

PACK RATS'



PACK RATS

CLUB CALL: W3CCX

MT. AIRY VHF RADIO CLUB, INC.

CHEESE BITS



MT. AIRY VHF RADIO CLUB., "THE PACK RATS", PHILADELPHIA, PENNSYLVANIA W3CCX
 NET FREQUENCIES: 50.125, 144.150, 222.125, 224.58/222.98, 432.110, 903.100, 1296.100 MHz
 AFFILIATED CLUB: AMERICAN RADIO RELAY LEAGUE ARNS

Meetings: Third Thursday of each month at 8:00 PM
 Southampton Free Library, 947 E. Street Road
 Southampton, Pennsylvania 19866

VOLUME XXXIII

NOVEMBER 1991

NUMBER 11

THE PREZ SEZ

I begin this month by thanking all of you who helped make HAMARAMA weekend a success. Thanks to our very capable chairmen, Al, K3EOD (hamfest) and John, KB3XG (conference), we were able to overcome the move to new locations and produce positive results. The current indications are that attendance was down at the hamfest due in part to our move, but mainly to the foul weather. As we anticipated, the new location will give HAMARAMA a superior location with room to grow.

I commented to KB3XG that I very much enjoyed the variety in the talks of the VHF Conference. I also had an opportunity to visit with some old friends. I spent time during and after dinner to visit with old friends Emil, W3EP/1 and Joe, W1JR. This leads me into the next topic.

I was very distressed to hear that a long-time ham friend had passed away. As I have attended all of the major VHF conferences over the past 25 years, I have had the personal good fortune to meet lots of fellow VHFers. Many of these are pioneers in the sense that they try something new and succeed at it. One of these was Larry Nickols, W5UGO who was one of the Oklahoma contingent on 5760 MHz. I first met Larry at a Central States VHF convention about 20 years ago. I had received a call from him in July wanting me to go to this year's Central States for their 25th anniversary. I declined and told him that I would see him next year. Larry passed away on August 9. He will be missed by all who knew him. I have some 5760 parts that Larry gave me to get on that band. They're in the junk box, but I think now is the time to get on the band.

I believe that the Packrats are just as much pioneers as anyone else I've met. Fellowship has allowed the club to prosper. Let each of us plan to attend our monthly meetings. If you need help, ask. Whether it be a ride to the meeting, antenna work, or help with your radio gear, ask and you will find plenty of friends willing to help.

William T. Murphy, W0RSJ

NOVEMBER PROGRAM: "30 Years of Ham Radio - Reflections and Predictions" Pack Rat Geoff Kraus, WA2GFP shares his observations and exciting experiences. Be There!!

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DEADLINE FOR ARTICLES AND SWAP SHOP IS THE 20TH DAY OF THE MONTH. NON-COMMERCIAL SWAP SHOP ITEMS - FREE OF CHARGE.

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K3EOD AL BOBLITT (1 YR)
N3AOG DICK COMLY (2 YRS)
WA3NUF PHIL MIGUELEZ (2 YRS)

MONDAY NIGHT NETS

7:30 PM - 50.125
8:00 PM - 144.150
8:30 PM - 222.125
8:30 PM - 224.58/R
9:00 PM - 432.110
9:30 PM - 1296.100
10:00 PM - 903.100

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CALENDAR OF COMING EVENTS

By Harry Brown, W3IIT

NOVEMBER

- 2-4 ARRL November Sweepstakes, CW. See October QST page 103 for rules.
- 4 Check into the Pack Rat 6 meter net on 50.125 MHz at 7:30 PM EST.
- 4 Check into the Pack Rat 33 cm net on 903.100 MHz at 10:00 PM EST.
- 5 Predicted peak of the Taurids meteor shower at 1228 UTC.
- 7 Election Day
- 11 Check into the Pack Rat 2 meter net on 144.150 MHz at 8:00 PM EST.
- 11 Check into the Pack Rat 23 cm net on 1296.100 MHz at 9:30 PM EST.
- 11 Veterans Day
- 14 Pack Rat Board of Directors meeting at the QTH of Dave Mascaro, WA3JUF
Call 215-795-2648 for directions. Meeting starts 8:00 PM.
- 17 Predicted peak of the Leonids meteor shower at 2156 UTC.
- 16-17 ARRL November Sweepstakes, phone. See October QST, page 103 for rules.
- 18 Check into the Pack Rat 135 cm net on 222.125 MHz (SSB/CW) or 224.58/R
(FM) at 8:30 PM EST.
- 21 Regular meeting of the Mt. Airy VHF Radio Club at the Southampton Free
Library on Street Road in Southampton, Pa. All VHFers are encouraged
to come and enjoy the evening with us. You need not be a member.
- 23-24 CQ World-Wide DX Contest, CW. See October QST, page 26 for rules.
- 25 Check into the Pack Rat 70 cm net on 432.110 MHz at 9:00 PM EST.
- 28 Thanksgiving

LETTER FROM W3CL

Dear Pack Rats:

The "Surprise Roast" you put on September 21st will be remembered all my life. It was a tremendous event with special thanks to Al Boblitt, K3EOD for all the tiring and detailed efforts he put in. There were friends there that went back to 1927 - some from the Navy, RCA, SJRA, DVRA and the QCWA.

The affair was kept a secret from me for over three months!! It really was an outstanding super event, including the many letters that were sent. Assistant MC George Van Dyke, W3HK, did a nice job too.

Sylvia and I and our family give our sincere thanks to the Pack Rats and friends.

Harry, W3CL

PROPAGATION REPORT

By Paul Drexler, WB3JYO

Congratulations to newlyweds Paul and Naomi Drexler currently on honeymoon in Scotland (GJ). In his free time (hi) Paul will attempt to visit several VHFers. Meanwhile, Paul is missing some great propagation and activity. On Paul's wedding day, October 19, several locals worked 7Q7RM on 50 MHz. During the following week the conditions which gave us daily, morning fog, produced some good coastal tropo. On the evening of October 23, WC2K worked W4FSO (FM14) in North Carolina on 222 and 903 MHz with 55 - 59+ signals. Then K4CAW/4 showed up on 1296 MHz from FM14 North Carolina with S-5 signals on SSB. The bands were hopping from Maine to South Carolina.

6 meter operators had a good session on Saturday October 26. N3BBI, N2SB, W3VIR, and WC2K worked a number of DX stations between 1230 and 1500Z including 7Q7RM, A22BW, FY3FV, G4BNC/8R1, PZ1AP, PY0FF, PT7BZ, PT7NK, PZ1EL, and HC5K. Keep a close ear on 6 this month - it may be the peak of F2 for the season and probably the last shot of DX for Cycle 22.

LETTER FROM EMIL, W3EP/1

Many thanks to John Sortor and the rest of the Pack Rats for inviting me to give a presentation [at the VHF Conference] and for all your kind hospitalities. I enjoyed it immensely and was gratified to hear such interesting discussion of my project. Thanks for the opportunity.

The discussions that morning have prompted me to go on with some additional investigations, and perhaps some Pack Rats could help. I need reports of 144 MHz Sporadic E propagation. Report the usual information: callsign and QTH of reporting station, dates, times, stations worked/heard, and relative comments. I can use anything as far back as 1950 including data about individual openings or your lifetime of records. I would be grateful for any information and will acknowledge all reports.

Sincerely,

Emil Pocock, W3EP/1

Rural Route 3, Box 70

Route 207

Lebanon, CT 06249

1992 JANUARY VHF SWEEPSTAKES

By Chairman Phil Miguez, WA3NUF

It's time for a change and this year, the change is the way we organize for the January contest. The lack of real outside competition in the past contests has lessened the enthusiasm and dulled the killer instinct that the Pack rats thrived on in the VHF SS. In order to get that old feeling back the club is sponsoring an internal competition of Pack Rat member teams. A letter detailing the competition rules and the TEAMS has been sent out to all of the area members. Help the club and your TEAM by getting your station in order. Now is the time to discover what's working and what's not; the day before the contest is too late! Don't miss out on a chance to win the coveted 1st place TEAM COMPETITION AWARD which every participating member of the winning TEAM will receive.

IMPORTANT NOTE: You must attend at least two meetings this year to participate in the club contest effort and the TEAM competition. Don't delay, see you at the next meeting.

SNAP SHOP

WANTED: 220 rig, mobile or HT. Prefer IC-37 but am flexible. Must be in good working order.

SELL/SWAP: Complete multi-mode station for CW, AMTOR, RTTY, Packet. C-64 computer with b/w mon and disc drive + fully loaded AEA PK64 multi-mode controller. \$125 + shipping.

CONTACT: Jim Ward, WA3AAJ/6
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San Diego, Calif. 92129
619-458-7757 (w)
619-484-3110 (h)

FOR SALE: Cushman CE-2 communications analyzer, \$200. 384 MHz L.O., \$20.00.

CONTACT: Chuck Grabowski, WA2ONK
609-586-7180 after 5PM

FOR SALE: 432/28 MMT, \$110. 432 4CX250 cavity amp, homebrew w/ps, 200W out, \$90. Tonna F9FT 1296 yagi, \$20. 2304 loop yagi, like new, \$30. 220 MHz xtal controlled FM xcvr with Rat rptr and 223.5, 5W out, scanning RX, \$25. Kenwood R-820 rcvr, \$200. Hammarlund HQ-120 rcvr, circa 1939, 100% restored in like-new condx, \$75.

CONTACT: Mark Adams, WB2JHG
Medford, NJ
609-654-4441

WANTED: HF mono-band yagis for 10, 15 20 meters. Rohn 45 tower sections and accessories.

CONTACT: Rick Connor, WC2K
Tabernacle, NJ
609-268-0736 (h)
609-783-4808 (w)

COMMERCIAL AD

LOOP YAGIS: 902 MHz 33 element \$89 kit, \$109 assembled and tested. 1296 MHz 45 element \$89 kit, \$109 assembled and tested. 1296 MHz 55 element "Super Looper" \$99 kit, \$124 assembled and tested. 2304 MHz 45 element \$75 kit, \$89 assembled and tested. Also available: element and hardware kits for above. 2 and 4-way power dividers. Discount on complete arrays. Solid state linear power amps, 13 VDC: 1296 - 8W in 35W out \$315, 1W in 20W out \$265, 4W in 70W out \$695. GAS FET preamps: 902 MHz .8dB NF \$90, 1296 MHz .8dB \$90, 2304 MHz 1 dB max NF \$140. SHF SYSTEMS no-tune transverter kits, w/144 MHz IF now available for 903 through 3456 MHz. Write or call for complete catalog. DOWN EAST MICROWAVE, Bill Olson, W3HQT, Box 2301 RR-1, Troy, Maine 04907. For information and orders telephone (207) 948-3741.

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W3ZD, David R. Zimmerman
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P.O. Box 645
Crystal Bay, Nevada 89402

WB3JYO, Paul Drexler XYL Naomi
24 Main Blvd
Trenton, NJ 08618
609-538-1687

LAST CHANCE FOR A FB CERTIFICATE

The South Jersey Radio Association is offering a handsome color certificate to any station who works each of the original 13 states on VHF and above during the 1991 calendar year. Many Pack Rats have probably already qualified including the June contest station W3CCX. With the way the weather's been, some good tropo and some E-skip is quite possible during the months of November and December which may allow operators to catch those needed states. Send a copy of your log with the entries that are pertinent along with an SASE to: THE VHF CHALLENGE, South Jersey Radio Association, P.O. Box 1026, Haddonfield, NJ 08033. Contacts must be completed on 50 MHz and above using direct contact via any natural propagation.

REPORT ON HAMARAMA 1991
By Chairman Al Boblitt, K3EOD

Hamarama '91 is now history. Although it was a success, it fell far short of the financial goal I had hoped for. I am sure that the weather conditions kept a large number of both sellers and buyers from attending and we must recognize the present economic conditions the country is going through. Still another adverse factor was the change of location to the Cherry Hill Racetrack from the Bucks County Drive-In where the hamfest has been held for 14 years. Although our numbers were down, we had over 1200 buyers and 221 sellers set up in 475 spaces.

The Garden State Park was large enough to handle the crowd and offers us plenty of room for expansion. In addition, most of the Pack Rats who worked the hamfest stated that the layout of the parking lots made the job much easier than at the Drive-In.

There were some problems, but in any move problems are to be expected. None of the problems appear to be insurmountable. If you noticed a problem at the Park, please let me know so that the difficulty can be corrected.

I would like to personally thank all the Pack Rats who devoted their time and energy to make this event the success it was. I would especially like to thank Rick WC2K, Dave WB2VLA, and Bob WB2YEH for working the hamfest from 10 PM Saturday until closing on Sunday afternoon. And to the rest of the Hamarama crew, thank you for a job extremely well done! We learned a lot this year, and next year we'll have a bigger and better hamfest.

1991 HAMARAMA WORK CREW:

N3AOG	Dick	WA3IAC	Chuck +	K3PHY	Wil
N3CX	Dave		daughter Angie	W0RSJ	Bill
WB3DNI	Pat	W3IIT	Harry	WB2RVX	Mike
K3EOD	Al	K3IUV	Bert	WB2VLA	Dave +
N3EVV	Walt	K3JJZ	El		son Nathan
N3EXA	Brian	WA3JUF	Dave	WB2YEH	Bob
WA3GFP	Geoff	WB3JYO	Paul	WA3YUE	Bruce
K3GYS	Gus	WC2K	Rick	WB8ZAR	Dave
KB3GX	John	WA3NUF	Phil	W3ITT	Al
W3HMU	Tony	WA2OMY	Gary	WA3EHD	Jim

These guys made the job easy on one another and successful for the club. It really runs well with a great turn-out of workers. Thanks again!!

TID BITS

- The Mt. Airy VHF Radio Club extends its sincere thanks to John Sortor KB3XG and Al Boblitt K3EOD who overcame the odds and master-minded the success of both the VHF Conference and Hamarama. Those of us who have worked as chairmen of these events can appreciate the hurdles that these men encountered on top of the major location change. Hundreds of hours of preparation precedes these two essential club events. THANK YOU FOR ALL THE DEDICATION JOHN AND AL!!
- Jim Ward, WA3AAJ writes and says " I really miss the old gang and feel especially bad about missing W3CL's party. I really miss the Rats and continue to follow their exploits in Cheese Bits.
- Received a postcard from Richard, K3EVW who says "Greetings from Japan and 73." Last month he sent one from Hawaii, wonder where he's off to next? Safe traveling Richard!
- Dave Zimmerman, W3ZD writes from Lake Tahoe, near his new home in Crystal Bay, Nevada. Dave says "Seems that Al and all the gang did a fine job with Hamarama, congrats to all. W3CL roast was a big disappointment to me to have missed it. I enjoyed the report, 73 to all."

WEAK SIGNAL SOURCES FOR THE MICROWAVE BANDS

903 MHz to 10.368 GHz
Paul Wade N1BWT

Introduction

There are few areas of the country where microwave experimenters have the luxury of beacons or local hams to provide a signal source for checking out microwave equipment. The rest of us need a local weak signal source for tuneup, and to be able to verify that things are working when no signals are heard. Relying on harmonics of VHF² equipment can be very misleading - I learned this the hard way on top of Burke Mountain in northern Vermont during the 1990 UHF contest.

These weak signal sources provide a local signal source that is strong enough to be heard at a reasonable distance, perhaps a few hundred feet, but not strong enough to ride through directly into the receiver, so that the entire system, including preamps, coax switches, feed-line, and antenna, may be verified. The crystal frequency can be chosen so that none of the harmonics fall in the IF band; most of those listed in the table on the schematic avoid all ham bands.

The design is based on the no-tune transverter and oscillator work of KK7B, and is very similar to the LO section of the 903 transverter listed in the references. The only significant differences are in scaling of the filters for 903, 1152, and 1296 MHz; also, I flipped the artwork to avoid bending the base leads of common transistors under the can.

Tuneup

Tuneup is straightforward, and easiest if built in stages, following the schematic from left to right. Most of the component values aren't critical - the ones mentioned below require some attention. The first stage is to install all parts up to Test Point A, and measure the output at the test point. Adjust trimmer C1 for max output, checking to see that the crystal is running on the right overtone. Most of the crystal frequencies can be checked by listening on an FM broadcast radio (if it isn't near the right frequency, replace the crystal with a 47 ohm resistor and adjust L1 until C1 tunes through the desired frequency). I don't like to leave trimmers in the circuit, so after peaking C1, I estimate its capacitance and replace it with a fixed capacitor, then squeeze and stretch L1 to repeak the output. The second stage is to add components up to Test Point B and check the output there. I typically see one milliwatt (0 dBm) at Test Point A and 10+ milliwatts (10 to 12dBm) at Test Point B.

Now it is time to add the multiplier and next two amplifiers. There isn't enough output after the multiplier to measure unless you have a spectrum analyzer (that's cheating!), so the amplifiers give enough signal to measure, typically -10 to -20 dBm, depending on the number of times the crystal frequency is multiplied. This is plenty of output for a weak signal source, but if you feel a need to peak it, squeezing and stretching L4 sometimes makes a difference.

The optional amplifier is not recommended for 903 and 1296, but may be useful at 1152 to get to the higher bands. To install, drill a hole in the output stripline for the MMIC and make a cut with an X-acto knife for the output blocking cap. With this amplifier there is enough gain in the box to make things touchy; an external amp might be better.

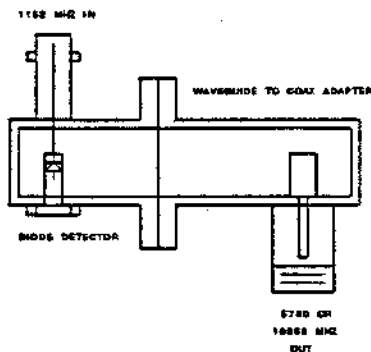
Board

The board artwork is shown in the copy, with four triangles on each to define an exact 3 inch by 4 inch rectangle for scaling. If you choose not to make your own, Down East Microwave should have both boards and kits available soon.

Higher Bands

All the standard calling frequencies above 2GHz are multiples of 1152 MHz (+100KHz), so this is the starting point. I made this one with the optional amplifier, which provides measurable (~-30dBm) harmonic output at 2304 and 3456 MHz to use as a weak signal, preferably after filtering. Output at 5760 and 10368 was not detectable, so I used a very simple harmonic generator and high-pass filter: a waveguide diode detector and a waveguide to coax adapter, both surplus, bolted together (see sketch). The 1152 MHz drives into the detector BNC output, and 10 GHz comes out the coax end of the waveguide to coax adapter. Drive of 8 to 10 dBm (from an external MMIC amplifier) produces an output of around -50 dBm at 10.368 GHz, but 0 dBm drive produced no output; apparently this is not enough to produce harmonics from a 1N23 diode. The waveguide section does rudimentary filtering, with all harmonics in the waveguide passband appearing; a real filter could be inserted here.

I haven't yet tried this with C-Band waveguide components, but there is no reason it shouldn't work just as well for 5760 MHz.

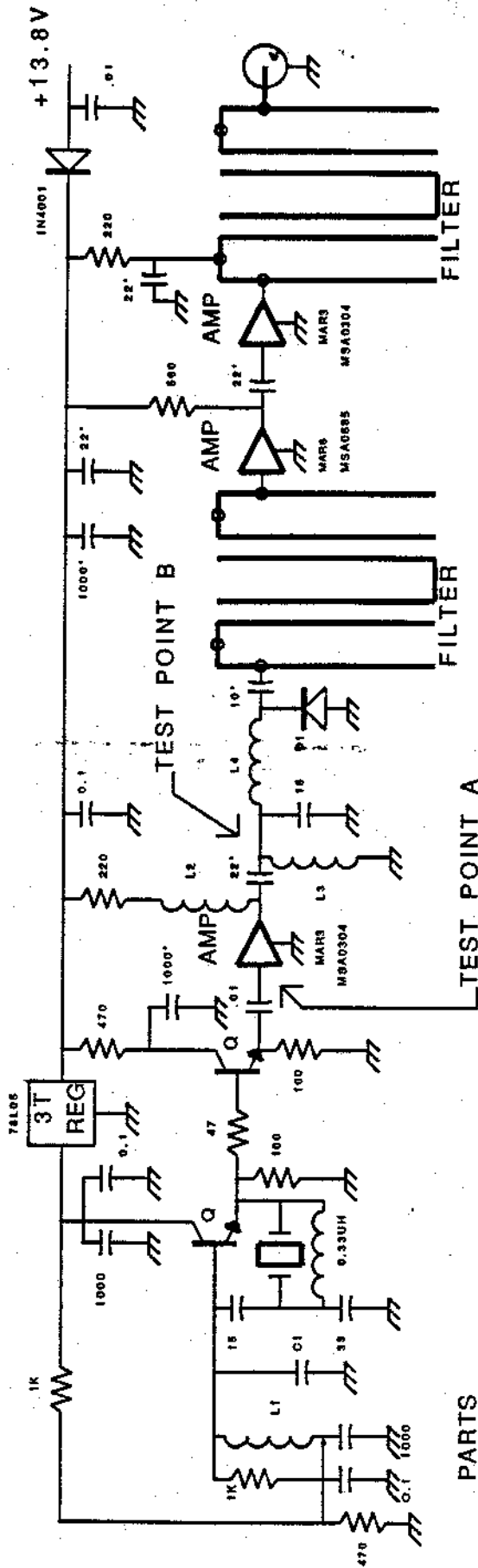


HARMONIC GENERATOR

TNX NTMS FEEDPOINT

MICROWAVE WEAK SIGNAL SOURCE

N1BWT 1991



PARTS

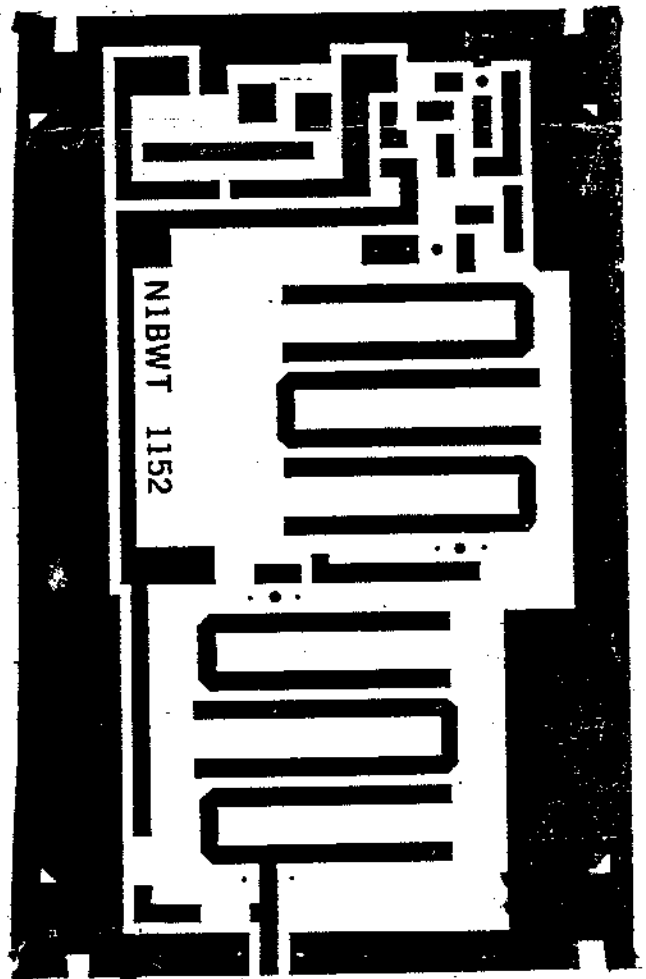
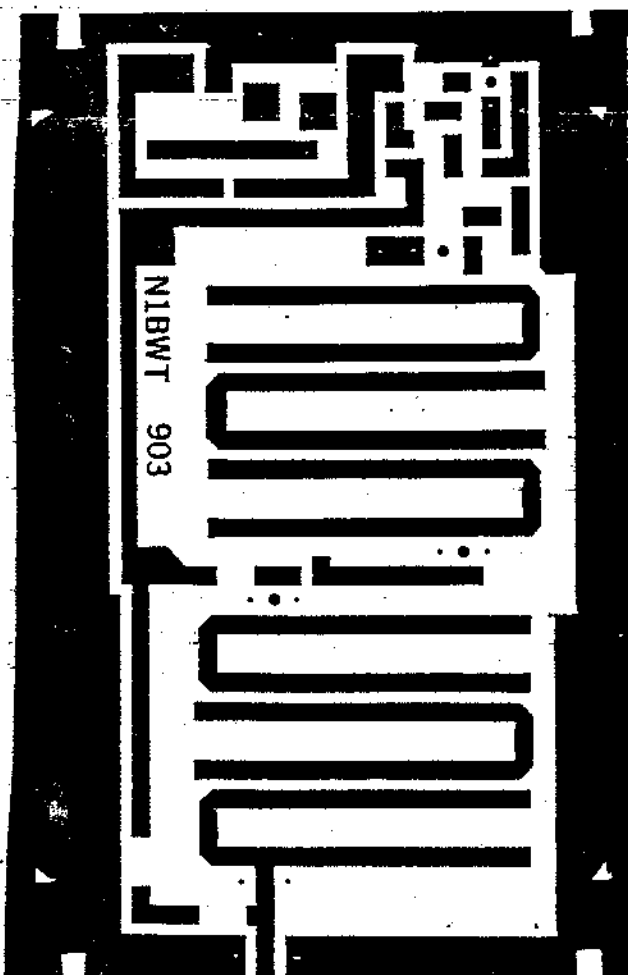
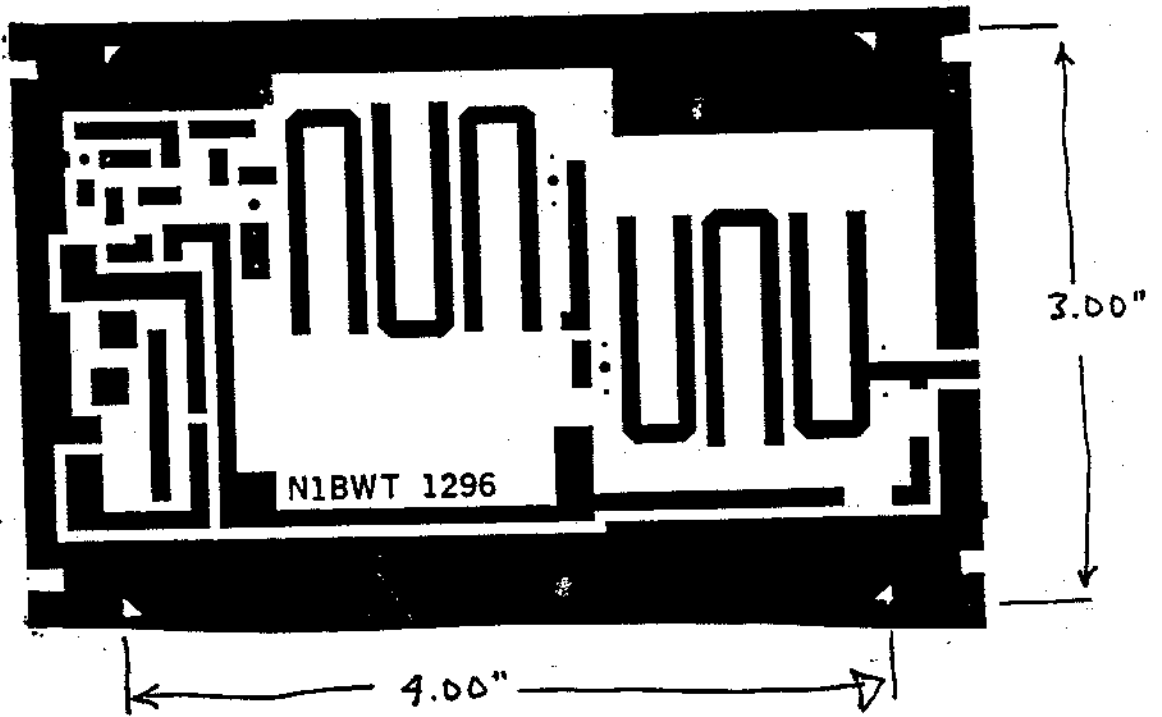
- * IS A CHIP CAPACITOR
- C1 - 10 PF TRIM TO OSCILLATE
- L1 - 10 TURNS #24 0.1DIA
11 TURNS BELOW 90MHZ
- L2-5 - 8 TURNS
- Q - 2N5179, 2N4124, ETC
- D1 - HP2835 OR SIMILAR
- Y1 - SEE TABLE

CRYSTAL FREQUENCY - MHZ	
903.1	1152
72.26	76.802
82.1	82.287
90.31	88.617
100.344	96.002
112.89	104.73
	1296.1
	81.01
	86.41
	92.58
	99.70
	108.01

BOX - RADIO SHACK 270-238

REFERENCES:

1. CAMPBELL, R., KK7B, & HILLIARD, D., W0PW, A SINGLE BOARD 900MHZ TRANSVERTER WITH PRINTED BANDPASS FILTERS. PROCEEDINGS OF MICROWAVE UPDATE 1989, PAGE 1.
2. CAMPBELL, R., KK7B, A CLEAN, LOW-COST MICROWAVE LOCAL OSCILLATOR. QST, JULY 1989, PAGE 15.



SOUTH JERSEY RADIO ASSOCIATION VHF CHALLENGE AWARD



In commemoration of SJRA's 75th Anniversary and coincident with the 200th Anniversary of the Adoption of the "Bill of Rights" to our Constitution by the Original 13 States

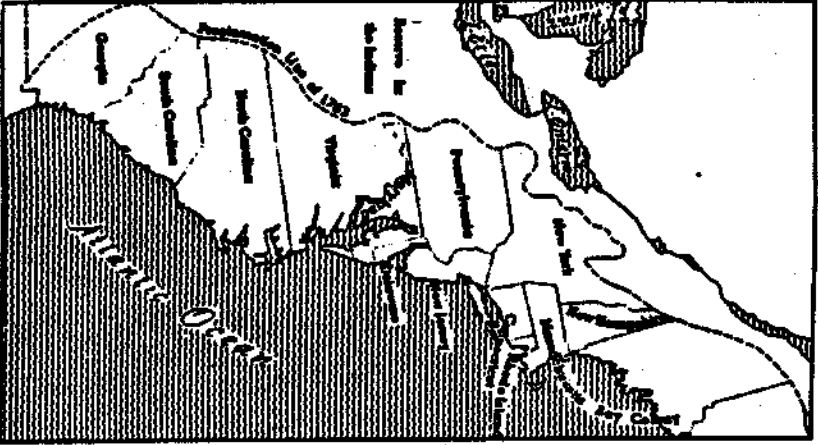
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Has provided confirmation that he/she, in 1991 has Communicated with the 13 Original States on frequencies of 50MHz or Higher

Award No. _____ Date _____ 1991

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Wesley Somms, W2YHU
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