

PACK RATS'



CHEESE BITS



CLUB CALL: W3CCX

MT. AIRY VHF RADIO CLUB, INC.

SCANNED TO PDF BY BERT, K3IUV.

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 MARCH 1991 NUMBER 3

THE PRSZ SSZ

The "Crying Towel" awards this year went to three club members that came along way to improve their contributions to the club contest effort this year. Congratulations to K3HW, K3EOD, and N3AOG.

The first June VHF Contest meeting was held at WA3NUF's QTH and a lot of enthusiasm was expressed on the upcoming event. WE NEED MORE OPERATORS!! The site for the Pack Rat station this year will be the summit of Camelback Mountain, FN21, in the Pennsylvania Pocono Mountains. That location is not far from the Philadelphia area and I hope that we see more club member participation and less lip service. Come on out and pitch in some help; you'll enjoy the scenery. Contact a band captain for job opportunities: 50 MHz - Bob, WB2YEH; 144 MHz - Paul, WB3JYO; 220 MHz - Bob, N2SB; 432 MHz - Bill, K3ESJ; 903 MHz - Dave, N3CX; 1296 and above - Phil, WA3NUF; Rovers - Gary, WA2OMY. Dave Mascaro, WA3JUF, is overall chief of the operation. He's looking for total club participation. Contact Dave to find out how you can help, even from your home QTH.

Don't forget that the meeting this month is "Homebrew Night" and all hams are invited to show off their latest VHF/UHF/Microwave projects. During the past year, a lot of building has been going on and it should be a very interesting and informative meeting. I hope that you're all working on the latest projects in preparation for the forthcoming tropo season.

I increased the power on the N3CX 2304 beacon to about 4 watts output. Listen for it on 2304.033 and let me know how you're hearing it. The latest frequency check on the 33cm beacon reads 903.084 MHz.

73, and listen for the weak ones,
Dave, N3CX

MARCH MEETING PROGRAM: Annual Pack Rat Homebrew Night. Show and tell session with the display of home-constructed equipment for VHF and above. A panel of judges will award prizes in several categories. Meeting starts at 8:00 PM AT THE SOUTHAMPTON LIBRARY.

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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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PACK RAT 220 FM REPEATER - W3CCX/RPTR
222.98/224.58 MHz, CHURCHVILLE, PA

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TREASURER: WA3YUE BRUCE LOSS
COR. SECY: WB3JYO PAUL DREXLER
DIRECTORS: WA3JUF DAVE MASCARO (1 YR)
WA3NUF PHIL MIGUELEZ (1 YR)
WA3AXV RON WHITSEL (2 YRS)
K3EOD AL BOBLITT (2 YRS)


<u>MONDAY NIGHT NETS</u>	<u>NET CONTROL</u>
7:30 PM - 50.125	W3CL
8:00 PM - 144.150	W2EIF
8:30 PM - 220.125	WC2K
8:30 PM - 224.58/R	K3ACR
9:00 PM - 432.110	WA3AXV
9:30 PM - 1296.100	WA3NUF
10:00 PM - 903.100	N3CX

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CALENDAR OF COMING EVENTS

By Harry Brown, W3IIT

MARCH

- 9 The Splitrock ARA and West Morris Wireless Society Hamfest will be held at the Mt. Arlington Shearton, Exit 30 off I-80. Dover, NJ. Talk-in: 146.385/.985, 146.52, and 223.86/.26.
- 14 Pack Rat Board of Directors meeting at the QTH of Pat, WB3DNI. All interested parties welcome. Meeting starts at 8:00 PM. Call 215-672-5289 for directions.
- 16 Cherryville Repeater Association Hamfest at the Hunterdon Central High School Field House, Flemington, NJ. Talk-in: 147.975/.375 and 146.520.
- 17 St. Patrick's Day
- 20 Death of Brendan, Dublin 1964.
- 21 March meeting of the Mt. Airy VHF Radio Club at 8:00 PM at the Southampton Free Library on Street Rd. The program will be the annual HOME BREW Night. Bring your successes, failures, and works in process to share with all. You do not have to be a member to enter. All interested VHFers and microwave enthusiasts are welcome. Prizes will be awarded in several categories.
- 24 Palm Sunday
- 24 Delaware Valley Radio Association "HAMCOM '91" at the National Guard Armory in Lawrence Township, Trenton, NJ. Talk-in on 146.07/.67.
- 29 Good Friday
- 30 Passover
- 31 Easter

JANUARY CONTEST REPORT

Fifty seven Pack Rat contest logs have been forwarded to the ARRL for participation in the 1991 VHF Sweepstakes. We're back in the Unlimited Club category by a good margin! Club members enjoyed a productive wrap-up session at the QTH of WB2YEH on February 9. Computer logging is on the increase, although most of the logs were still completed with pen and paper. The turn-out for the wrap session was excellent; the tally sheet was finished by noon. Thanks to all who came out.

If you submitted a log for the Pack Rats, you've earned a beauty of a baseball cap. The hats are blue, complete with the club logo... a perfect compliment to the Pack Rat T-shirts. (We understand that WA3YUE's entire wedding party has borrowed shirts and hats to wear for the ceremony). Come to the club meeting to pick up your hat.

Special thanks to Bob Fischer, WB2YEH, for his masterful planning and leadership in the January contest. The club total of 1,772,386 is evidence that Bob had the troops fired up and equipped for the this year's event.

PROPAGATION REPORT
By Paul Drexler, WB3JYO

The 6-meter band has frequently been open during the past month as the solar flux has remained fairly high. European openings have been common on an almost daily basis, however most have been weak and short-lived.

As the last month's column was being written, the solar flux was on an abrupt upswing. The SFI peaked at 367 on January 31 and six opened from our area to PZ (Surinam), G, GM, GI, OZ, and OY (Faroe Is.). WC2K worked OY9JD for a new one, #77. In the several days which followed, the flux declined as fast as the rise, but still produced openings to South America with stations worked from PY0, HC, and PY. February 2 brought morning E-skip to Midwest USA followed by some F2 in the afternoon which caused an opening to the West Coast, Yukon, and Alaska. Pack Rats N2SB, WA3AQA, WA3YUE, W3KKN, and WC2K worked KL7's from about 1900 to 1930z. [N2SB is working all of this good stuff with 7 watts and a 5el beam]. On the morning of the 3rd, the band opened briefly to Africa and South America, and then to Ireland and Scotland at 1330z. After the 3rd, the SFI had fallen back to levels around 200 and no DX reported. On the morning of the 10th, there was an E-skip opening to VE1 land with several local stations working VELMR (FN84).

The 27-day solar rotation brought a jump in flux late in the month with levels reaching 310 by the 26th and openings to 7Q7 (Malawi), CT2 (Azores), DL, I, and G-land. On the afternoon of the 24th, N2SB reports some very spotty E-skip to Florida (EL88), but no other stations were worked.

Tropospheric enhancement during the reporting period has been non-existent, attributed to persistent low pressure weather systems.

CU on the bands!

1991 DAYTON HAMVENTION VHF/UHF PROGRAM

Friday: 1930 - 2200 VHF/UHF preamp and converter noise figure measurements at the Hara Arena. Measurements will be conducted on 144 through 1296 MHz.

Saturday: 0900 - 1230 VHF/UHF Forum in Room 5, Hara Arena. Joe W80GS, Moderator.

"Succeeding at EME with Small Antennas and Moderate Power"	Al Katz, K2UYH
"Getting Started on 2.3 and 3.4 GHz"	Jim Davey, WA8NLC
"Sunspots and Geomagnetic Storms"	Jim Everly, K8IKE
"Super-Rover on SHF (903 through 3456 MHz)"	Dick Comly, N3AOG
"Discussion of Timely Topics - 220 MHz Lost?? Code-Free License, etc"	Bill Tynan, W3XO

Sunday: 0930 - 1200 Antenna Gain Measurements... in rear of grassy parking area behind flea market. Homebrew and Commercial categories for 144 - 1296 antennas. Prizes awarded to top entries.

TID-BITS

- Condolence to Ernie and Bert Kenas (W3KKN and W3INP), on the February 20 passing of their daughter, Joanne.
- Harry Stein, W3CL, was recently hospitalized at Jefferson for some minor surgery and is recovering well, even after a slight hitch with the procedure. Spoke with "Chicken Livers" today and he sounds terrific, ornery and chipper as ever. He plans to be discharged on 3/6. Give him a call at home.
- Steve Drexler, KA3FOG, (Paul WB3JYO's brother), is steaming home from the Persian Gulf aboard the USS Saratoga. Steve has been on active duty there since August. We're proud of Steve and the Drexler family; glad the war is over and he's home safe!!!

SWAP SHOP

WANTED: TRC-29 Cavities for 2304 use. Am
looking for several w/ or wo/tubes.
CONTACT: Bob, K9KFR 219-691-3743
3580 E. 600 N.
Columbia City, Ind. 46725

FOR SALE: HELIAX, various lengths,
types, sizes, new, used, connectors.
CONTACT: Rick Connor, WC2K
609-268-0736

FOR SALE: IC701 HF XCVR w/matching spkr/ps \$375, IC551D 6M XCVR w/new 100W amp
\$450, Yaesu G250 rotor w/100' cable (new) \$100.

WANTED: Lafayette HA410 10M XCVR
CONTACT: Harry, KA3B, 215-468-1512

MISSING: 1 orange, long-handled shovel. Last seen at Chestnut Ridge, June 1990.
CONTACT: Bob Cook, N2SB, 609-722-0132

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. GaAs
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.

HAM RADIO SCHOLARSHIPS

The foundation for Amateur Radio, Inc., a non-profit organization with
headquarters in Washington, DC, plans to award 36 scholarships for the academic
year 1991-92 to assist licensed Radio Amateurs. This group represents many clubs
and organizations.

Licensed Radio Amateurs may compete for these awards if they plan to pursue
a full-time course of studies beyond high school and are enrolled in or have
been accepted for enrollment at an accredited university, college, or technical
school. The awards range from \$500 to \$2000 with preference given in some cases
to residents of specified geographical areas or the pursuit of certain study
programs. Additional information and an application form can be requested by
letter or QSL card, postmarked prior to May 31, 1991 from: FAR Scholarships,
6903 Rhode Island Ave., College Park, MD, 20740.

VHF/UHF MEETS ON 75 METERS

In an attempt to encourage and promote increased SSB/CW activity on the VHF/
UHF bands, Bryan Snyder, WA8MZQ and Hal, KC4YO have organized a weekly gathering
on 75 meters. The "VHF Group", as it is called, meets on Monday evenings at 9PM
Eastern time on 3.836 MHz plus or minus QRM. The group was started in September
1990 and has continually gained support and popularity. Enthusiasts check in to
discuss technical information, to look for schedules in certain grid squares or
states, to arrange schedules for an upcoming meteor shower, to discuss current
and future operating expeditions, to get the latest information on VHF/UHF
propagation and other topics of interest to the VHF and above operator. The group
hopes to increase activity throughout the U.S. and Canada on the VHF/UHF/SHF
bands.

Mt. Airy VHF Radio Club Inc.
 "THE PACKRATS"
 January VHF Sweepstakes Contest
 1991

LOGS SUBMITTED
 57

TOTAL SCORE 1772386

CALL	CONTACTS AND GRID SQUARES FOR EACH BAND										TOTAL	
	50	144	220	432	903	1296	2304	3456+	GS	SCORE		
WC2K	142 39	309 45	112 25	120 31	41 10	62 14	26 4	10 3	171	276165		
WA3NUF	105 21	208 21	85 18	98 21	30 3	52 9	22 2	12 4	99	126621		
WB3JYO	124 25	128 21	82 17	79 16	36 8	46 9	24 3	3 1	100	111800		
N3CX		143 14	109 18	96 21	37 9	55 14	30 6	14 3	85	108205		
WB2YEH	82 15	208 19	103 12	76 14	35 5	43 5	22 2	10 2	74	89984		
N2SB	65 11	166 20	70 14	85 16	31 4	40 8	18 2		75	72675		
WA3YUE	94 17	206 21	86 11	86 13	26 4	34 5	13 2		73	72124		
WORSJ	95 23	192 25	54 11	59 13	20 2	28 6	14 2	1 1	84	69300		
WB3DNI	54 11	167 18	42 2	69 14	27 3	52 7	22 2	10 4	61	61915		
K3ESJ	113 15	262 26	51 3	102 14	30 3	21 2			63	55755		
WA3JUF	30 4	103 8	73 15	70 13	16 3	44 10	18 2	3 1	56	46312		
N3EXA	74 13	161 17	58 9	55 10	13 2	19 3	4 1		55	34155		
AK30	57 9	125 12	40 6	57 6	23 3	24 3	16 2		41	28372		
N3AOC	21 2	123 10	38 2	71 12	21 3	27 4	12 2	8 4	39	27846		
W2EIF	48 9	99 10	68 11	55 9	13 3	20 4	5 2		48	27120		
K3IUV	73 8	112 11	68 4	70 11		28 3			37	21201		
N3BBI	308 66								66	20328		
V3IIT	81 17	134 12	58 4	52 7		10 2			42	19950		
WA3AQA	54 8	128 9	59 5	62 9					31	13144		
K3DMA	59 7	112 7	72 7	48 4		16 2			27	12825		
W3HMU	67 13	70 8	40 2	56 10					33	10857		
W3CL	52 8	86 9	63 3	46 5					25	8900		
W3GXB		120 16	36 4	41 4	16 2				26	8788		
WA2OMY	1 1	23 5	41 3	28 5	12 2	21 4	2 1	2 2	23	7498		
WB2ONA		29 8	21 2	22 7	16 3	9 3	5 1	3 2	26	7254		
WA3IAC		106 8	45 2	42 5	15 2	5 2			19	6840		
K3GYS	55 8	39 3	37 9	11 2	5 2	7 2			26	6188		
WA3EHD	52 6	155 11	47 2	1 1					20	6060		
WB8ZAR		118 15	7 2	28 5		11 2			24	5568		
K3BPP	16 4	21 6	25 2	30 3		17 2	9 2		19	5453		
WB2VLA	36 7	50 7	42 2	25 4					20	4400		
KB3XG	11 3	40 7	20 6	22 3	13 2				21	3927		
K3ACR	35 4	101 9	53 3						16	3872		
W3CXU	21 3	34 3	30 5	13 3		19 2			16	3472		
N3EVV	1 1	74 10		30 5		8 2			18	3006		
W3HFY	22 2	22 4	34 2	26 3	4 2	5 2			15	3000		
W3HK	37 5	36 6	28 3	8 2					16	2320		
K3PHY		146 6	47 2						8	1920		
W3UBO	43 9	52 8		3 1					18	1818		
WB2JHG		106 16							16	1696		
W3NSI	2 1	47 10	22 2	7 2					15	1605		
W3BRU		113 11							11	1243		
WA3IWT	24 4	27 2	26 2						8	824		
W3VIR	23 8	3 1		13 4					13	676		
WB3HHO		67 2	39 2						4	580		
WA3HIT		27 2	26 2						4	316		
K3JJZ/M		20 2	25 2						4	280		
K3DLS/3			37 2						2	148		
W3AJF			31 2						2	124		
K3VEQ		21 2							2	42		
K3DLS/M			5 2						2	20		
MULTI-OP STATIONS												
WA3AXV	155 25	317 32	130 23	141 24	46 10	69 16	31 4	14 3	137	251258		
W3KKN	107 18	190 20	77 14	85 18	14 2	34 3	13 2		77	70609		
K3EOD	94 11	162 10	70 2	46 4					27	13176		
K3HW	68 10	247 16	70 2						28	12740		
KD3VI	55 10	175 19	41 2			13 1			32	11648		
KS2T	102 16	103 13	34 2						31	8463		

A 50 MHz SD1458 LINEAR AMPLIFIER

This installment completes the transmit portion of the 50 MHz transverter as described in Cheesebits.¹ The final stage in the 50 MHz transmit converter is a 10 watt linear amplifier using the Thomson SD1458 transistor. The amplifier boasts 18 dB gain, yet is stable into a 10:1 VSWR. Additionally, since the SD1458 is designed for highly linear TV applications, a very linear SSB amplifier is possible with little effort.²

Biasing was chosen for optimum linearity using a two-tone IMD test. As in all previous stages this amplifier also operates several dB below its 1 dB compression point. Consequently, when operated at the intended 10 watt power output, all distortion products are more than 40 dB down - this translates to a very clean SSB amplifier.

The SD1458 transistor is actually made for VHF/UHF operation, and consequently has a large amount of gain at 50 MHz. Resistive feedback is employed to lower the gain slightly, improve linearity, and provide stability. A 100 ohm resistor and .01 uF capacitor from the base to the collector forms the required feedback.

Referring to the schematic, the 680 and 3300 pF capacitors may be ceramic or silvered mica types. The 40 and 100pF capacitors at the base and collector should be "Unelco" types. ARCO transmitting capacitors are used for the variables.³ Although no board layout is given here, lands may be cut into the PC board to make component mounting easier; care must be taken to keep all lead lengths to a reasonable minimum.⁴ For simplicity it is suggested that two separate, double-sided PC boards be used; one to form the input side and one for the associated output matching. First wrap and solder the edges of the board near the transistor with copper foil to insure a good ground. Then mount the boards to the heatsink using 4-40 hardware. Each board should be tight against the transistor body so that all emitter leads may be soldered directly to ground. Likewise, use wire "thru's" at the ground end of all Unelcos and variables by drilling a small hole in the PC board and soldering a wire from the circuit to the ground side.

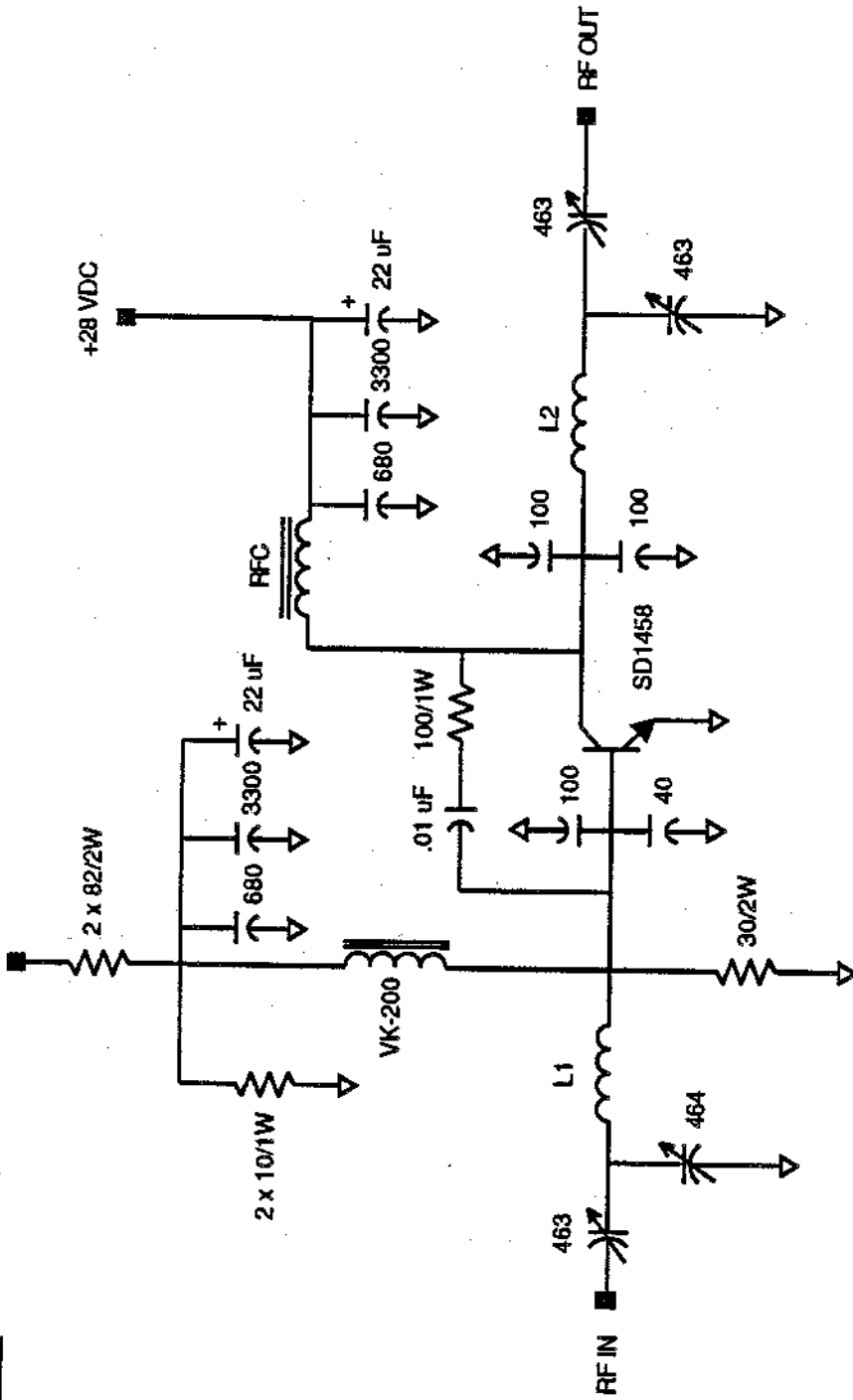
You'll want to use some type of switching circuit to apply the 5 V bias during transmit only. A separate 5 V regulator will provide a "stiff" bias network (more on this later). For those who want to experiment, a bias network using a diode "regulator" may also be used.⁵ To tune the amplifier simply tune the input for lowest reflected power and then tune the output variables for maximum power!

REFERENCES

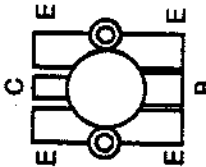
1. The transmit block diagram may be found in the Oct 90 CB.
2. "Transistor Selection for Linear SSB Amplifiers," Oct 90 CB.
3. Parts suppliers are found in the Nov 1990 Cheesebits.
4. "Making Printed Circuit Boards," Jan 90 Ham Radio, WA3JUF
5. "Transistor Biasing for Linear SSB Amplifiers," Jan 91 CB.

50 MHz SD1458 LINEAR AMPLIFIER

BIAS (+5 ON XMIT)



THOMPSON SD1458



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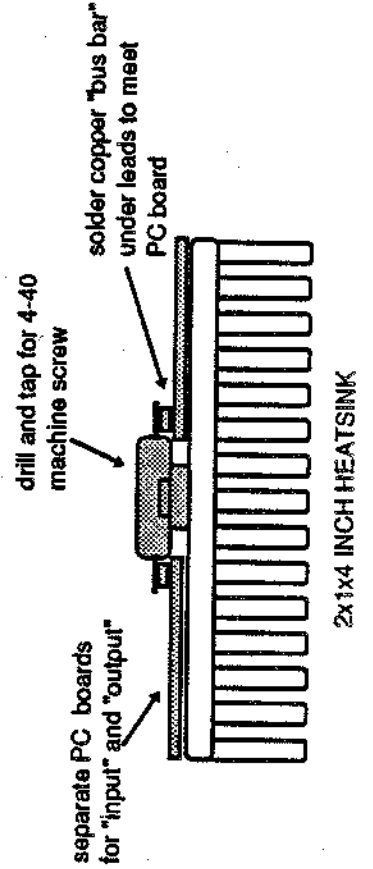
NOTE

Resistance in ohms, capacitance in pF unless otherwise specified

All variable capacitors are ARCO type (#463 is 20-180 pF, #464 is 45-280 pF)

L1 = 2 turns #20 AWG on 3/8 inch ID
L2 = 4 turns

RFC consists of 10 turns #20 AWG enameled wire wound on a 100 ohm/2 W resistor.



GAIN = 18dB @ 50 MHz
P1dB = +47 dBm
Icq = 1.5 A
STABLE INTO 10:1 VSWR
IMD < -44 dBc @ +40 dBm

WB3JYO 2-91

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