

PACK RATS'



PACK RATS

CLUB CALL: W3CCX

MT. AIRY VHF RADIO CLUB, INC.

CHEESE BITS



MT. AIRY VHF RADIO CLUB, INC., PHILADELPHIA, PA.

ARNS

50.125, 144.150, 220.125, 432.110, 1296.110 MHz, W3CCX - Repeater 222.98/224.58 MHz

Affiliated Club: AMERICAN RADIO RELAY LEAGUE

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

VOLUME XXV

APRIL, 1983

NUMBER 4

THE VICE-PREZ SEZ

Well, with this issue of Cheese-Bits I guess I can finally start bragging that I made front page news. Our Prez is stomping around in North Carolina at the moment but did manage to check in on the 432 Monday Nite Net via K4CAW.

The March club meeting was a real eye opener for anyone who has'nt been keeping up with the rapid advances in technology. Jerry Chappell, a local Hewlett-Packard representative brought a trunk full of the latest in noise figure measuring equipment and provided us with a terrific demonstration and a chance to find out just how good our pre-amps really are. Thanks Jerry. From the number of projects lined up for noise figure testing its' safe to say that the art of home-brewing is alive and well within the Pack-Rat organization. (the test results are listed in another part of this paper).

The ARRL SPRING SPRINTS are coming. The first of the league sponsored VHF mini-contests designated Spring Sprints is less than a month away. These are six hour events using the grid square system and a great way to boost activity on the bands as well to improve our VHF QSL card collections. This is a new idea which the Pack-Rats should give their full support. The first sprint is on 2 meters on April 18, 1983. The regular 2 meter Monday nite net will be suspended that evening so that everyone can enjoy the contest. (from 6 PM to Midnite). Lets show our stuff!

DUES ARE DUE

Phil, WA3NUF

DUES ARE DUE

* * *

Last minute news: Doc, K3GAS received a note from Dick, K3IGX now located out there in Arizona joined their repeater association. His new telephone number - 602-872-1808

Steve, KF6AJ (ex- WA3WAS) reports a change of QTH : 915 Apricot St., Unit B,
He says 73 and will visiting the area on May 15th. Campbell, CA 95008

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SWAP SHOP ITEMS - NO CHARGE

DEADLINE FOR ARTICLES IS THE GENERAL
MEMBERSHIP MEETING: THE THIRD THURSDAY
OF THE MONTH

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609-783-9478

CLUB HISTORIAN:

W3CL, HARRY B. STEIN

MONDAY NIGHT NETS NET CONTROL

7:30 PM - 50.125 MHZ	W3CL
8:00 PM - 144.150 MHZ	W2EIF
8:30 PM - 222.98/224.58	K3GAS
9:00 PM - 432.1 MHZ	K3IUV-WA2DPU
9:30 PM - 1296.025 MHZ	W3CXU

PACK RAT REPEATER 222.98/224.58 MHZ
LOCATED IN CHURCHVILLE, PA.

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VICE-PRES: WA2DPU, BILL SMITH
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CALENDAR OF COMING EVENTS

Syllabus by Lee, K3MXM

APRIL

- 1 GOOD FRIDAY
- 3 EASTER SUNDAY
- 9 Flemington, N.J. Hamfest - Hunterdon Central High School, Cherryville Repeater Ass'n.
147.375 talk-in
- 9-10 ARRL QSO PARTY - CW
- 14 Board of Directors Meeting - QTH - Doc Cutler, K3GAS, 7815 New Second Street,
Elkins Park, Pa. 215-635-1078. Directors and interested parties always welcome
to express their views and opinions.
- 15 Black Friday - Income Tax Due Today
- 16 DHARC Hamfest - Downingtown Sr. High School, Downingtown, Pa.
- 16-17 Trenton Computer Festival - Big Two Day Affair - Manufacturers Displays, Seminars;
Flea Markets, User Group Sessions - Trenton State College, Trenton, N.J.
- 16-17 ARRL QSO Party - Phone
- 3 First ARRL VHF/UHF Spring Sprint on 144 MHz from 6 PM to midnite local time. Grid
square locators-good chance for 2 meter activity. For details see Pg. 85 March QST.
The Pack-Rat net is cancelled for that evening.
- 17 15th Annual Kite Flying Contest - Curtis Arboretum - Elkins Park, Pa. Now when
someone tells you to go fly a kite - you know where....
- 21 General Club Meeting - Southampton Free Library 8 P.M. Topic: Program will be
announced on the Pack-Rat nets. The Mario Raffle, Frankies Silent Auction,
Refreshments.
- 24 Daylight Saving Time Begins - Remember - Leap ahead - move clocks forward one hour!
- 26 Second ARRL VHF/UHF Spring Sprint on 220 MHz from 6 P.M. to midnite.
- 27 Secretaries Day
- 29,30,
May 1 The Biggie - Dayton Hamvention. Dayton Hara Arena and Exhibition Center.
Peg and Lee spent some time in * * *
the Orlando, Fla. area.

NETS

The SWOT Delaware Valley Net operates on 144.250 MHz Wednesday evenings at 9 P.M. WB2BJH
is acting net control. Pack-Rats please check in on this - its a good one!

There is a Central N.J. QCWA net on Tuesday evenings at 10 P.M. on the Asbury Park, N.J.
Repeater 147.045 MHz - Our old friend Phil Peterson, W2DME is net control. (Tnx W3AYJ).

DUES ARE DUE - DUES ARE DUE

NEW PRODUCTS OF INTEREST TO HAMS

By Lyn, W3NSI

1. VHF UHF SWR METER: Daiwa now has an extensive lineup of antenna tuners and SWR meters. One of the more interesting units for use at VHF is the CN 630 which covers the range 140 MHz to 450 MHz. This is a dual meter item and will read forward and reflected power at the same time, a convenience you can appreciate only after having switched a regular SWR meter back and forth 50 or 100 times during antenna adjustments. Minimum power is rated at 4 watts, maximum at 200 watts. Forward and reflected power are read directly from the meter scales, while the SWR reading is taken from the point where the needles intersect. Price \$135
2. HT POWER PACKET: Vocom Products Corp. has an interesting new product that can be used with just about any HT equipped with a belt clip. The Power Packet is fastened under the car dash and hooked up to the car 12 volt system. The HT is slid into place under the Packet unit and interconnecting cords are patched into the HT. A mic can be connected to the Power Packet. The Packet then provides up to 3 watts of receiver audio, which can be patched into the car radio speaker system. A mic pre-amp is also provided as is a charger for the HT internal battery. This charge varies depending on the drain to the HT and can be 35 Ma to 400 Ma so that the internal battery will not be depleted. A hooded lamp is provided on the Packet to illuminate the HT front panel. Price \$85. 65 E. Palatine Rd., Prospect Heights, IL 60070
3. MOBILE DUCKY: The Tuned Antenna Co. is selling a magnetic mount antenna using a rubber duck 7" high helical wound whip. Three models are available for the 144-220-440 MHz bands. Just the thing for those low garage doors. MD2 - MD220 - MD440. Price \$12.95. 9520 Chesapeake Drive #606, San Diego, CA 92123
4. POWER AMP FOR 220 MHZ: Mirage Comm. Inc. has introduced a third 220 amp. the C1012. This unit will boost 10 watts up to 120 watts out and will also perk up the received signal with the built in receiver RF amplifier. The C1012 can be used with a 2 watt HT to boost the signal to about 45 watts for mobile operation. Price \$290.

NOTE: The Icom IC 35 for 220 MHz FM has been held up due to problems. Looks like we will have to wait a while for this one.

* * *

UHF/VHF REPORT

By Joe, W2EIF

The bands from 50 MHz on up have been quiet although there is activity on 2 meters around 144.2 almost nightly. Conditions have been fair to good. The Pack-Rat 2 meter net has had participants from New England, Western N.Y. and Toronto.

There have been a number of auroras, with some good for contacts up thru 220 MHz. The dates noted here were Feb. 20 and 27 and March 1 and 12-13. There have been others that I did not hear. (* NOTE N3BBI REPORT)

Don't overlook the New "Sprint" contests that ARRL is sponsoring. See March QST 1983 for details. These are interesting contests in that they are only 6 hours long starting at 6 PM and ending at Midnite local time. There is only one contest per week starting with 144 MHz and progressively 220, 432, 1296. 50 MHz is reserved for the last week when the Es season will be pretty good! The exchange is the new grid square system (Feb. QST P. 49) with signal report optional. The scoring is simple - first multiply the number of contacts you make by the number of grid squares for the total. The dates selected for the tests follow the accepted "activity" nites i.e. Monday 144, Tues. 220, etc. Should spur some activity.

NOTE *: N3BBI reports an opening on March 12, 1983 and the following stations worked on 6 mtrs: TI2NA (59+) 2050 GMT; VE2FUT (59+) Montreal - 2059 GMT (AU); W5UWB (59) Texas - 2105 GMT; VE1YX (59+) Nova Scotia - 2120 GMT (AU); WB8KRY (59+) Ohio - 2322 GMT (AU). Aurora on 2 mtrs Upstate NY - nothing heard on 220 or 432. (Mike reports also 50 MPH winds up there at Jim Thorpe, Pa.)

LADIES NIGHT MESSAGE

May 14

May 14

May 14

THIS IS THE DATE FOR THE PACK-RAT BANQUET. THOSE WHO HAD ATTENDED IN PREVIOUS YEARS, KNOW WHAT TO EXPECT. GOOD FELLOWSHIP, GOOD FOOD, AWARDS AND SURPRISES. COME ONE, COME ALL. LET'S MAKE THIS YEARS BANQUET, THE BEST. PRICE EXPECTED TO BE THE SAME AS LAST YEAR. \$25.00 A COUPLE, NOT MUCH WHEN YOU CONSIDER AN OPEN BAR IS INCLUDED. WHEN YOU RECEIVE THE FLYER, PLEASE ANSWER PROMPTLY!

K3GAS & W3CL

* * *

Southampton Free Library
947 Street Road
Southampton, Pa. 18966

Feb. 25, 1983

Mr. David R. Zimmerman
Corresponding Secretary
Mt. Airy VHF Radio Club, Inc.

Dear Mr. Zimmerman:

We appreciate very much and want to thank the Mt. Airy VHF Radio Club for the latest edition of amateur radio publications. (ARRL). These 23 soft bound publications will certainly enhance our collection. We will eagerly display and circulate these publications.

Sincerely,
Roberta Fechner, Secretary
Library Board

* * *

ANNOUNCEMENT

First International VHF/UHF Conference will be held as a part of the Dayton Hamvention from April 29 through May 1 and will include - Technical talks and forums. The program on Friday, April 29, 1983 at the Hara Arena will include well known U.S. and International VHF'er including our own Pack-Rat Bill Olson, W3HQT. (Tnx NE VHF NEWS)

* * *

ARRL VHF/UHF SPRING SPRINT SCHEDULE

Monday - April 18 - 144 Mhz
Tuesday - April 26 - 220 Mhz
Wednesday - May 4 - 432 Mhz

Thursday - May 12 - 1296 MHz
Saturday - May 21 - 50 MHz

Operating time from 6 PM to Midnight Local time. Grid squares for locators - no signal report required.

* * *

ARRL BULLETIN NR 16 FROM ARRL HEADQUARTERS NEWINGTON CT
MARCH 2, 1983 TO ALL RADIO AMATEURS BT

AMTOR, a digital teleprinter operation that produces copy less prone to errors, is now permitted in the amateur hf bands from 3 to 30 MHz. The new rules became effective with their publication in the February 22 Federal Register, see page 7457. For a description of this handshaking technique, see June 1981 QST AR

TELECONFERENCE RADIO NET A SUCCESS

Vic Clark, W4KEC, President ARRL, did a magnificent job on the first Amateur Teleconference Radio Net on the evening of March 3, 1983. The three segment speech was on "The Future of Amateur Radio". The Honeywell ARC of Minneapolis sponsored the net control station WØTN, Rich Whiting who did an outstanding job. The next teleconference net will have Joe Reisert, W1JR as the speaker on June 2nd at 8:30 PM. Joe will talk on "State-Of-The-Art Antenna Design." Pack-Rats mark your calendars and listen to the Cherryville, N.J. repeater on 147.375 or the Marc repeater located in Delaware County on 147.06.

* * *

VISITORS MARCH 17, 1983 MEETING

WB2BJH, Russ - Kinnelon, N.J./Phila., Pa.
, Jerry Chappell, Hatboro, Pa.
W2JAV, Phil Catona - Pitman, N.J.
W3AJS, Charles E. Keener - Orelan, Pa.

WB3EFO, Ed Lee - Huntingdon Valley, Pa.
W2NM, Mel Sulzburg - Blackwood, N.J.
N3CX, Dave Hackford - Finland, Pa.

* * *

VOTED TO MEMBERSHIP

WB2BJH - Russell J. Edmunds - XYL - Diane
Palace Hotel, 18th & Parkway
Phila., Pa. 19103
215-963-2222 X1807

* * *

APPLICATION FOR MEMBERSHIP

W2NM, Mel Sulzburgh
38 York, Nob Hill Apts.
Blackwood, N.J. 08012
609-227-0349

N3CX, David T. Hackford
Box 138 RD 2
Pennsburg, Pa. 18073
215-679-7293

* * *

CHANGE OF ADDRESS

WA3OVH - Peter H. Shavney
242 Cornell
San Antonio, TX 78201

* * *

TID BITS

Sunwatcher, Jack Power, W2AXU, reports the monthly sunspot No. for February, 1983 = 50.1 smoothed No. for August 1982 = 108.9.

The Pack-Rats will be hosting Carol Smith, AJ2I, ARRL Membership Services Department on Thursday evening May 19, 1983 club meeting - Carol writes the "Happenings" column in QST. Atlantic Division Director Hugh Turnbull, W3ABC will be joining us also. The meeting in May traditionally has been our famous ARRL Nite.

(TID BITS CONTINUED ON PAGE 8)

SWAP SHOP

FOR SALE OR SWAP: Collins 32S-3 W/PS (WE)
Collins 51J3 (R388) (0.5 to 30 MHz).

A AR-8516, (80KHz to 30MHz) Heath HO-13
Ham Scan.

CONTACT: Gus, K3GYS
Phone: 609-767-3628

FOR SALE: Kenwood TS600 W/VOX3, Tempo SI-T
Walkie/Talkie w/leather case & rubber ducky.
Computer Goodies: Ohio scientific GZ-4P
computer & 24K expansion memory board w/full
documentation; acoustic coupled 300 baud modem;
direct connect modem 300 baud auto ans./orig.,
printer 200 cps dot matrix tractor-feed -
full width commercial quality.

CONTACT: Bruce Loss, WA3YUE
Phone: 215-947-4166 (Home)
215-542-2966 (Work)

FOR SALE: Lettine Model 242, 45W. 2 mtr. Am xmtr
with mobile connections & A.C.P.S. & operating
instructions. Gonset -communicator IV, VFO model
3357, 6 meters, 2 mtrs and 220 Mhz osc. ranges plus
manuals & instructions for connections of VFO to IV
plus data for adding FM to xmtr of the IV. Make
offer - cash & carry. Mikes may be available also.

CONTACT: W2DKH, Lou Roth
116A Lowell Lane
Jamesburg, N.J. 08831
Phone: 609-655-2825

FOR SALE: Kenwood TR-2500 w/58D charger &
collapsible 5/8 wave ant. \$225 or trade for 6 mtr
portable or 220 MHz FM rig.

CONTACT: Mike, N3BBI
Phone: 1-717-325-3580 after 6 PM

* * *

BUSINESS CARD AD CHANGE

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975 Jaymor Road
Southampton, Pa. 18966
215-355-5400

* * *

ANNOUNCEMENT

Tony, K3UKW announces a new Cowtown computer and electronic fleamarket the 3rd
Sunday of each month. Location near Salem, N.J. on U.S. Rte. 40 east of 295 at Exit 4,
about 7.5 miles to Cowtown. The first event will be held on the Fourth Sunday, May 22, 1983
for additional info. Phone 215-271-8898.

* * *

FROM ARRL LETTER

A new 220 MHz world record was established on March 9, between KP4EOR, located near
San Juan, and LU7DJZ, located in Buenos Aires. The 3670 mile QSO was made via transequatorial
propagation. KP4EOR used both cw and ssb, while LU7DJZ used cw only. The old distance record
was established in June, 1959, between W6NLZ and KH6UK, covering a distance of 2540 miles.
ails will be in Bill Tynan's column in May.

* * *

THE EIGHTH ANNUAL TRENTON COMPUTER FESTIVAL - TRENTON STATE COLLEGE, TRENTON, N.J.
Saturday - Apr. 16 - 10 AM - 6 PM.... Sunday - Apr. 17 - 10 AM - 4 PM

FOR SALE: GLE Channelizer mobil 440B
with a standard marine radio mike & spkr.
\$120.

CONTACT: Sam, N3SM/4
P.O. Box 4541
Macon, GA 31208
Phone: 912-474-2283

FOR SALE: Colline 75A4 rcvr "the classic"
with 0.5, 3.1, and 6 KHz filters. True mint
condx. - hi serial No. (5386) \$360. Clegg
FM27B xcvr - all channel selection from
146 to 148 MHz - 25W output \$135.

WANTED: Ham Radio Issue of May 1982.

CONTACT: Bert Soltoff, K3IUV
961 Warfield Ln.
Huntingdon Valley, Pa. 19006
Phone: 215-947-4483

FOR SALE: A 60 minute audio cassette tape
is available of the first teleconference
radio net's program when Vic Clark, W4KFC,
ARRL Pres. spoke on "The Future of Amateur
Radio" March 3rd last. Cost \$2 plus 50¢
for mailing.

CONTACT: Al, W3AYJ (Phila.)
215-725-2869

FOR SALE: 3 DC REX rotary electric mimeo
machine- compact model with ink & supplies
AC or manual \$20. portable phonos & stereos
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6&2 converters, switching box, spkr, manual
\$90; Collins 75A3 rcvr - 1 filter w/ameco
converters for 6, 2, 220 Mhz w/P.S. CE SSB
slicer & switching box \$200; Concord
stereophonic 444 reel to reel tape rec.
\$20; Concord 880 stereo reel to reel tape
rec. \$30. Small tv's available.

CONTACT: Doc, K3GAS
Phone: 215-635-1078

NINTH ANNUAL EASTERN VHF/UHF CONFERENCE

The 9th Annual Eastern VHF/UHF Conference will be held May 13-15, 1983 at the Sheraton Tara, located in Nashua, New Hampshire at Exit 1, U.S. Route 3, approximately one-half hour north of Boston. Friday night there will be a hospitality room hosted by the Northeast VHF Association. Saturday's program will feature well-known VHFers speaking on antennas, receivers transmitters, microwaves, and other topics of interest to VHFers. There will also be "rap-sessions" for each of the bands, chaired by persons active on the respective bands. Saturday night there will be a banquet (Banquet food at the Sheraton is generally excellent), followed by a speaker (name to be announced later). After the banquet, everyone reassembles for the prize drawing. Sunday's program consists of the noise figure and antenna gain measurement contests (the latter if weather permits). This year is planned to accommodate any preamp/converter IF up to 1500 MHz, so bring your converters as well as preamps. The antenna range will be set up for 432, 902, 1296, and 2304 MHz.

The fee for pre-registration is \$13.50, before May 9. After that date, the fee will be \$20.00. Banquet reservations must be made by May 9; the price is \$14.00. For registration information, contact Rick Commo, K1LOG, 3 Pryor Road, Natick, MA 01760.

* * *

TID BITS CONTINUED

The Delaware Valley Chapter QCWA will be having a dinner meeting on Saturday, May 21, 1983 at The Buck Hotel, Feasterville, Pa. Cocktails 3:30 P.M. - Dinner at 4 P.M.

Jerry Chappell, the rep from Hewlett Packard squared away a lot of mysteries on noise figure measurements at our last meeting. The workshop session brought smiles and tears from our homebrewers -- it was quite an evening.

Heard from the Boyle's of Peoria, Arizona - K3IGX that is - Muriel wrote a nice letter explaining a bit of homesickness but otherwise getting settled. A pick-up truck ran into the rear end of their car but no injuries. Drop us a line too Dick!

* * *

220 MHZ LINEAR AMPLIFIER

By D. Mascaro, WA3JUF

Activity on the 220 band is increasing. The popular rig on this band is the Microwave Modules 220 XVTR. Although the 10 watt transmitter does well for qsos up and down the coast, higher power is always needed.

The following is a 70 watt SSB amplifier design using the SD1434. This is a UHF power transistor manufactured by Thomson CSF Components Corp. Using the MMT 220 XVTR with 10 watts, P.O. is 65 to 70 watts. The amplifier can be driven with 15 watts from a Midland FM transceiver for greater than 75 watts out.

Construction is straight forward using micro strips on G-10 fiberglass double sided board. The two amplifiers I have built were done using a Ruby and Ultraviolet exposure techniques. But the board can be cut out using an exacto knife and a hot soldering iron to remove the copper, or masking tape can be used as a resist to etch the board. Parallel input/output line were used to make the amp easy to tune and eliminate two variable trimmers. (PC BOARD DWG WILL BE IN THE MAY ISSUE OF CHEESE-BITS)

Rivets are used through the board to insure good rf grounds. This is important. The amplifier will not tune if the rivets are forgotten.

Tune up is accomplished at 12v. with the base return choke grounded. Tune for max. P.O. and min. Power In reflected, as inciated on a coupler on the input. A Bird meter with a one watt slug is usable. Input return loss is very good with reflected power of 100 mw or less. This degrades a little with the double pole relays used to do RF switching.

(CONTINUED ON PAGE 9)

220 MHZ LINEAR AMP. TEST
CONTINUED

With the Vcc at 14-15 volts, adjust the bias dropping resistor for Icq (idling current) of 150 - 220 ma. Tune for max. P.O. again and min. reflected, going back and forth for good efficiency and P.O. Bias is removed on receive to prevent the amplifier from possibly oscillating in to the open antenna relay, also to reduce heating and current draw.

The bias diode is mounted next to the device, attaching the diode to the heatsink. Even though the device does not get very hot during SSB (provided a large heatsink is used) the diode keeps the quiescent current stable. The device is screwed down tight! using heatsink compound between the flange and a smooth heatsink surface.

No relays or switching is shown. Two miniature Dow Key 12V. relays can be used as the DPDT RF relay switch, and solid state switching can be used for the controls and bias switching.

On the air test with a close station is recommended to prove the linearity of the amplifier. Adjust the bias for best results. Be sure the device is not running HOT hot. The supply must of course be fully regulated and capable of 8-10 amps. at 15v.

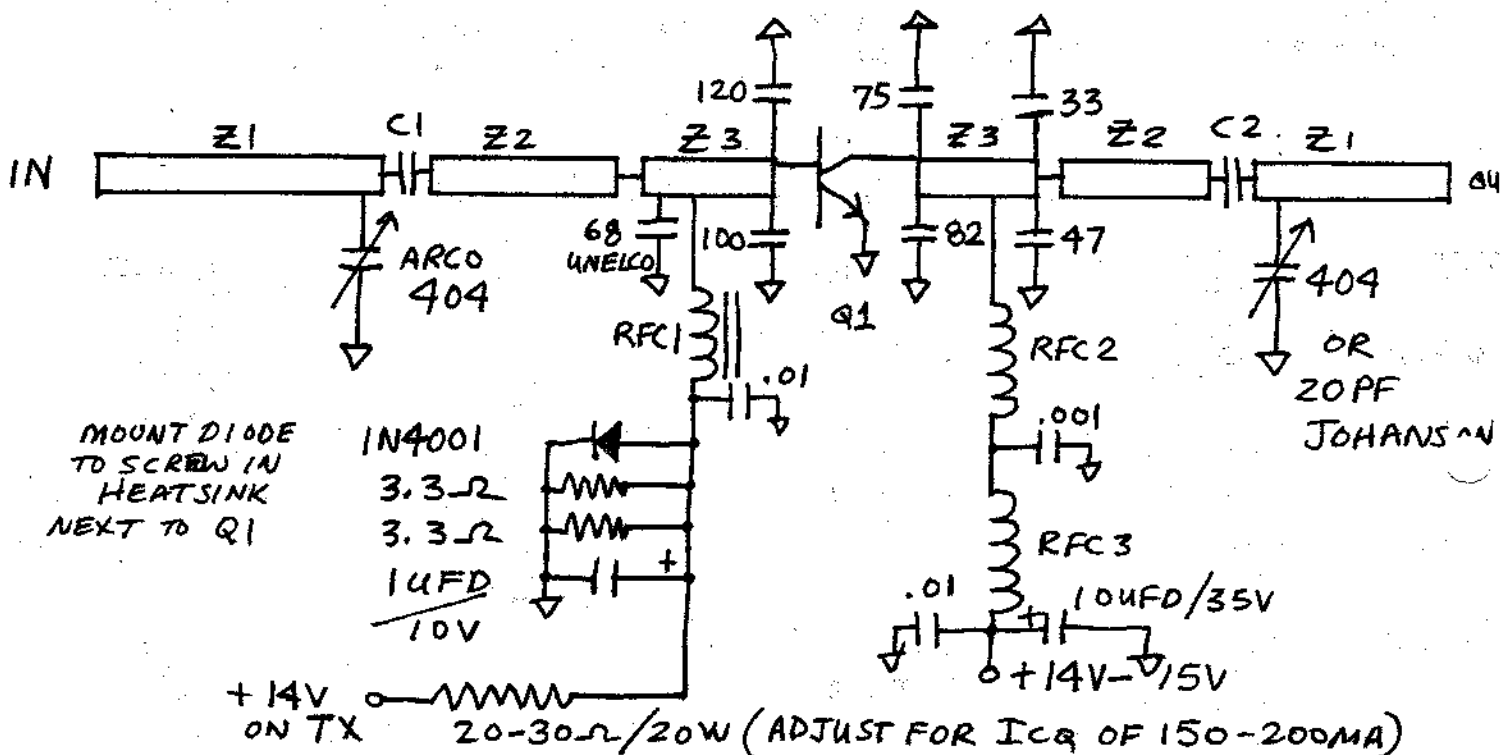
* * *

NOISE FIGURE MEASUREMENT RESULTS

	<u>CALL</u>	<u>DEVICE</u>	<u>GAIN(dB)</u>	<u>N.F. (dB)</u>
50 MHZ	W3IIT	W-J Module	43.2	2.72
	WB3JYO	40673	10.6	7.75
144 MHZ	K3GAS	Janel Preamp	15.9	1.54
	W3KKN	?	16.28	1.59
	W2NM	?	8.48	1.95
	W3IIT	MRF901 #1	14.8	2.54
	W3IIT	MRF901 #2	16.26	2.63
220 MHZ	W3HQT	3SK48	18.6	1.32
	W3KKN	3SK48	17.78	1.90
432 MHZ	N3CX	D432	21.11	1.08
	W3IIT	MRF901 #1	12.15	1.48
	W3IIT	MRF901 #2	9.49	2.63
	K3IUV	A.R.R. Preamp	13.13	3.65
1296	WA3AXV	NE720	15.05	0.63
	WA3AXV	NE700-4	17.45	0.92
	WA3JUF	NE700-4	13.61	1.40
	WA3AXV	MRF901	12.34	3.60
	K3IUV	V766	10.45	4.00
	WA3JUF	1296/144 Xvtr	25.93	6.90
	K3IUV	?	8.70	11.7
2304	WA3JUF	MGF1400	11.90	1.98
	WA3JUF	MGF1400	12.20	2.20
	W3HQT	2 stage MSC88001	24.8	5.08

The above measurements were made by Jerry Chappel, the HP rep at the March 17, 1983 meeting using the finest HP Noise Figure measuring devices. The test results were compiled by WA3NUF, Phil Miguezlez.

220 MHz AMPLIFIER



MOUNT DIODE
TO SCREW IN
HEATSINK
NEXT TO Q1

- RFC1 = VK200 WIDEBAND CHOKE
- RFC2 = 3T, #18E, 1/4" DIAM.
- RFC3 = 5T, #18E, 1/4" DIAM.
- C1, C2 = 400-510 PF S.M.

ALL OTHER FIXED VALUES ARE UNELCO BOOK MICAS
4 UNELCOS ARE MOUNTED UNDER EMITTER LEADS

Z1 = 2.5" x 0.175" SEE P.C. LAYOUT FOR MICROSTRIPS.
Z2 = 2.5" x 0.175" AND PARTSLAYOUT.
Z3 = 1.0" x 0.275"

Q1 = SD1434
SD1499

215-947-8670

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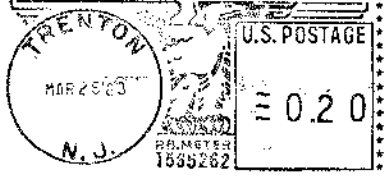
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