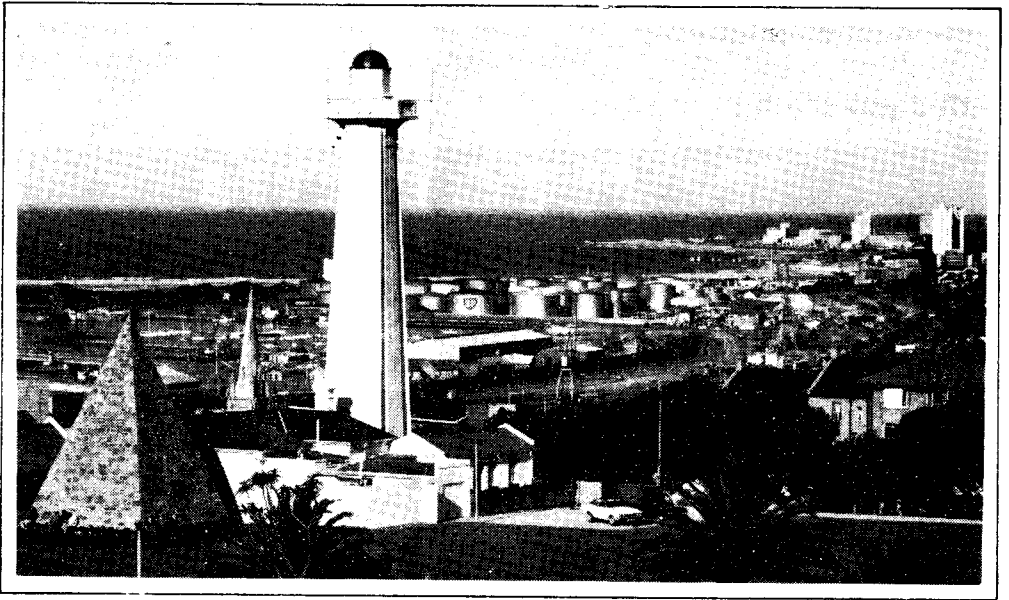


February 1994

QSOX

Port Elizabeth



The Port Elizabeth Branch of the
South African Radio League

P O Box 10402

Linton Grange 6015

NOTICE OF MEETING

The next General Meeting of the Port Elizabeth Branch will be held on Friday, 18 February 1994, commencing at 20h00 (8pm) in the Civil Defence Centre, Westview Drive, Mill Park, Port Elizabeth.

The 1994 SARL Annual General Meeting, which the Branch is hosting on Friday, 11th and Saturday, 12th March 1994, will be the main subject of discussion for the evening: first the motions for the AGM, and then final planning and arrangements. Please bring along the AGM supplement to your January "Radio ZS" to refer to.

There will still be plenty of time for socialising during the refreshments interval.

See you there !

INVITATION

ALL RADIO AMATEURS AND THEIR XYL'S/YL'S ARE CORDIALLY INVITED TO ATTEND THE WELCOMING PARTY FOR THE 1994 SARL ANNUAL GENERAL MEETING HOSTED BY THE BRANCH TO BE HELD IN THE MASONIC HALL, HAVELOCK STREET, CENTRAL, PORT ELIZABETH, ON FRIDAY 11 MARCH 1994 AT 7:00 FOR 7:30PM.

This will be a cocktail party with tea, cold drinks, wine and beer to drink. We are hoping to have the U/D Double-sideband Band in attendance. Entrance is free of charge. Dress is smart casual.

MEMBERS ARE REQUESTED TO PLEASE INVITE OR BRING ALONG THEIR NON-MEMBER HAM FRIENDS.

WE LOOK FORWARD TO THE PLEASURE OF YOUR COMPANY.

MINUTES OF THE GENERAL MEETING OF THE PORT ELIZABETH BRANCH OF THE SA RADIO LEAGUE HELD ON FRIDAY 21 JANUARY 1994 AT THE CIVIL DEFENCE CENTRE, MILL PARK

Present:

38 members and visitors.

Apologies: As per attendance register.

Welcome:

The meeting opened at 20:10 with the Chairman welcoming all present, especially Fanie and Richard from Jeffrey's Bay, Garth, Daniel and our speaker, Bill ZS2BY.

Confirmation of Minutes:

The minutes of the previous meeting as published in QSX were taken as read and their adoption proposed by Wolf ZS2WG, seconded by Bill ZS2ABZ.

Finance:

The Branch funds stood at over R10 000,00 and we are approximately R700,00 short of our target of R7 500,00 for the AGM Fund.

Correspondence:

Letter received from PE Municipality Parks Department informing us that they would not be able to help us with decorative plants for the AGM. The contact person at the Parks Dept was Mr John Pitout, who had recently received his ZR callsign after passing the RAE in November 1993. He would be contacted directly by Colin ZS2CTR and the matter followed-up.

The Chairman mentioned that the Committee was dealing with a matter with the local Chairman of SATEPSA and that this would be reported on once it reached finality.

AGM:

The Chairman reported on the progress being made with plans for the AGM. A meeting of XYL's and YL's would be held on 25 January 1994. Raffle tickets for the oil painting had been dispatched to all branches.

General:

Al ZS2U informed members about the VHF QSO Party which will take place on 26-27 March 1994.

The Chairman mentioned that Baycom packet kit PC boards were available from Vic ZS2SZ at R10,00 each. The main chip and crystals for the kit had been ordered.

He also mentioned that the PE Gun Owners Association will be holding an open day on 28-29 May 1994 and would appreciate help with communications. Eight operators were required with 2-metre handie-talkies, and a few mobiles. Please contact Robin ZR2A if you can help. The Branch will obtain the necessary permission for this event nearer the time.

Mike ZR2MBM was thanked for his help with QSX.

The Chairman also thanked Sandy ZS2LN for his help with QSX and the design of raffle tickets.

Raffle tickets for the AGM were available for sale. Our Treasurer, Clive ZS2RT would have tickets available at the tea interval, and thereafter handle sales.

Al ZS2U mentioned that classes for the RAE would start on Monday, 24 January 1994 at 7:30pm at the Civil Defence Centre.

Discussion took place regarding the Intechnet on Sunday, 6 February 1994. Colin ZS2CTR would handle the telephone link and the 2-metre relay, and Beavan ZS2RL kindly agreed to handle the 80-metre relay.

Mention was made that the 6-metre link on the Lady's Slipper repeater was not functioning. This would be followed up on.

Vic ZS2SZ mentioned the interference on 145,700 MHz from a commercial transceiver in a Randpave vehicle and the official action that was being taken to eliminate this.

Viv ZS2VM gave a report on local QRP activities and the QRP-Interest Group which had been formed at a meeting held at his QTH. The Chairman congratulated the group on getting this activity going. The display of QRP equipment at the AGM was discussed and would be finalised with members of the group.

In response to a question from the floor, Garth ZS2HB spoke briefly about the current activities with WEFAX. The Branch would arrange for more WEFAX kit PC boards to be made in view of the amount of interest shown.

Closure:

There being no further business to discuss, the meeting closed at 20:40.

After a break for tea and Coke, a most interesting talk was presented by Bill ZS2BY on his experiences as both a Post Office official and ham. The Chairman thanked Bill very much for giving a most enjoyable talk.

ZS2CTR on Frequency

- * The SARL AGM which we are hosting is only weeks ago. If only just this once, please will you place yourself at the service of the Branch over the weekend of Friday 11th and Saturday 12th March 1994, and also attend this Friday's meeting where we will be discussing the AGM.
- * Please join us with your XYL/YL at the Welcoming Party for the AGM on the Friday evening of the AGM. It would be great if you could invite or better still bring along your non-member ham friends and let them join in the social get-together. Look forward to you being there!
- * **Would you like to attend the AGM Dinner and Prize-giving to be held at the PE Technikon on Saturday 12th March at 7:30 for 8:00pm?**
There will be place for approximately 60 people other than delegates. The cost of the dinner will be most reasonable and will be announced on a Branch bulletin as soon as arrangements are finalised.
We are going to make this dinner a memorable occasion so it will be something not to miss. The contact person for the dinner will also be announced on a bulletin.
- * If you can accomodate some of our out-of-town members over the AGM weekend at your QTH please would you let our AGM Convener, Dick ZS2RS, know. Please consider this. It is very likely that there will be a number of our members attending, and if you can put them up on the Friday and/or Saturday evening this would be very much appreciated. Thank you.
- * Congratulations to Garth ZS2HB on the beautiful colour photograph of himself in his shack which appeared in the EP Herald last December after the exchange of greetings between the crew of the space station MIR and the Russian Ambassador in South Africa. Garth and his son Keith ZS6TW struck up quite a friendship with Alexander R5MIR on the space station, and the QSO's between them were most interesting. Ham radio was promoted locally, and that's what counts! Well done, Garth.
- * Thanks to Vic ZS2SZ for handling our Baycom Packet TNC project. Vic has the PC boards available at R10,00 and the main chip and crystal at R35,50. We must also thank Vic for once again running slow morse classes on the Ladies Slipper repeater. These are proving most popular. Let's hope we have many new ZS and ZU callsigns on the air shortly. Many thanks, Vic.

* A reminder that the U/D Social Group holds a social get-together on the first Friday evening of each month at the Eskom recreational centre in Uitenhage. You are most welcome to attend. A braai fire will be on the go and there are usually mini-flea markets and raffles held. Bring along your braai meat and join in. The group would like to support the Eskom rec club and ask that you get your liquid refreshments from the club bar where they are available at most reasonable prices. These informal get-togethers are really great fun to attend, so don't miss out.

Until next time,
73 de Colin ZS2CTR

10 WATT AMPLIFIER FOR 2-METRES

This 2-metre amplifier was built to meet the need of a stronger signal than my handie-talkie could give. The circuit has appeared in the ARRL Handbook but I found that C3, which is given as 180pF, was too large for my particular layout and 40pF was all that was required. This amplifier is not linear and is therefore only suitable for FM.

The efficiency is in the region of 70% and tuning is broadband with a variation of 2W output power between 145,1 and 145,6 MHz. The necessary drive for 13W is 3,5W to 10W.

No instability problems were encountered and the amplifier functions well. Note that the 2N5590 does require some heatsinking.

2N5590 transistors are quite pricey, but dont despair! There are a good many old single-channel commercial VHF transceivers not worth resurrecting floating around from which a transistor can be scrounged from the PA board. Just ask around on 2-metres - someone might be able to help you!

The following equivalent transistors can be used:-

Motorola M9580, M9587, M9765

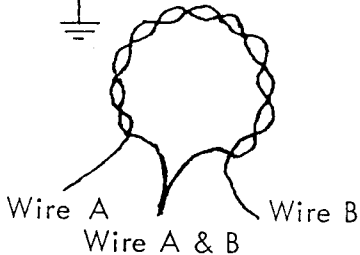
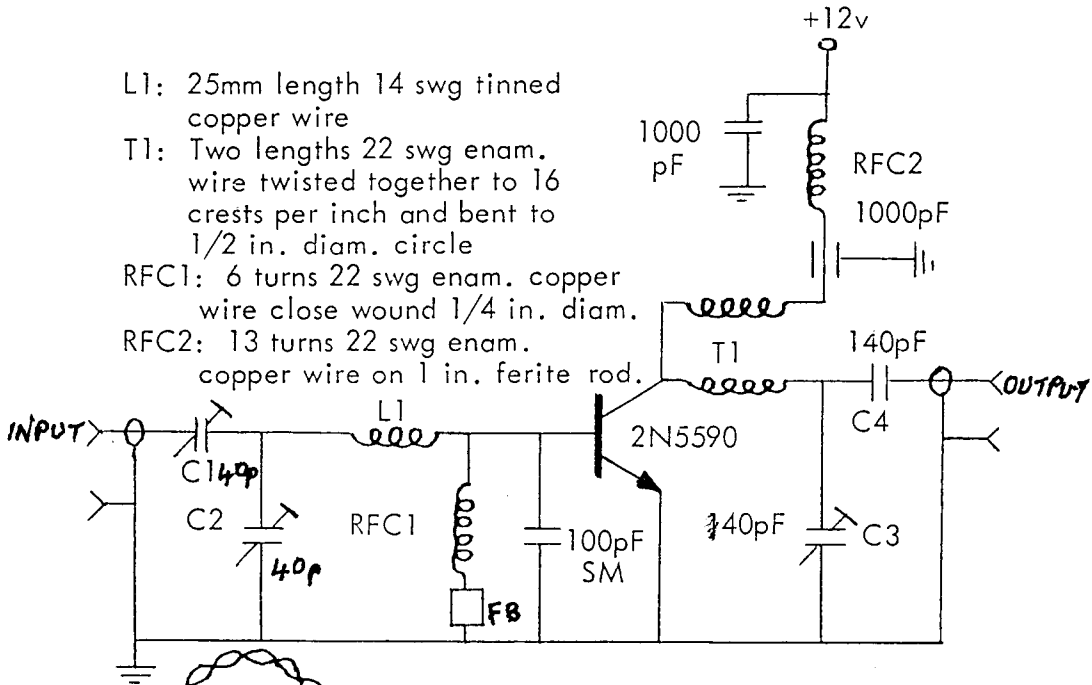
Philips BLW88A

Pye PT3161D, PT3168E, PT5590, PT8769, PT8837

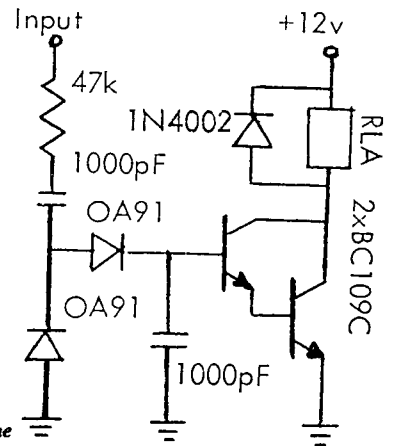
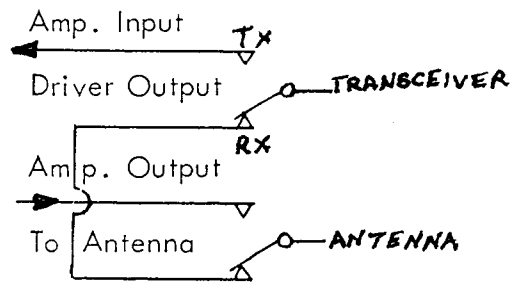
Others B12-12, B15-12

(ECG349, ECG350)

- L1: 25mm length 14 swg tinned copper wire
- T1: Two lengths 22 swg enam. wire twisted together to 16 crests per inch and bent to 1/2 in. diam. circle
- RFC1: 6 turns 22 swg enam. copper wire close wound 1/4 in. diam.
- RFC2: 13 turns 22 swg enam. copper wire on 1 in. ferite rod.



A to RFC2
 B to Output Capacitors
 A & B to Collector
 Two lengths 22swg enamelled wire twisted to 16 crests per inch and bent into a circle of 1/2 in. diameter.



[This circuit by M Olgaar ZR2AQ of PE first appeared in Radio ZS, June 1976. The author no longer appears in the ZS Callbook. Thanks to Andre ZS2ACP for passing it on -Ed.]

BUILD A VHF AM RECEIVER

This receiver features exceptional sensitivity, image rejection, signal-to-noise-ratio, and stability. It is an excellent performer and will bring in many stations in the air!

Circuit Description:

Figure 1 shows a schematic diagram of the receiver - a superhetrodynded AM unit built around four IC's: an NE602 double-balanced mixer (U1), an MC1350 linear IF amplifier (U2), an LM324 quad op-amp (U3), and a LM386 audio amplifier (U4). All of these chips are available. The harder to find NE602's and MC1350's will be obtained by the branch for constructors. In operation, an antenna that plugs into J1 picks up the AM signal. That signal is then coupled through C1 to a three-section, tuned-filter network, consisting of L1-L5 and C2-C6. Signals in the VHF range are coupled through C7 to a VHF transistor (Q1), where the signals are amplified. From there, the signals are fed through C8 to the input of U1 (the NE602 double-balanced mixer), which in this application serves as a local oscillator. A variable inductor (L6) and its associated capacitor network set the local oscillator frequency at 10,7 MHz higher than the incoming signals. A tuning network, consisting of varactor diode D1 and potentiometer R1, allows the local-oscillator frequency to be tuned across about 15 MHz. The 10,7MHz difference between the received signal and the local-oscillator frequency (ie. the IF) is output at pin 4 of U1 to a 10,7MHz ceramic filter (FIL1). The filter is used to ensure a narrow pass band and sharp signal selectivity. The output of FIL1 is amplified by Q2 and then fed through C16 to U2 (an MC1350 IF amplifier), which, as configured, also offers automatic gain control, as we'll see shortly. The amplified 10,7MHz IF signal is peaked using variable transformer T1. The AM audio is then demodulated by diode D2. After that, the audio is fed in sequence through the four sections of U3 (an LM324 quad op-amp). Note that a portion of U3-a's output signal is fed back through resistor R25 to the AGC-control input of U2 at pin 5. That signal is used to automatically decrease the gain of U2 when strong signals are present or to automatically increase U2's gain for weak signals. That keeps the output volume of the circuit within a comfortable listening range regardless of the strength of the incoming signals. The receiver circuit also contains a squelch circuit that is controlled by potentiometer R3, which is used to kill random noise below a selected threshold level. Potentiometer R2 controls the overall volume fed through C26 to U4, an LM386 low-voltage audio-power amplifier. Due to the overall design and squelch control, the audio output is quite low in background noise, and yet it's capable of driving simple communications speakers to excellent volume levels.

Construction:

The receiver was assembled on a printed-circuit board, measuring about 100 X 120mm. Figure 2 shows a full-size template of the PC board's layout. A parts-placement diagram is shown in figure 3. When assembling the project,

take care that special polarity-sensitive components (electrolytic capacitors, diodes, and transistors) are installed properly. Begin by installing the passive components (jumper wires, resistors, capacitors, and inductors). Follow that by installing the active components; diodes, transistors, and IC's. Once the active components have been installed, check your work for the usual construction errors: cold solder joints, misplaced or misorientated components, solder bridges, etc. Once you've determined that the circuit has been correctly assembled, it's time to consider the enclosure that will house your receiver. It will be necessary to drill holes in the front and rear panels of the enclosure to accommodate the controls (S1, R1, R2, R3) and the jacks (J1 and J2). Once drilled, the front and rear panels of the enclosure can be labeled using dry-transfer lettering. The receiver antenna can be as simple as a 535mm length of wire.

Alignment and Adjustment:

Aligning the receiver consists of nothing more than adjusting the slug in the local oscillator coil (L6) for the centre of the desired tuning range, and peaking the IF transformer (T1). The receiver can be calibrated using a VHF RF signal generator, frequency counter, or another VHF receiver by setting R1 to its mid-position; remember that you want to set the local oscillator frequency 10.7MHz higher than the desired signal or range to be received. Then, using a non-metallic alignment tool - a metal tool of any kind will drastically detune the coil, making alignment almost impossible - adjust L6 (the LO coil) until you hear an incoming signal. Once you are receiving a signal, adjust T1 for the best reception. Typically, T1 is adjusted 2-3 turns from the top of the shield can.

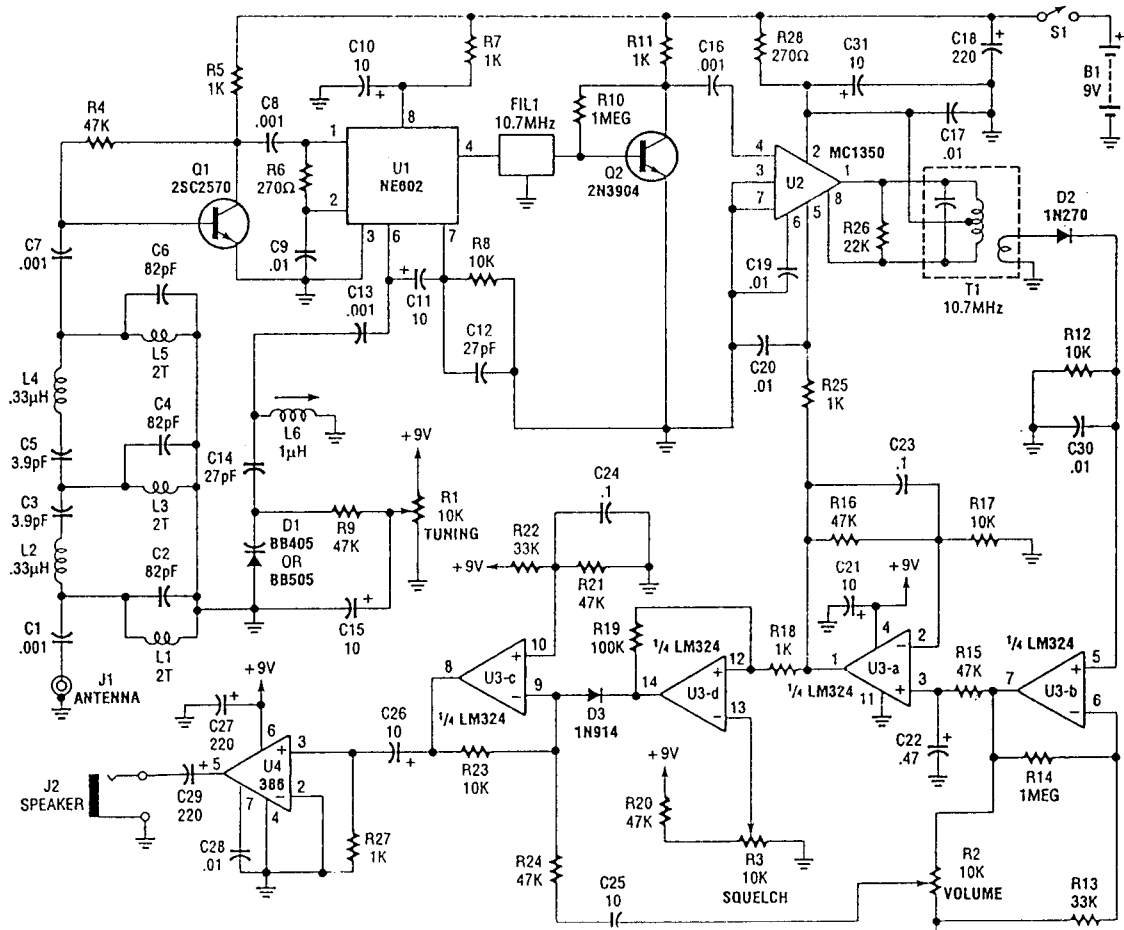
Use:

Plug an antenna into J1 and a 4- to 8-ohm speaker into J2. Turn on the receiver by closing S2. You may or may not hear background noise. Turn R2 (the squelch control) fully counterclockwise. Then rotate R2 clockwise until you hear a "pop" and some background noise; then back it off slightly (counterclockwise) past the "pop". You are now in squelch mode. You will need to get used to tuning in the receiver. As you sweep across the band (via R1), listen for a sound, then rock it back and forth slightly to tune it in clearly.

Trouble-shooting Suggestions:

If the receiver does not work at all, carefully check the obvious things first; battery polarity, soldering of the battery wires and switch, and the connections to the speaker jack. Also, be sure to check that you've correctly installed all of the jumpers. If the circuit's operation is erratic, a solder connection is usually the culprit, or there could be a break in the antenna or speaker wire.

Pay special attention to the orientation of all IC's, transistors, diodes, and electrolytic capacitors. Also, be sure tht C11 and C12 in U1's oscillator circuit are of the right values. Local-oscillator operation can be verified with a simple VHF receiver or frequency counter. Remember that the local oscillator should be set to a frequency 10.7MHz above the desired listening range. If the oscillator works, only a defective or incorrectly installed part can prevent the rest of the circuit from funtioning.



PARTS LIST:

Semiconductors:

U1 NE602 double-balanced mixer
IC2 MC1350 linear IF amplifier IC
U3 LM324 quad op-amp IC
U4 LM386 low-voltage audio amplifier IC
Q1 2SC2570 or 2N5179 NPN transistor
Q2 2N3904 NPN transistor
D1 BB405 or BB505 varactor diode
D2 1N270, 1N34 or similar germanium diode
D3 1N914 silicon diode

Resistors:

(All fixed resistors are 1/4-watt, 5% units)
R1-R3 10K-ohm PC-mount potentiometer
R4, R9, R15, R16, R20, R21, R24 47K-ohm
R5, R7, R11, R18, R25, R27 1K-ohm
R6, R28 270-ohm
R8, R12, R17, R23 - 10K-ohm
R10, R14 1Megohm
R13, R22 33K-ohm
R19 100K-ohm
R26 22K-ohm

Capacitors:

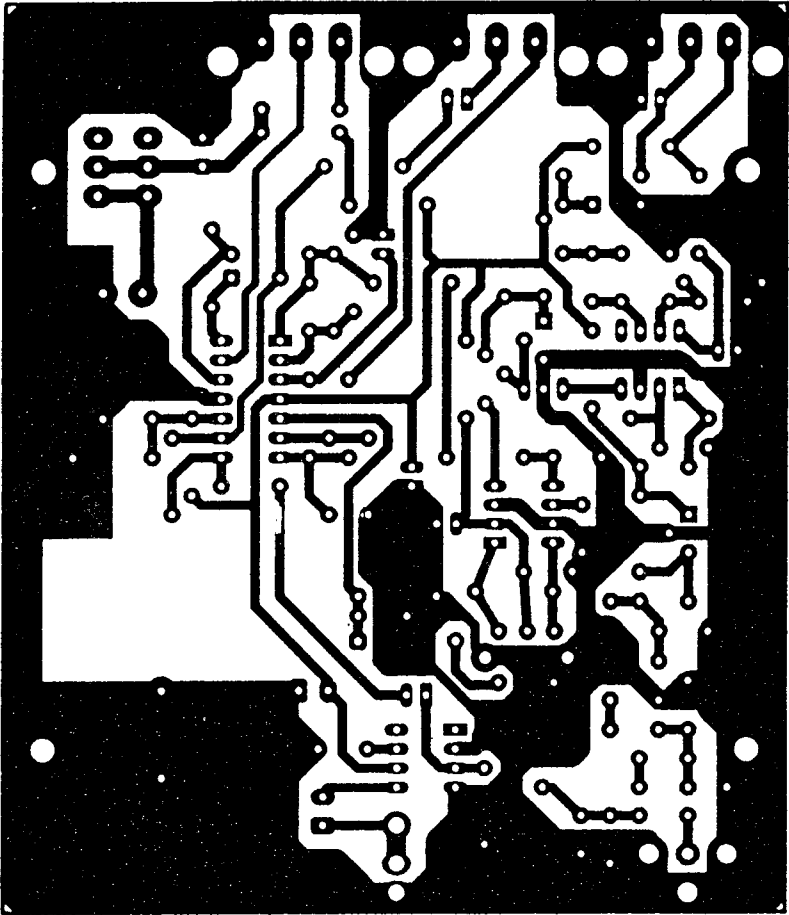
C1, C7, C8, C13, C16 0.001uF ceramic disc
C2, C4, C6 82pF ceramic disc
C3, C5 3,9pF ceramic disc
C9, C15, C19, C20, C28 C30 0.01uF ceramic disc
C10, C15, C21, C25, C26, C31 4,7 to 10uF, 16-WVDC electrolytic
C11 10pF ceramic disc
C12, C14 27pF NPO ceramic disc
C18, C27, C29 100 to 220uF, 16WVDC electrolytic
C22 0.47 uF, 16WVDC electrolytic
C23, C24 0.1uF ceramic disc

Inductors:

L1, L3, L5 1 1/2 turns #24 to #30 guage wire
L2, L4 0.33uH inductors (chokes)
L6 0.1uH, 3 1/2 turn slug-tuned coil
T1 10,7MHz shielded transformer

Additional Parts and Materials:

FL1 10,7MHz ceramic filter
S1 SPST switch, PC mount
J1 RCA jack, PC mount
J2 Subminiature speaker/earphone jack
B1 9-volt PP9 battery
Enclosure, battery holder and connector, wire, hardware, etc.



Instant Printing

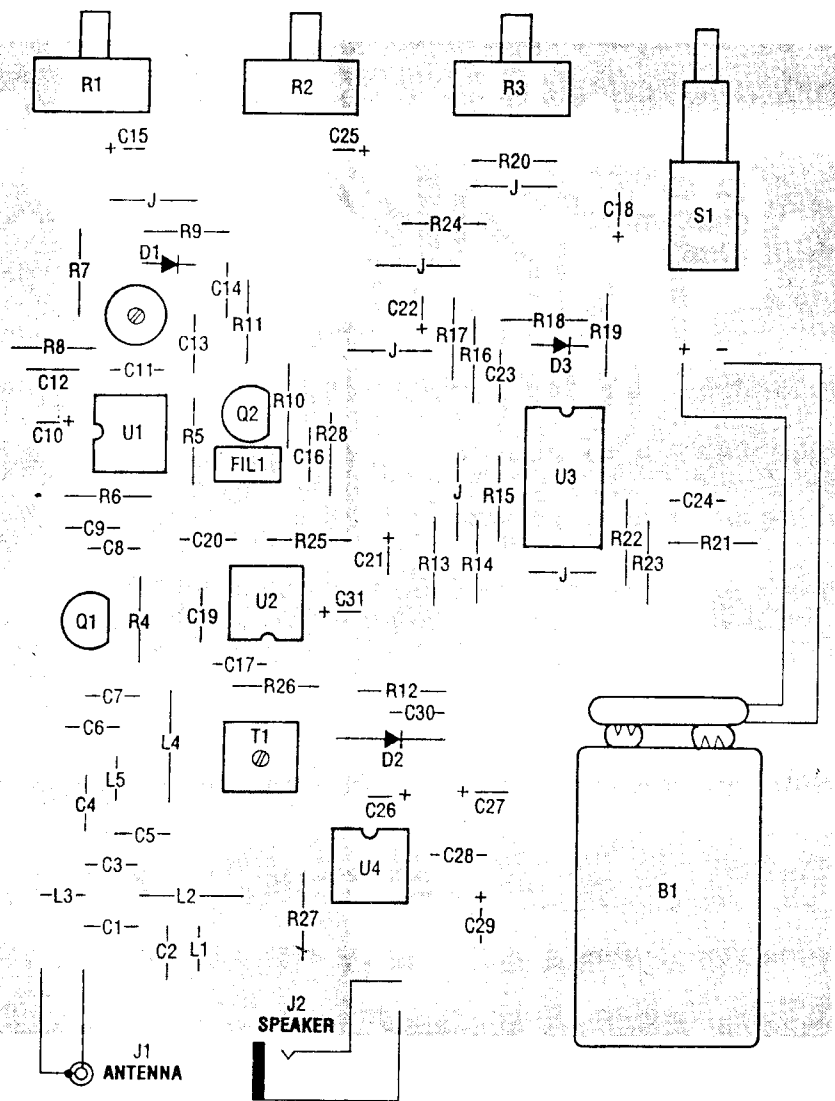
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Interested in building the receiver?

It certainly is not beyond the means of local constructors!

Viv ZS2VM has the negative for the board. Andre ZS2ACP can give you further information on the components and coils. Colin ZS2CTR is obtaining a supply of the MC1350 IF amplifier IC's. A parts kit containing only the semiconductors, potentiometers, all inductors, S1, J1, and J2, and FIL1, is available for \$14,50 excluding postage from Ramsey Electronics in the USA, Fax 091-716-924-4555 (around R70,00) - quote your name and address, Master/Visa Card details (number, expiry date and bank) and Special Parts Kit AR-1SPKBP and they will despatch it to you.

Or you can buy a complete ready-to-assemble kit from a Johannesburg dealer for around R200,00!

EAST CAPE VHF QSO PARTY

The purpose of the QSO Party is to provide the opportunity for radio amateurs in the East Cape to make many VHF contacts on simplex. Do join in the fun and let's see some more 6-metre activity.

The QSO Party will take place from 1200 SAST on Saturday, 26 March to 1200 SAST on Sunday, 27 March 1994. Only contacts with stations in the Republic of South Africa will count. There will be a 2-metre section and a 6-metre section. Participants may enter either or both sections. Serials must be exchanged, consisting of the normal report plus a 3-digit serial starting at 001, this for each band. FM, SSB and CW may be used.

There will be two categories:-

- A. Single operator fixed station.
- B. Single operation portable station.

Portable stations may not use any permanent structures to house equipment to support antennas. No mains power is to be used for the operation which must be from the same site for the duration of the QSO Party.

Participants will score points according to the distance between stations as follows:-

| Distance in km | Points | Distance in km | Points |
|----------------|--------|----------------|--------|
| 0 - 25 | 1 | 26 - 50 | 2 |
| 51 - 100 | 3 | 101 - 200 | 5 |
| 201 - 300 | 7 | Over 300 | 10 |

A certificate will be issued to the winner of each section, provided there are at least three entrants in that section.

Logs must show date, time and call of contact and serials sent and must be given as accurately as possible. This could be the station's address, co-ordinates or 6-figure Maidenhead Locator. Failing this, indicate relation of station to some prominent landmark. Also, though not necessary, equipment used.

Closing date for entries is 30 April 1994, and logs should be sent to:
VHF QSO Party, PO Box 10402, LINTON GRANGE, 6015.

QSOX
Port Elizabeth

HAMNET NEWS

It seems an appropriate time to restate the policy of the Hamnet East Cape Committee with respect to Hamnet in this area.

Hamnet is a low-key organisation. The normal day-to-day emergencies are handled very effectively by organisations such as Regional Services Councils' Civil Protection Department, SA Police, Metro, etc. It is at times of major disasters that these emergency services are hard pressed to cope because of the vastly increased communications traffic load and/or having their communications partially or wholly disrupted by the disaster. It is at such times that Hamnet comes into its own.

Fortunately, major disasters seldom occur, but as a result, members soon tire of endless emergency exercises and the like. Attempts in the past to hold emergency exercises have been largely a dismal failure. Thus we prefer to promote activities that would be considered normal amateur activities, but would achieve essentially the same ends. Examples of these are the Hamnet Simulated Emergency Contest, rallies, QSO Parties and contests. Incidentally, all of these activities, plus the SARL Field Day, will take place over the next 6 months. Let us see the Hamnet members well represented. From time to time too, there are Hamnet News articles in QSX.

If you have any queries or problems with regard to Hamnet, please contact me, or one of the Hamnet East Cape Committee members. They are:

Regional Director: Al Akers ZS2U

Secretary: Clive Fife ZS2RT

Members: Stoffel Carr ZS2C, Jack Moolman ZS2KU, Ken Victor ZS2OC

Nuwe Lid:

Hartlike welkom aan Gideon ZS2ZS wie nou ook by Hamnet aangesluit het.

Hamnet Shield:

The EP Command Signal Unit has made this shield available to be presented to the radio amateur who, during the year under review, showed himself to be outstanding in emergency communications and service to the community. To show oneself outstanding in an emergency is of course out of the question if none occurs. There are, however, other ways in which one can qualify for this award. Promoting Hamnet among fellow amateurs and getting them to join, supporting activities that serve as operating exercises and showing yourself to be prepared for an emergency are some ways.

Why not endeavour to earn this award?

73,

Al ZS2U

[Regarding emergencies, the radio regulations permit emergency communications between all amateur radio stations and with any other station to prevent loss of life and to render assistance or call for assistance in emergency situations - Ed.]

Port Elizabeth Branch Committee

Chairman, Editor QSX and

Bandplanning:

Vice-Chairman, Hamnet, Training

Rallies and Club Station:

Secretary, Tea Convener,
and Uitenhage/Despatch Liaison:

Treasurer:

Awards, Asst Rallies and

Club Station:

Digital and Repeaters:

Projects and Repeaters:

Social, Guest speakers, Special

Events & 1994 AGM Convener:

Assistant Editor QSX

Branch Bulletin News:

Colin Robertson ZS2CTR Tel 300570

Al Akers ZS2U Tel 302983

Sharon Layton ZS2SL Tel 9227958

Clive Fife ZS2RT Tel 323203

Peter Flynn ZR2PF Tel 464096

Wolf Gerstle ZS2WG Tel 301510

Martin Layton ZS2ML Tel 9227958

Dick Schonborn ZS2RS Tel 563908

Mike Bentley ZR2MBM Tel 301498

Colin ZS2CTR, Sharon ZS2SL and Peter ZR2PF

Sunday Bulletins

Bulletins are transmitted on Sundays at 08h45 on

| | <u>Reader</u> | <u>2m Net</u> |
|---------------|---------------|---------------|
| 7098 kHz : | | |
| 145-700 MHz : | 20/02 ZS2SL | ZS2CTR |
| 145-750 MHz : | 27/02 ZS2RS | ZS2RT |
| | 06/03 ZS2CTR | ZR2PF |
| | 13/03 ZS2U | ZS2WG |
| | 20/03 ZS2SL | ZS2CTR |

Branch VHF & HF Services

Repeaters:

Town VHF.....145-050/650

Town UHF.....431-050/438-650

Grahamstown.....145-150/750

Kareedouw.....145-125/725

Lady's Slipper.....145-100/700

Uitenhage.....145-075/675

Other Services:

2m Beacon (ZS2VHF CW ID).....144-910 MHz

Packet Bulletin Board (ZS0NTP).....144-675 & 14-109 MHz

Digipeater (Grahamstown ZS0GHT).....144-675 MHz

6m Link with Lady's Slipper.....51-400 MHz

6m Beacon (ZS2SIX CW ID).....50-005 MHz

Wefax Relay (Meteosat II).....145-350 MHz

☺☺☺ WE LIKE BEING YOUR BRANCH ☺☺☺