

March 2008

Volume 8, Issue 7

ANODE

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Editor's Comments

March 2008 Volume 8, Issue 7

Direct Conversion Receiver Project

As promised, I have put the Direct Conversion receiver into the Anode for this month. We discussed this project at length in the Electronic Enthusiasts section and the Bring & Fix meeting. This looks really promising as a club project.

Club Fox Hunt

Romeo is organising a 'Fox/Jackal Hunt' for the club. As we have already date clashed with two week-

ends, we will re-organise and get back to the club later. This might give us time to construct an 80m "Fox". If this would be of interest to you, please contact Romeo. His details are on the back page.

On the sine wave generator project, I hope to persuade OM John to lay a p. c.b. out for us in the near future.

List of free manual sites

http://home.comcast.net/~aa4df02/downloaded_manuals.htm

Next Flea Market is on the 3rd of

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Amateur Radio Contest Training Software

Somewhere out there is a man, a brother amateur, with a warped, very sick mind. I do not know who he is, but he knows me, and his fiendish paraphernalia has made me a slave to his electronic wizardry. I do not know if he is the fellow who invented Space Invaders, but if he is not, he surely is related to that other sick mind, except that his condition is now worse yes, far more diabolic and dangerous and his ability to derange the minds of innocent amateurs has grown even more malevolent. Yes, losing even your sanity now has a price, and that price is less than \$200.

Let me start at the beginning, however, when I was still naive and un-

sullied, whole and vital. It began innocently enough at the annual pilgrimage to Dayton. I had had a long day of exploring the flea market and drooling over the new boxes at the manufacturers' booths, mixed with many joyful meetings of old friends not seen since the year before. I was taking my ease and quenching my honest thirst with a well earned cooling beverage at a DX hospitality suite at a down town hotel, which, for that matter, I cannot remember, and in any case I am sure by now it has been destroyed by fire and brimstone.

A good friend, W21ZX, saw me across the room and waded through the crowd to take me by the hand. "Bob"

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Special points of interest:

- Contact details on back page (updated)
- Next Flea Market is on the 3rd of May at 12:00.

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he said, "there's some thing here you have to see. Come with me." He dragged me through the crowd to a table with a large group packed around it. I could hear Morse being sent, then another signal coming back, exchanging reports in a high-speed contest format.

"Here. Here's W9KN I. Let him have a go at it," Jack announced as he dragged me through the ring of people. There it was, a small home-brew looking transceiver sporting all the usual dials and laid out in a clean, economic design. "Here you go, Bob. It's a new transceiver from AEA. It's strictly a prototype, of course, but does it ever work! Give it a try! "

I looked doubtfully at the little box. It did look nice, a clean, pleasant little box with a Bencher paddle plugged into the front and the friendly glow of the digital frequency readout. However, all it was sporting for an antenna was a 3 foot telescoping vertical, obviously swiped off a Zenith Transoceanic receiver, with a little 12 volt 4 amp supply for a power source. I know a ORP rig when I see one, and here was a classic example. Whoever had been operating moved out of the chair and sat me down. "Here he said. "There's nothing to it. Use about a 500 Hz offset, and you'll be all set. You're on 20 meters. Go ahead." He showed me the other important controls, such as the keyer speed control for the built-in keyer, the volume control, etc.

I asked about bandwidth. "Oh, that's fixed. It's strictly a c.w. rig, so it has only a narrowband filter in it." I took the seat and tentatively started tuning the dial. Almost immediately I heard a VU2 calling a CQ coming from the built-in speaker. "Hey," said Jack, standing next to me, there's a VU! Go ahead and call him, but let me adjust the antenna. Go ahead and use your own call." As the VU called, Jack turned the antenna slightly. I could detect no difference.

No way was this going to work. Hah! I didn't know what kind of power I had at my disposal, but with that little power supply it couldn't be

more than 20 watts, and with a lousy antenna to boot - a telescoping vertical with no radials - and in the middle of a high-rise building. Oh, we were on. the eighth floor, nice and high, but there had to be steel all around me.

The VU signed. I called him. I listened. The little transceiver had VOX, so all I had to do was stroke out my call on the gleaming Bencher paddle. Yes, there was the VU coming back all right, but to someone else, just like I expected.

"Wait," Jack counselled. "Try him again when he's done, and don't forget that the offset is about 500 Hz." I moved the tone of the VU down a bit, closer to 500 Hz. The VU was passing out fast contest-style reports. I mentally tried to recall what contest would fall on a Dayton Hamvention weekend, but without success. There, he finished, and called a short CQ again. I called again.

I almost fell out of my chair. He came back to me with a 579 report! I banged back a 569 to him, he confirmed, then called CQ again, as I slumped back in shock. "You've got to be kidding," I muttered as Jack was congratulating me. "See," he addressed someone, "I told you that he was a good operator! " He turned to me again. "Keep tuning, Bob. Maybe you'll find something else good." I did.

Within five more minutes I had nailed a UG6, a TA1, and an HZ1. My mind was reeling. The band just hadn't been that good the night before when I checked out things a few minutes before packing for Dayton. And here it was fantastic! Signals were crisp and clean. Background noise was low. The rig tuned smoothly. QRM seemed minimal. I was starting to really get into it, when I was gently moved over to let someone else have a go. I couldn't blame him; this rig was fantastic. Jack stood by, rubbing his hand.

"Wasn't that fantastic" he asked. And that rig will be only \$1,000." I asked Jack why he was rubbing his hand. He grinned. "I got a bit of an

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r.f. burn when I was adjusting that antenna. They use a bimodal active antenna design there for both receive and transmit. Pretty effective, huh?"

As I was slowly returning to reality, little bells belatedly started ringing in the back of my mind. "Hey, now wait a minute, Jack. Run that by me again." He chuckled as he saw my expression change. "Okay, pal. It's all over. I won't kid you any more. Come over here and I'll explain it." And he did.

The "transceiver," in fact, was nothing more than an interactive computer programmed to emulate a real transceiver in a contest situation. If you tuned the knob to the right, the frequency as displayed on the digital counter went up, and different signals slowly moved through the audio passband, going from low note to high note. Tune the knob in the other direction, and the "frequency" went down. Call the station that you heard, and if you were close to his frequency and to his transmitting speed, he came back to you. Be off frequency and you were ignored. The received station might have called CQ again, or another station might have called him and worked him. In fact, the computer would respond to actions with very highly believable responses.

The more I listened, the more impressed I became. Of course, this was not a radio at all, but rather a whole DX contest wrapped up in a computer with virtually all the moves. And in wildly improbable circumstances, it had fooled me and a lot of others as well. It was to a DX hunter what a flight simulator is to a pilot, a make-believe contest world so close to the real one that it was eerie.

I was in awe. Then Mike Lamb, N7M1, of AEA came up to us. Well, Bob, what do you think of that?" Mike asked. I told him, and he smiled. "That's great. We're really proud of that little box. Look, I can't stay, but we'd like you to fill

out this market survey for us on that machine. We're thinking about marketing it." He handed me a form. Answering the questions was easy, not that it was going to make much difference. I know an expensive piece of hardware when I see one. The bottom question really got a chuckle from me. "Would you buy a simulator if the price was less than \$200?" As I checked off the yes box, I was laughing.

One Saturday, 2 1/2 years later I got a call from Mike. "Bob, you remember that contest simulator you liked so much at Dayton a couple of years ago?"

How could I forget? "Yeah, Mike, I sure do. That was really neat!"

"Great, because we are going to bring it out. We're going to call it 'Doctor DX.' CQ magazine asked us to ask you if you would like to do a product review?"

"Yeah, Mike, I would," I replied, "but how much is it going to sell for? That's a pretty complex gadget."

"That's the truth! But we've reworked it so that it works through a Commodore 64 computer, and we're going to sell it for under \$200. What do you think of that, Bob? . . . Bob? . . . Bob, are you there?"

A few days later the box arrived. At first I was sure that the shipping department at AEA had made a mistake; the box was smaller than a cigar box. I opened it, and there sat a small circuit board with an edge connector for the Commodore 64 and the documentation. Normally I'm from the "plug it in and fire it up" school, but for once I figured that perhaps I'd best read the instruction book first. I'm not much for computers, and I was a little afraid of the whole thing.

At this point let me say without qualification that the instructions for the Doctor DX Trainer are absolutely the finest of their type that I've ever

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seen. They are clear, lucid, and easily understood, especially when you consider how new the concept is to most amateurs. Within moments after reading the instructions I was hooked up and running.

After plugging the simulator module into the Commodore 64, and the paddle and keyer into the module, turn on the computer and the TV. Bang, there on the TV screen is the image of a transceiver and a box for scoring. There is a place to set the time and also to set your latitude and longitude. On the transceiver you set the power level with a choice of 2, 20, or 200 watts. Select the desired band from 160 to 10 meters. You have a choice of seven colours for the screen, and you have control of an audio filter, setting the tone most desirable for you TV audio output and your ear.

One of the really interesting aspects of the device comes in the setting of the latitude, longitude, and time. You can place yourself anywhere in the world at any time, and the Trainer actually generates propagation appropriate to your instruction! I set myself in, 42 degrees north latitude, 87 degrees west longitude. I put the rig on 15 meters and set the time (in UTC) for 0000Z. Last, I hit the RETURN button on the computer. I got a brief "Good Luck" on the screen, and suddenly I heard an HL calling CQ. I looked at the digital readout on the TV screen; I was at 21050.

I started to move down the band by depressing the F5 key on the computer, and slowly started down. I decided that I would rather get quickly to the bottom of the band. I hit the F7 key and the frequency excursion speeded up considerably; in no time I was at 21000. I then depressed the F3 key, and slowly the receiver began moving up the band. (Note: There are four F, or function, keys all in a row on the right of the Commodore 64 keyboard.)

Ah, there was a JA calling CQ. I moved the frequency back down a bit. There, a lighted star on the TV screen started to blink in sync with

his c.w. I hit the 'X' key, and the audio filter cycled through its range until I released it at the optimum point for my ear. I checked the power level; yes, I was at 200 watts. He signed. I called him. He came back! "W9KNI DE JAIRF13 5NN25 K," I responded; "R 5NN04 K." He responded, "R TU CQ TEST I was on the air!"

By now, you have figured that the simulator is designed to work in the CQ World-Wide DX Contest mode. Your goal is to work as many countries in as many zones on as many bands as possible. The simulator automatically logs the QSOs for you, scores for you, and watches for dupes. And this is one place where changing one character in a call won't sneak you another QSO; remember, it knows what call you are supposed to be working. If you call a station that you have already worked on that band, you get a dupe message from the other station.

Scoring follows the rules of the CQ World Wide DX format, with the exception that additional QSO points are earned by working stations at one of the designated lower power levels. And, as is proper for the CQ World Wide DX test, IT9's in Sicily count as a separate country from Italy for another multiplier. This is different from the DXCC countries list, and demonstrates a small part of the astute thinking that went into this clever device.

As you continue on in the WW DX Contest, conditions change, as would be expected in the real world. Ten dies out as the hours lengthen, and then 15 goes. Forty, 80, and 160 open and improve later in the evening. Different paths open and close as the hours go by, all as a hot contesteer would expect. Some signals are quite strong; others are rather weak, almost buried in the noise. However, if you can hear them you can work them. CQ calls on your part will raise DX, some of the calls quite rare. One of the tantalizing aspects of the simulator is to hear a really good one answer a station calling CQ, and there appears to be no way to raise that

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station except perhaps by your own CO calls, just as in the real world. Open bands are full of other stations calling CO, some of them W's, others DX.

I was interested to see what sophistication of DX technique was workable with "Doctor DX." For example, there is no real provision at all for split frequency operation, and tail-ending was not one of my better techniques. On the other hand, proper timing and length of calls proved very rewarding when the simulator gave some competition to work against. The device obviously has a number of operator-oriented sophistications designed in, and I have not found all of them yet.

Doctor DX is a real joy for the operator, both experienced and inexperienced. Any operator capable of copying code will come out of a few sessions with the good Doctor a better operator, or a much better operator.

It is a real joy. It comes miraculously close to matching the thrills of a big time contest. It takes very little imagination to enter its magic domain. Five minutes after you start using it, you are excited by working the A6X that you still need in the real time world, you despair when you hear the A51 answer a JA's CQ and you can't touch him, you swear when you get gunned down by another station, and cheer when you ace out a pileup.

AEA has an award program being set up for users of the Doctor DX simulator. No QSL'ing! But remember, they know the calls that are in the machine, so you'd best be sure that you got them logged right before applying for one of the awards.

Anyone who loves DX will love this machine. If you are a frustrated DXer living in an apartment, or a hired gun who doesn't get enough air time between contests, Doctor DX is for you. If you love contests and want to keep sharp through the summer months, you had better place your

order. And, it will help you lengthen your contest attention span. A DXer who travels a lot would love it, if he could also take a Commodore 64 with him. This is a serious Trainer for anyone interested in contests or DX; I guarantee it will make you a better operator.

But enough of this. I have to get back to 20 meters. Let me see here. Yes, back to 200 watts. Okay, it's nearly 1400Z; long path into the Middle East ought to be coming in. What's that signal? 4W1 what? Ah, good, he's calling CQ again; guess he had no takers. Yes, it's FC. Move him closer to 500 Hz, quick. Right. Call. Call. Darn. Call.

The AEA Doctor DX Morse Code DX and Contest Simulator

BY BOB LOCHEW, W9KNI 1445 Northwoods Circle, Deerfield, IL 60015

For this unusual product review we enlisted the aid of "Mr. C. W." himself, Bob Locher, W9KNI. Bob is a noted c.w. DXer, who is presently the top-ranking member of the CW-DXCC Honour Roll. His recent book, *The Complete DX'er*, published by Idiom Press, has earned a great deal of attention and a number of most favourable reviews, and it has already become a classic in the field. This was to be the ultimate test of man and machine. -K2EEK

From CQ October 1984 !

Build Your Own Direct Conversion Receiver

BY BWIDAR PASAR16 , YWHL

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Here's a terrific receiver project for the QRPer and weekend builder alike. It's not complicated to construct and should give you hours of fun.

In the last few years direct conversion receivers have gained more and more popularity among European amateurs, especially those who wish to build a simple receiver of their own. Here is a description of a direct conversion receiver using a novel principle of mixing, first promoted by V. Polyakov, RA3AAE. I hope that the American amateur fraternity will be interested in this little beginner receiver, hence this article.

For those who have not dealt with direct conversion receivers before, let's say that in those receivers the result of mixing is not the usual intermediate frequency (460 kHz or similar) used in superhet receivers, but an immediate audible tone - c.w. or s.s.b. To achieve this it is necessary that the mixer's local oscillator (more precisely the b.f.o.) oscillates near the received radio frequency (e.g., $f_{in} \pm 1$ kHz). In such receivers the signal The Principle amplification and selectivity are obtained in the a.f. stage (fig. 1).

Direct conversion receivers, simple as they are, also have some disadvantages. No doubt, the most unpleasant one is the interference of strong broadcast stations whose unwanted signals are also detected (due to poor front end selectivity of the receiver) and fed directly into the sensitive a.f. stage. True, this problem can be cured by the use of double balanced mixers, but unfortunately at the expense of simplicity.

The Principle

In our receiver the solution is unusual and it will take some explaining to understand its functioning (fig. 2). The received radio signal f_{in} is fed through the antenna coil L1 to the resonant circuit L2C1 tuned (in our case) permanently to the middle of the 3.5 MHz c.w. band (3550 kHz). The local oscillator, viz. the b.f.o., constructed around T1 is a Clapp, oscillating on half of the received radio frequency (i.e., between 1750 and 1800 kHz, because the receiver covers 3500-3600 kHz). Later we shall see why. As a mixing device we use two identical matched silicon or germanium high frequency diodes, D1 and D2, connected in parallel and back to back!

The received radio signal from the antenna (e.g., 3500 kHz) is fed to the diodes through the

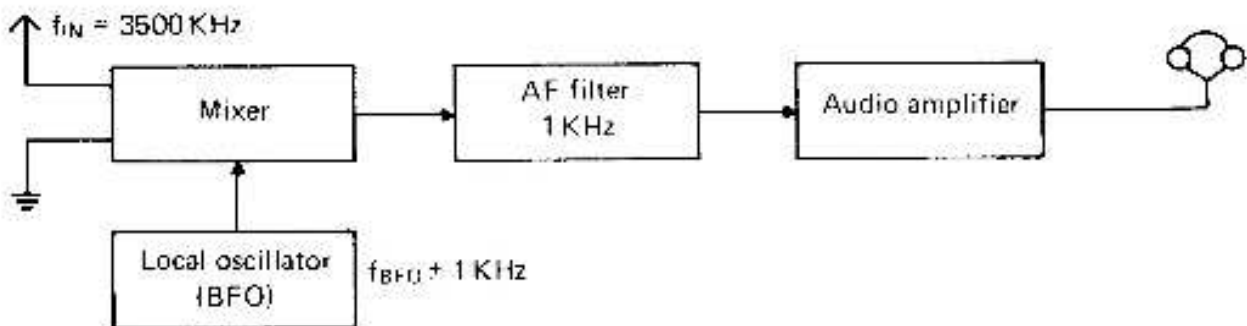


Fig. 1- Block diagram of a standard direct-conversion receiver.

Fig. 1 Block diagram of a standard direct conversion receiver.

secondary coil L3, and the b.f.o. frequency f_{bfo} (1750 ± 0.5 kHz) through L4, both the coils be-

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Build Your Own Direct Conversion Receiver

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ing connected in series. The result of mixing, an audible tone, c.w. or s.s.b., is routed to the low noise a.f. pre-amplifier (T2) and from there to any standard a.f. Amplifier.

audible tones. The frequencies f_{in} and f_{bo} are grounded through capacitor C2 while the c.w. or s.s.b. signal is fed to the audio amplifier. Note that the usual loading resistor after the diodes has been omitted: being connected in anti-

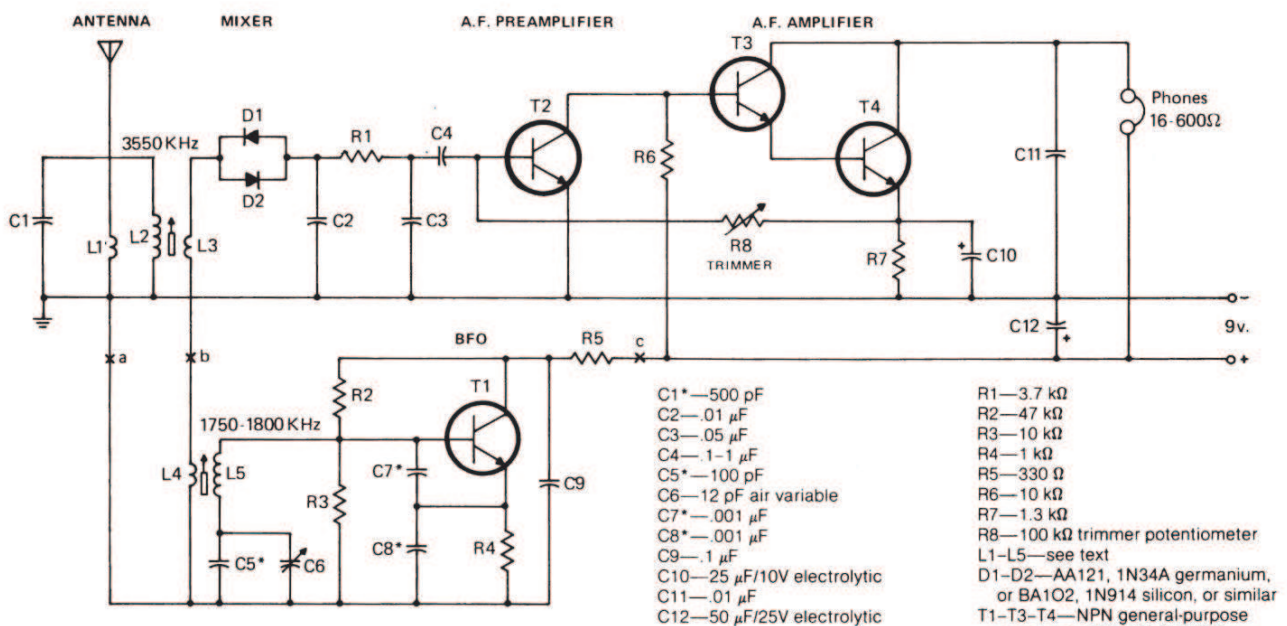


Fig. 2— Schematic diagram of the direct-conversion receiver.

- 1) Capacitors with an asterisk (*) are polystyrene.
- 2) Points a,b,c refer to figs. 4 and 5.
- 3) All resistors are $\frac{1}{4}$ or $\frac{1}{2}$ watt.

If the voltage from the b.f.o. applied to the diodes through L4 exceeds their cut-off voltage by two to four times, we shall have the following process: the pair of diodes will not conduct the incoming signal f_{in} while the b.f.o. high voltage is passing through zero between the cut-off points. However, when the b.f.o.'s voltage (positive or negative half cycle) becomes higher than the cut-off voltage, one of the diodes will be conductive. Thus, the diodes function as a switching device. Since each cycle has two half-cycles, and each of them closes the diode circuit, becomes obvious that the b.f.o. must work on half of the received radio frequency as we said before.

It can be mathematically proven that on the right side of the diodes except f_{in} and f_{bo} we also get $(2f_{bo} - f_{in})$ and $(f_{in} - 2f_{bo})$, and those are

parallel mode, the two diodes cancel any a.m. detection, and we can hear only the pure results of mixing. It's as simple as that. For maximum results the characteristics of the two diodes must be closely matched. We also must add that the inventor of this mixer, Polyakov, strongly recommends the use of silicon diodes, although we have found germanium diodes equally usable.

How do we get an a.f. signal with such a strange combination? The secret is in the voltage / current characteristic of the two diodes shown in fig. 3. It is well known that even in the positive direction, diodes The Circuit Diagram do not conduct current if the applied voltage is not higher than the potential barrier found in them.

For silicon diodes that minimum positive voltage is about 0.5 V, and for germanium diodes about

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0.1 V. Now, if we take two well matched diodes and connect them in parallel and back to back, we shall get an inverted S shaped characteristic shown in fig. 3. We draw your attention to the central flat part of it where neither diode conducts.

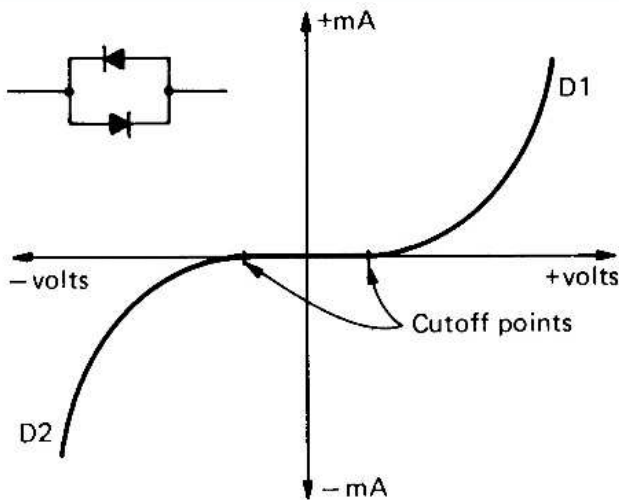


Fig. 3- The integrated characteristics of two identical matched diodes connected in parallel and back to back.

Now back to fig. 2.

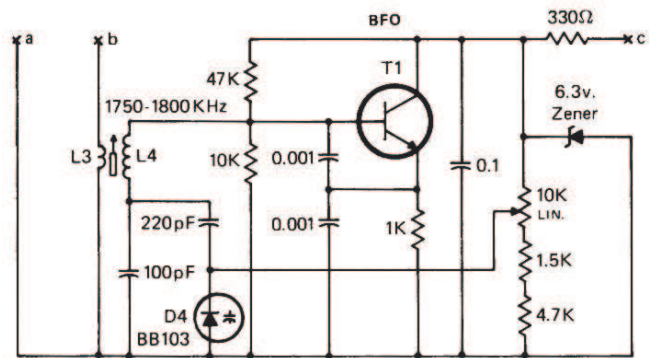
After this explanation the electric diagram of the receiver is self explanatory (fig. 2). The receiver works between 3500 and 3600 kHz, so the antenna tuning circuit C1 - L2 has been permanently set to 3550 kHz by means of the ferrite core in L2. The secondary coil L3 has about 1/4 turn of L2. The b.f.o. is a Clapp using a 2N2222 or similar general purpose NPN transistor (T1). The tuning is done with C6, a 12 pF variable capacitor.

The secondary coil L4 has approximately the turns of L5 for germanium diodes (1N34A, AA 121, etc.), or 1/2 the turns for silicon diodes (1N914, BA102, and similar). The RC filter C2 - R1 - C3 can be made resonant to 1 kHz if we substitute R1 with a 2H inductance. However, in the experimental receiver the coil produced (picked up) a lot of hum so we used a resistor

instead.

The audio signal is routed to the low-noise pre-amplifier (T2) with a 2N3391A, 13F 173, or a similar low noise transistor. This stage is set only once by R8 a 100 k ohm trimmer potentiometer, for best performance. The last stage is a Darlington two transistor amplifier with T3 and T4, which makes the whole a.f. chain very simple. The loudness is moderate when using earphones so no volume control was provided. In a more elaborate project an active audio c.w. or s.s.b. filter and a stronger a.f. amplifier should be used instead of T3 and T4.

For those who want to build the b.f.o. with varicap tuning, we offer a convenient schematic diagram in fig. 4.



NOTE:
T1 = NPN transistor: BC109, 2N2222 or similar.

Fig. 4- A b.f.o. with varicap tuning. For use with the receiver shown in fig. 2, connect points A, B, and C to their corresponding points in fig. 2.

Fig. 5 represents a b.f.o. with a PNP transistor and a broadcast ganged dual variable capacitor 170+420 pF which we removed from an old transistor a.m. receiver. In this case the band could be wider: 3500-3800 kHz. Please note that C9 in this scheme is a part of the resonant circuit providing for the correct feedback, so its capacity should be about eight times that of C7. Points a, b, c refer to the same points in fig. 2, in case you want to substitute the b.f.o.

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Fig. 6 shows that the b.f.o. injection can also be made on the right side of the diodes. In that case the radio frequency is not weakened through L4.

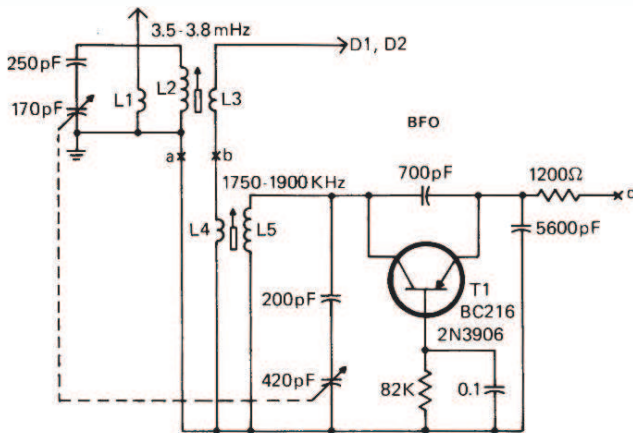


Fig. 5— An alternate b.f.o. with PNP transistors and a broadcast-type ganged variable capacitor. The coils L1 through L5 must be calculated and wound according to the capacitors used and the resonant frequencies.

As a first project we recommend building the unit shown in the schematic diagram in fig. 2. However, the finished sample shown in the photographs (figs. 7 and 8) is a combination of fig. 5 and fig. 6, while the a.f. stages were taken from fig. 2. Hence the large a.m. band variable capacitor in the photographs. However, all the data that follows in this article are given for fig. 2 exclusively.

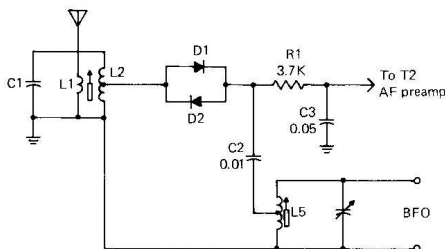


Fig. 6— In Polyakov's mixer (see references) the b.f.o. frequency can also be injected on the output side of the mixer. In that case R1 functions as an r.f. choke also. Likewise, instead of winding secondary coils, appropriate connections can be made to primary coils L2 and L5.

wire. We drilled the necessary holes and placed all the parts on the upper side of the board and all hook up wire underneath. The overview is shown in the photographs. The front panel is 16 x 9 cm (6% " x 3 1/2 " inches) cut from one sided pc board, as well as the side panels which were cut to convenient dimensions. The whole framework, made of four pieces, was soldered to proper shape and strength (copper inside). The circuit board was raised 18 mm (about 3/4 above the table level so that the antenna, ground, and phone connections could be placed on the side panels. There is only one knob on the whole receiver: the tuning knob.

The coils were wound on polystyrene tubes 7mm in diameter with small adjustable ferrite cores inside them. Since European standard coils are different from American ones the following data are only for orientation. The r.f. coil consists of L1, L2, and L3 (fig. 9). L1 has 5 turns, L2 has 25 turns, and L3 has 6 turns of No. 27 copper enamelled wire (0.35 mm diameter). The inductance of L2 is 4 microHenries and can be adjusted with the ferrite core. The antenna coil L1 was wound on a short piece of paste board tubing so that it fits tightly over the main coil. In that case L1 can be moved up or down for best results. The same effect can be reached by changing the number of turns on L1. The b.f.o. coil was wound on the same type of tubing, but with No. 34 copper enamelled wire (0.15 mm diameter). L4 gets 15 turns, and L5 gets 90 turns. The inductance of L5 is 80 microHenries.

The receiver is powered from a 9V battery. Its drain is about 5 ma.

Construction

The receiver was soldered on a piece of universal pc circuit board 14 x 7 cm (5"x2" inches). Since the sample was not intended for duplication, we didn't bother to produce an etched circuit board. All connections were made point to point with short pieces of insulated hook up

Adjustment and Performance

If everything has been soldered correctly the adjustment will be quite simple. Apply voltage and adjust R8 so that the voltage on the collector of T2 is about 2.5 volts. With help of a counter, dipper, or a communications receiver, tune the

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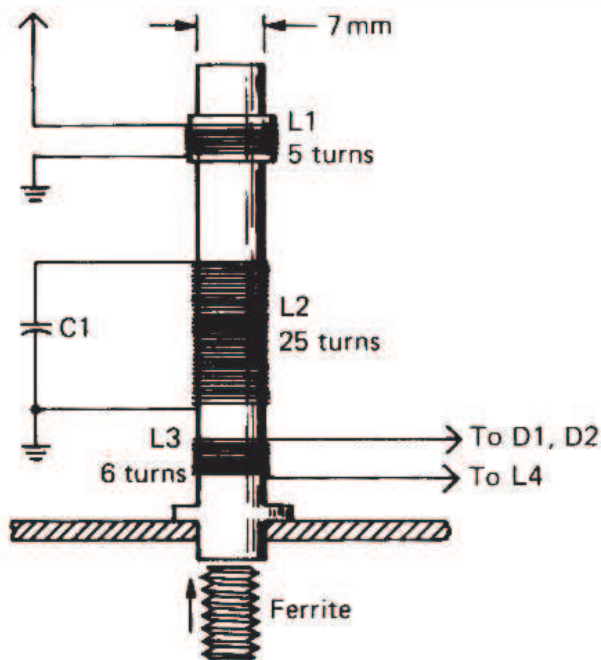
b.f.o. so that it covers at least 1750-1800 kHz. Tune L2 to 3550 using a dipper. Apply the antenna and you should hear c.w. signals. Readjust R8 once more for best performance, and that's it. Considerable improvement of sensitivity can be achieved by experimenting with the number of turns of L3 and L4, changing the distance between L1 and L2, and especially by choosing all transistors with higher gain and lower noise. In our case the receiver's sensitivity was 5 microvolts for an S4 signal in the phones.

quency because its b.f.o. oscillates on half of the received frequency.

4. The radiation of the b.f.o. through the antenna is reduced because the r.f. circuit is tuned to a different frequency.

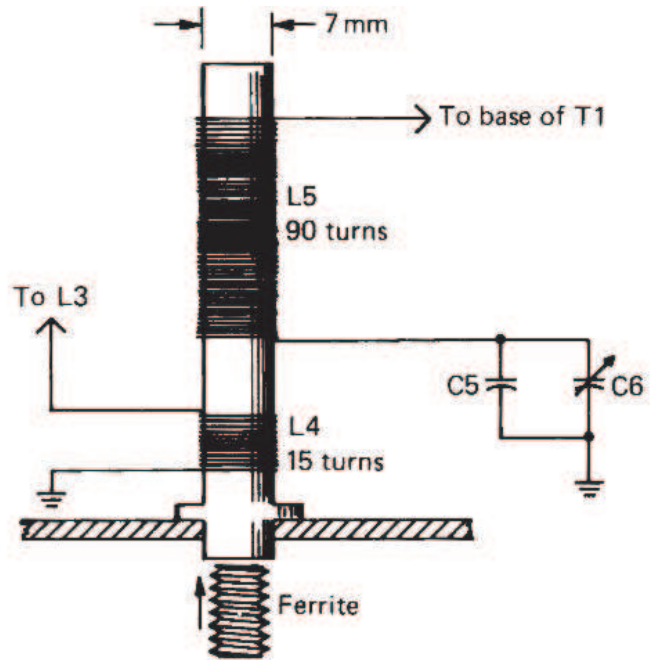
5. Lower noise of the receiver is achieved through absence of the fundamental frequency and its noise.

The receiver was built without an r.f. stage so a good antenna is needed resonant if possible. The receiver can also be built for 7, 14, 21, or 28 MHz.



RF coil is wound with copper enameled wire No. 27 (0.35mm dia.) inductance of L2 is $4\mu\text{H}$.

RF COIL



BFO coil is wound with copper enameled wire No. 34 (0.15mm dia.) inductance of L5 is $90\mu\text{H}$.

BFO COIL

Fig. 9- Details of the coils used in the receiver as described in fig. 2.

Besides its simplicity, this type of direct conversion receiver has several advantages:

1. Even strongest signals will not block the receiver, especially if silicon diodes are used.
2. Better sensitivity and clean reception are achieved due to suppression of direct detection of all kinds of signals.
3. The receiver has greater stability of fre-

Anyhow, the idea for a weekend project is here, and we leave it to you to add something more: an r.f. stage, a.f. active audio filter, more a.f. gain, other bands, etc. And do not think, that this little gadget is a modern replica of your grandpa's "cat's whisker" detector receiver when he was a boy. It works like crazy, especially on c.w.!

(Continued on page 11)

Build Your Own Direct Conversion Receiver

(Continued from page 10)

References

V. Polyakov, "A Mixer for a Direct Conversion Receiver, 91 Radio, December 1976 (in Russian).

V. Polyakov, "A Direct-Conversion Receiver," Radio, Nov. 1977 (in Russian).

Radio Communication, July 1977, comments on pages 531-532.

B. Pasarić, "An Amateur Direct Conversion Receiver, 11 Radioamater, September 1977 (in Yugoslav).

B. Pasarić, Direct Conversion Receiver, Ham Radio, September 1978 (please consider editor's errors in the diagram, page 101).

Editors comments

May at 12:00.

Bulletin Readers for the Months of March and April.

2-Mar-08, ZS6BZF, John

9-Mar-08, ZR6RON, Ron

16-Mar-08, ZS6C, Joop

23-Mar-08, ZS6ARQ, Romeo,

6-Apr-08, ZS6GRL, Geoff

13-Apr-08, ZS6JNB, Willem

20-Apr-08, ZS6OUN, Stuart

27-Apr-08, ZS6WWJ, Willem

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Bulletins (Sundays at ...)
11h15 Start of call in of stations
11h30 Main bulletin start

Frequencies
439.000MHz 7.6MHz split
Input: 431.4MHz (West Rand Repeater)
145,625 MHz (West Rand Repeater)
10,135 MHz (HF Relay)

Radio Amateurs do it with more frequency!

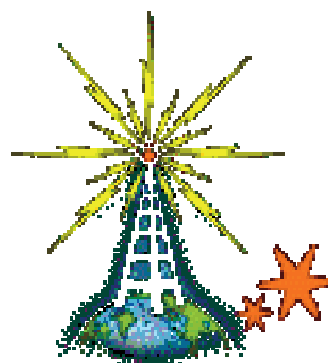
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SARL liaison	Willem	ZS6WWJ		marie.w@absamail.co.za

West Rand members - we need your input!

To make this the best ham radio magazine in South Africa we need your input. Please submit articles, comments, suggestions etc.

Please send plain text with no formatting to the email address below.

In July 2003, we re-published an Anode Compendium on CD. It has the issues from July 2000 until June 2005. This included the new Adobe reader. It has been updated, check with the chairman for details.



We need your input! Email us articles, comments and suggestions please.
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