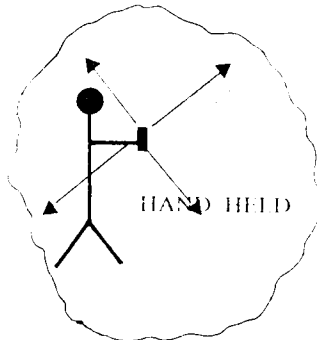
Portable radios are extremely popular and useful but often too much is expected of them to start with and the use of the wrong type of antenna or siting it in a poor location helps to ensure trouble with the customers.

The ideal antenna from the radiation aspect is a quarter wave whip mounted on a large ground plane. Unfortunately the whip is excessively long at some frequencies (e.g. 1 metre at 75MHz) and the ground plane is almost non-existent since the radio is so small. The lack of a really good ground plane cannot be overcome but the size of the antenna can.

The normal method is to wind the antenna into a helix so that the overall length is considerably reduced whilst giving a far more flexible antenna. The reduction in length results in a loss of performance of typically 2dB over a quarter wave whip. Normally helicals are used for frequencies up to high band VHF whilst quarter wave whips are used at UHF since they are physically small in that band. Other possible portable antennas include those mounted inside the carrying strap for the radio or the shoulder mounted antenna, but the proximity of the body causes a considerable loss of performance and neither version has been really satisfactory.

The loss of signal due to the absence of a good ground plane on a portable can be seen by putting a radio on the middle of the roof of a vehicle when reception is bad and comparing it with the performance when held in the hand. The groundplane is worth a couple of dB but walking around with a large sheet of metal underneath the radio is somewhat inconvenient even if the improvement in performance is appreciated.

The position of the antenna relative to the body of the person using the radio is very important. Typical radiation patterns for different positions of the radio are:-



The height is an obvious consideration as experience shows that greater height gives greater coverage, so a hand held radio at head height should be better than one at hip level. The human body absorbs a tremendous amount of the radios energy at VHF/UHF frequencies to such an extent that up to 20dB of loss (a one hundred fold loss!) is possible if the antenna is up against the bulk of the body and on the side away from the base station. When the relatively low power e considered, this sort of loss is disastrous.

A Simple Capacitance Meter You Can Build

How many capacitors do you have that seem useless because they are marked in some strange hieroglyphics? If you're like most experimenters, you probably have a sizeable collection of such unknown capacitors. Here is a simple-to-build meter that you can use to decipher those strange markings and quickly find the right capacitor for the job at hand.

This meter has a reasonably linear scale and has sufficient accuracy to satisfy the needs of most experimenters. The scale linearity is approximately $\pm 5\%$, and the accuracy is about the same. So the purists can stop reading now! If you are looking for a "ball park" capacitance value, however, this inexpensive meter will do the job.

The Circuit

The capacitance-meter circuit (Fig. 1) is similar to one described in *Test Equipment for the Radio Amateur*.¹ Modifications were made to improve the calibration and the scale linearity, however.

Six capacitance ranges, from 200 pF to 10 μ F full-scale, are provided on the meter. While experimenting, I found that the characteristics of the 555 IC used in this circuit varied with temperature and from one IC to another. This resulted in problems when using a 100-pF, full-scale range. As a compromise, I selected 200 pF full-scale as the lowest range. The other ranges are in decimal relationship to one another.

To improve the meter accuracy, range adjustment trimmer resistors were included on the 200-pF and the 0.001- μ F ranges. Fixed-value resistors may be substituted for these trimmers if you can tolerate the decreased accuracy.



In this circuit, the 555 is used in the monostable mode. One side of the unknown capacitor is switched between the positive and negative supply terminals by the 555 at a rate determined by R_A , R_B and C_1 . When connected to the negative terminal, the capacitor charges to a value near the supply voltage. When switched to the positive terminal, the capacitor discharges. M1 indicates the average discharge current value. It can be shown that

This weekend project can save you time and money!

By Harry M. Neben,* W9QB

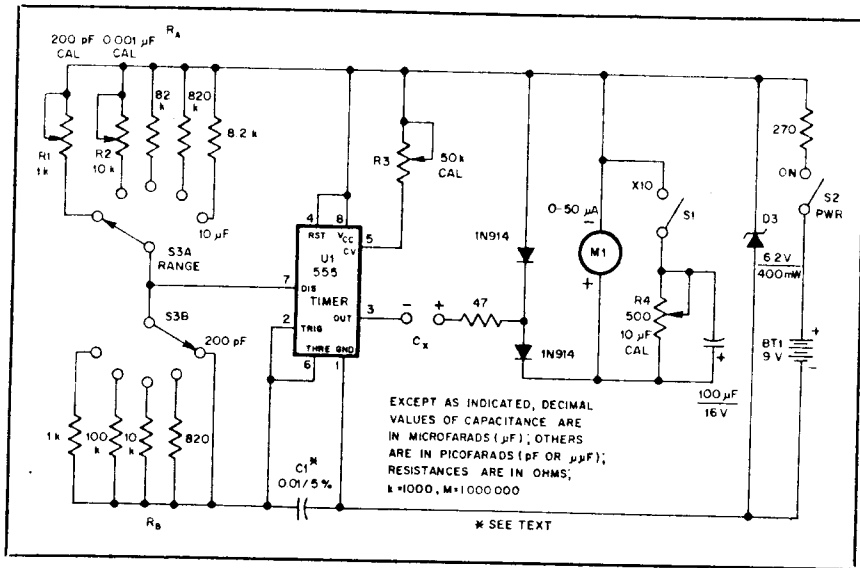


Fig. 1 — Direct-reading capacitance-meter schematic diagram. Resistances R_A and R_B discussed in the text correspond to the resistors selected by the range switch (S3). S3A selects the value of R_A , while R_B is selected by S3B. All fixed resistors are 5%, 1/4-W carbon types. Polarized capacitors are electrolytic. Numbered components not listed below are for text reference only.

BT1 — 9-V transistor-radio battery.

R1 — 1-kΩ pc-mount trimmer.

R2 — 10-kΩ pc-mount trimmer.

R3 — 50-kΩ pc-mount trimmer.

S1, S2 — Spst toggle switch.

S3 — 2-pole, 5-position rotary switch.

U1 — 555 timer IC.

$$I_{\text{avc}} = \frac{V \times C_X}{(R_A + 2R_B) C_1} \times K \quad (\text{Eq. 1})$$

where

V = voltage to which C_X is charged

K = a constant, depending upon the IC characteristics and the charge and the discharge time of the 555 circuit.

In this formula the internal resistances of the 555 IC are included in R_A and R_B . Therefore, I found it advisable to use trimmer potentiometers for meter calibration on the two lowest ranges.

Because the calibration is voltage-sensitive, a 6.2-V Zener diode is used to provide a constant voltage to the measuring circuit. While this places an additional current drain on the battery, the total current required is less than 10 mA, so the battery has a fairly long life.

Construction

All the components for this meter were purchased as stock items from a local parts store. [A complete parts kit is available from Circuit Board Specialists, P.O. Box 969, Pueblo, CO 81002. — Ed.] There are no specialty components to frustrate the builder. The meter is a 50-μA unit. All fixed-value resistors are 1/4-W, 5% carbon types. As the value of C_1

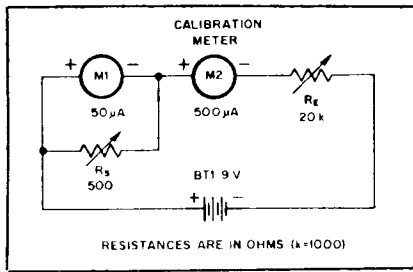


Fig. 2 — Suggested circuit for determining the value of the 10- μ F range shunt resistor. After R_S is set to the correct value, it is used as R_4 in the capacitance-meter circuit. The procedure for setting R_S is discussed in the text.

determines the range and the accuracy of the meter, this capacitor should be as stable as possible and, therefore, of the highest available quality.

Front-panel layout is conventional, with the meter, the range-selector switch and the measuring terminals in line from the top to the bottom of the panel. The OFF/ON switch is mounted to the left of the range-selector switch and the 10- μ F range switch is mounted to the right. The IC and most of the other components are mounted on a small piece of perf board or on the range switch.

Before completing the meter wiring, it is well to determine the resistance necessary to produce a 10- μ F range. This resistance (R_4) shunts the 50- μ A meter, increasing the full-scale reading to 500 μ A.

To establish this resistance, another meter, such as a VOM (volt-ohm-milliammeter), must be used. Use the suggested circuit (Fig. 2) to determine this resistance. Set R_S to the lowest possible resistance before you start this procedure, to avoid damaging M1. Connect R_S across the terminals of M1. Connect this combination in series with the calibrating meter, R_E and the battery. Adjust R_E until the calibrating meter reads 500 μ A. Adjust R_S until M1 indicates 50 μ A. Re-adjust R_E until the calibrating meter again

reads 500 μ A, and adjust R_S so that M1 reads full scale. You may have to repeat this procedure several times to obtain a full-scale M1 reading when the calibration meter reads 500 μ A. Once R_S is set to the correct value, it can be used as R_4 in the capacitance-meter circuit (Fig. 1). Now the wiring of the capacitance meter may be completed.

Calibration

You can calibrate the meter using capacitors you have on hand. The more known-value standard capacitors you have, the easier the job is to do. Yet, you can calibrate this meter with only a 0.01- μ F capacitor. Well, almost!

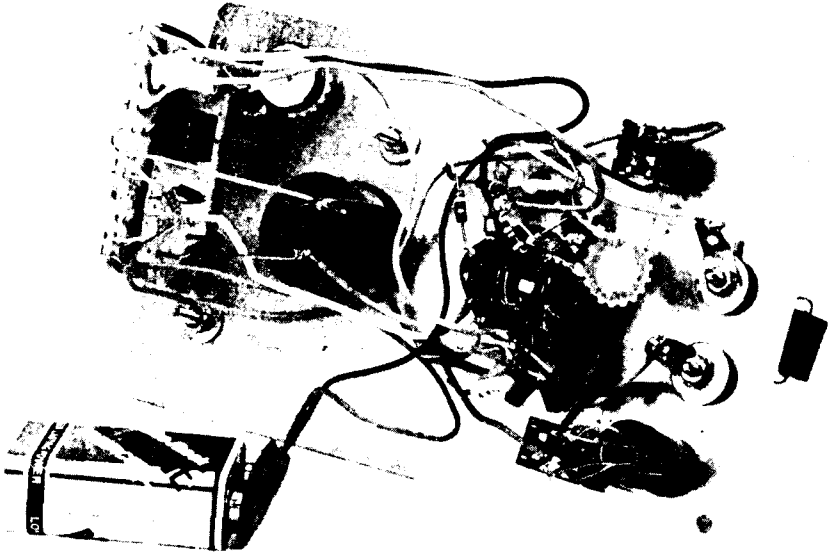
Begin calibration by placing the range switch in the 0.01- μ F position. Attach your most accurate 0.01- μ F capacitor to the C_X terminals. Turn on the meter and adjust R_3 so that M1 reads full scale. This adjustment calibrates the 0.01 μ F, the 0.1 μ F, the 1.0 μ F and the 10- μ F ranges.

To calibrate the 0.001- μ F range, leave the 0.01- μ F calibrating capacitor connected to the C_X terminals. Place the range switch in the 0.001- μ F position and place the 10- μ F range toggle switch in the 10- μ F position. Adjust R_2 until M1 reads full scale. When the 10- μ F range switch is returned to the OFF position, the meter will read 0.001 μ F full scale.

The 200-pF range is calibrated by first selecting a 200-pF or less (preferably 200-pF) capacitor. Measure this capacitor using the 0.001- μ F range. Place the range switch in the 200-pF position and adjust R_1 so that the meter reads the value you found while using the 0.001- μ F range. This completes the calibration.

Remember, the meter scale reads 0 to 50. So, unless you redraw the scale, you must use a scale factor on each range. This should not be a problem for most experimenters. I think you'll find that using this meter will make your next search through that sea of unmarked and unknown capacitors *much* less frustrating.





This interior view of the capacitance meter shows the parts placement used by the author.

WANTED.

Antenna Noise Bridge. Omega or Palomar Type.
Please contact Dudley Forsyth. ZS2AW.
10 Cromwell Street. Grahamstown. 6140.

FOR SALE.

Sharp MZ 80 A (32k RAM; 4k ROM) 280 Microprocessor.
Unit includes built-in screen, numeric pad,
"Qwerty" keyboard and built-in tape deck.
GP - 80 D graphics printer included. The Lot -
R2000.
Contact Gordon Knapp 30-6776. (041).

This and That.

SUBSCRIPTIONS are due for renewal at the end of June and Headquarters will be sending account cards to members in the post during this month. Subs for this year are R20 for ordinary membership and R10 for all other classes, except social membership of this Branch which still stands at R5. PLEASE remember to return the card and subs to the BRANCH TREASURER and NOT to Headquarters, as this involves much communication and postage between HQ and the Branch and sometimes causes a delay in the up-dating of records. Should you find the subs too much to pay at one go, have a chat to the Treasurer and you may make your payment over two months - if you like send a post-dated cheque, but PLEASE let us know of your intentions. We would hate to lose you, YOU AS A PERSON are valuable to us and remember - there should be better and bigger things in the future - Radio ZS!

While on the subject of Radio ZS, we would like to put it in writing, the sincere thanks of all the members of this Branch to the former Editor of Radio ZS for his sterling work in the past. While many of us have had our little grumbles in the past, let me tell you that putting together a Newsletter is not always the easiest, so you can just imagine what it is like to edit a magazine for national consumption. So we extend to Derek Siegal ZS1DF the heartiest thanks from the members of the F.E. Branch.

As you are no doubt aware, The League unanimously passed the motion at the 17M that the history of the League be compiled, so if any of our members, especially the "Old timers" have any information or literature that will be of use, either send it directly to Kees van der Merwe at Headquarters or let the Secretary ZS20B have it and we will send it on all at one go. Thanks in anticipation.

FAMOUS HAM DIES - Anyone remember the first American in space? No, it wasn't Alan Shepherd or John Glen. It was a flying chimp called Ham. He was trained to operate levers and push buttons in response to flashing lights and completed his Mercury mission in fine form. Ham died recently at the grand old age of 26.

Thanks to Durban Branch Newsletter CQ.

1984 AGM. I know this seems like flogging a dead horse, but please, we would like to appeal to all members who have not yet contributed (where finances allow, of course) anything to the 1984 AGM Fund. Before all the expenses of TV licences and Christmas shopping - remember Easter 1984. We would like here to thanks all those who have contributed so generously and those who go on doing so every month. We must put on a good show next year and not let the side down. Thanks again.

BULLETIN BOARD.



26th June	Attie ZR2DY
3rd July	Dick ZS2RS
10th July	Trevor ZS2AE
17th July	Marge ZS20B
24th July	Brian ZS2AB.

If money still talks, it is probably asking what on earth happened.

The Last Laugh.

SCHMATIC DIAGRAM OF DELAYED LIGHT TURN-OFF

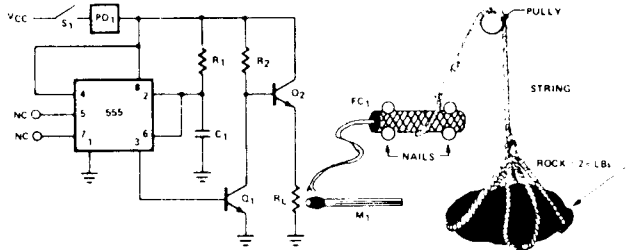


FIGURE 1

Tnx to ZS2A0

$R_L = 5\Omega$, 18W WIRE WOUND
 DESIRED TIME CONSTANT
 DETERMINED BY VALUES
 OF R_1 & C_1

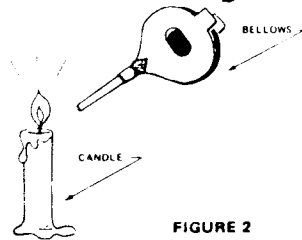
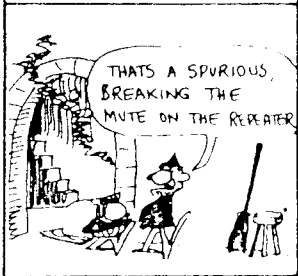
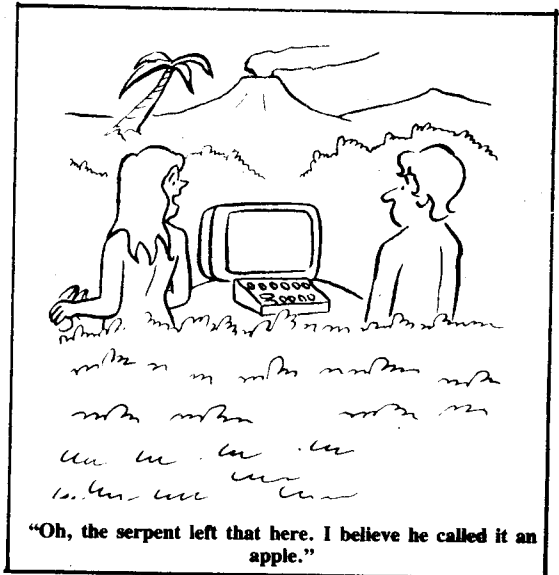


FIGURE 2



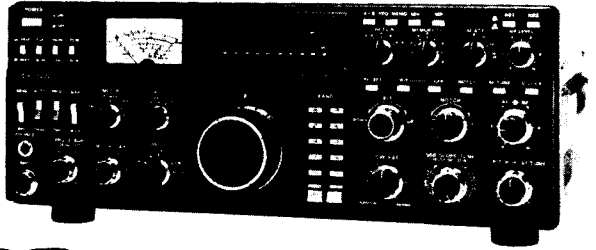
From The Fourth Deadly Sin by...



With apologies to Norman ZS2RI!



KENWOOD



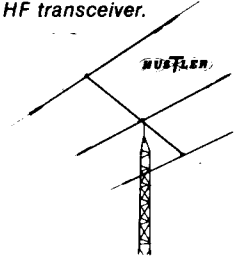
TR 2500

The TR-2500 is a compact 2 meter FM handheld transceiver featuring an LCD readout, 10 channel memory, lithium battery memory back-up, memory scan, programmable automatic band-scan and Hi/Lo power switch.

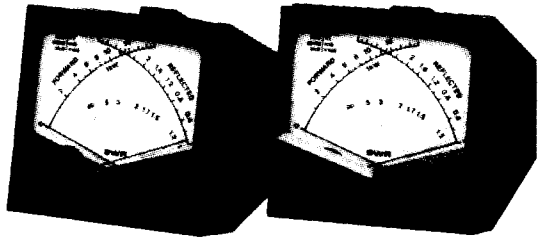
Kenwood's TS-930S HF transceiver.

 KENWOOD

hy-gain



DAIWA POWER METERS



CN540

50MHz · 150MHz

CN520

1.8MHz · 60MHz

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