

# PACK RATS'



**PACK RATS**

CLUB CALL: W3CCX

MT. AIRY VHF RADIO CLUB, INC.

# CHEESE BITS



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 ARRL

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

VOLUME XXXIII

APRIL 1991

NUMBER 4

## THE PREZ SEZ

Homebrewing is alive and well within the Pack Rats! What an outstanding Homebrew Night we had at the last club meeting. If you missed it, then you missed a view of the great enthusiasm in our club for home construction projects. Dick, N3AOG, had his roving mobile eight foot parabolic dish set-up assembled in the library parking lot. He received his share of stares from the library patrons! Walt, N3EVV gave a very interesting talk on his solar powered VHF/UHF ham shack. I'm glad he's recovered from carrying those batteries into the basement. To everyone who participated, I thank you. I remember when I was a young boy just getting interested in radio, all the hams I met were homebrewers. Since then I have viewed us as a group that's a notch above. Let's not lower the standards of anything anymore just to make the numbers count. I promise I won't get on my soap box!

The program for the April meeting should be a good one. We have a representative from CBS - Jim Malone, WA3LBI - coming to speak on setting up microwave shots for sporting events throughout the world. It sounds very interesting.

Mark your calendar for Ladies' Night to be held on May 4th at the Mill Race Inn, in Holland, Pa. Please return your reservation form asap. We're looking forward to a terrific evening with the wives and YL's.

Please contact June Contest Chairman Dave, WA3JUF, and volunteer your services. We need more help for the operation; even if you can't go along, you can help. I hope that everyone had a nice holiday. Don't forget the lawnmower blades, Hi!

73, and listen for the weak ones,  
 David Hackford, N3CX

**APRIL MEETING PROGRAM:** A presentation on professional news gathering via microwave. Jim Malone, WA3LBI, will discuss how it's done and speak on his experience with CBS TV broadcasting from Moscow, USSR. Meeting starts at 8:00 PM AT THE SOUTHAMPTON LIBRARY.

Pack Rats CHEESE BITS is a publication of the Mt. AIRY VHF RADIO CLUB, INC. Philadelphia, Pa. and is published monthly. SUBSCRIPTION RATE - \$7.00 PER YEAR

We operate on an exchange basis with other publications. Anything that is printed in CHEESE BITS may be reprinted, unless otherwise stated, provided proper credit is given.

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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)

MONDAY NIGHT NETS  
7:30 PM - 50.125  
8:00 PM - 144.150  
8:30 PM - 220.125  
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

### APRIL

- 6-7 Timonium Maryland, Baltimore ARC Hamfest at the Maryland State Fairgrounds  
Talk-in on 146.07/.67.
- 8 ARRL 144 MHZ Spring Sprint (Monday evening) 7 to 11 PM local time. See  
March QST, page 87 for rules.
- 11 Pack Rat Board of Directors meeting at the QTH of Dick Comly, N3AOG. All  
interested parties invited. Meeting starts 8 PM sharp. Call 215-443-9965  
for directions.
- 13 Lebanon Pa., The Appalachian Amateur Repeater Group Hamfest will be held  
at the Lebanon Fairgrounds. Talk-in on 146.04/.64 and .52.
- 14 AWARE Radio Club and Delmarva Hamfest Assn. Hamfest will be held at the  
NUR Temple, 198 S. Dupont Highway, Newcastle, Delaware. Talk-in on  
147.025/.225 and 222.62/224.00.
- 16 ARRL 220 MHZ Spring Sprint (Tuesday evening). March QST for rules.
- 19 Pack Rat general membership meeting at the remodeled [and very  
comfortable] Southampton Free Library, Street Road, Southampton, Pa.  
"Microwave News Gathering" by Jim Malone, WA3LBI. Mario's Raffle,  
Frankie's Silent Auction, refreshments, and lots of Pack Rats on hand  
for a good night out. Bring your on-the-air buddies. All VHFers welcome.  
Meeting starts promptly at 8:00 PM, N3CX presiding.
- 20-21 Trenton Computer Festival at Mercer County Community College, near  
Trenton, NJ. Mostly computer stuff, but lots of good parts too.
- 21 Summit ARA Hamfest at the Carroll County Agricultural Center in  
Randallstown, Md. Located off Md. Route 32, 1 mile south of Westminster.
- 22 Lyrids meteor shower peaks at 1451 UTC.
- 24 ARRL 432 MHZ Spring Sprint (Wednesday evening). March QST for rules.
- 26-28 Dayton Hamvention, Dayton, Ohio. If you've never been there, you've never  
seen anything like it. If you're looking to buy it, sell it, or see it,  
GO! It'll be there.

### THE TREZ SEZ

DUES ARE DUE!! What's the deal out there Pack Rats? Only 20 members are paid up  
for 1991! Time to go to the hip, guys and preserve your membership and  
subscription status. My new address is: Bruce Loss, WA3YUE, 732 Mill Grove Drive,  
Audubon, Pa. 19403. Send dues direct, see me at the meeting, or call 215-666-1558  
to make arrangements. "Guido, Tony, help Mr. Hackford with his checkbook". Thanks

### "BADGES? WE DON'T NEED NO STINKING BADGES!"

ACCEPT NO SUBSTITUTES, THESE ARE THE OFFICIAL PACK RAT NAME TAGS. Cost -- \$12.00,  
Place your order with Dick, N3AOG. Delivery at the following meeting.

PROPAGATION REPORT  
By Paul Drexler, WB3JYO

Propagation has been poor at best during most of the month. The dominant early Springtime low pressure weather systems usually hamper any tropo enhancements. Since the K index has been in the 3-4 range most of the month, 6-meter F2 propagation has been non-existent for the East Coast, even though the solar flux has often been above 200.

But the old saying goes: "expect it when you least expect it." The K index had crept up to 7 by the weekend of March 23, killing HF propagation, but VHF and UHF bands buzzed with Aurora activity. Rick, WC2K noticed the Aurora around midnight on the 24th while working 2-meter EME and darted up the band to work several W8 and W9's. On Sunday, March 25, Auroral conditions were at maximum levels by 1800 UTC and plenty of activity filled the bands. The opening intensified, extending as far south as KY and TN, and as far west as OK and NE. Bob, N2SB worked a bag of new grids and several needed states on 2-meters. Mark, WB2JHG, reported several 432 contacts during this period. John, KD3VI, got in on his first Aurora when he heard "some really strange signals" on the band. Running 50 watts and a yagi in the attic, John worked K9MRI (EN70 IN) on 2 meters! Dave, N3CX, ran with KD5RO on 903 to test propagation there, but had no positive results. WB3JYO caught several W8 and W9's on 222.1, indicating that stations out of the area have indeed moved up the band as the Pack Rats have advocated. John, K3DMA and WC2K got an eyeball view of the "Northern Lights" which was spectacular as usual. The "buzz" continued on 6 and 2 possibly all evening, as Hal, W3HFY, reported Aurora around 0600 EST Monday morning. Stations in our area were still reporting contacts as of net time Monday evening. [Too bad for the no-code guys; with SSB "blacked-out", guess they just went away and played checkers! -ed] A couple of guys to look for: W6JKV will operate portable from Belize as V31IV on 6 meters between April 7-13. And, Harry, KA3B, will be portable from Bolivia on 6 as CP/KA3B from April 3-10. Both stations will run well-equipped and can be found on 28.885 for propagation reporting and skeds. TNX 50 MHz DX Bulletin. CU on the Sprints!

WELCOME NEW MEMBERS

Alan Sheppard, N3ITT  
Box 226 RD-2  
Ottsville, Pa 18942  
215-847-5490

Jim Yeager, K3EBZ  
450 Lincoln Ave.  
Hatboro, Pa 19040  
215-672-5487

1991 PACK RAT DIRECTORY CHANGES/ADDITIONS

WA2GFP Geoffrey H. Kraus  
1927 Audubon Drive  
Dresher, Pa 19025  
215-643-2031

WA3EHD James J. Antonacci  
1427 Airline Ave.  
Roslyn, Pa 19001  
215-659-4359

N3EXA Brian Taylor  
1634 N. 5th Street  
Perkasie, Pa 18944  
215-257-6303

WA3YUE Bruce Loss (see page 3)

N3FWV now KD3VI

17th ANNUAL EASTERN VHF/UHF/SHF CONFERENCE

The 17th Annual Eastern VHF/UHF/SHF Conference will be held May 17-19, 1991 at Riviera College Nashua, New Hampshire. Friday night refreshments, Saturday technical talks and "rap sessions", Sunday antenna gain (220 -2304 MHz) measurements are among the activities. Banquet, noise figure measurement, and social events Saturday night. Preregistration prior to May 13 is \$23.00. Add \$20.00 for banquet, \$5 for antenna measurements. Registration at the door \$30.00. Dormitory rooms available @ \$30/single, \$50/double by 5/13. Contact: David Knight, 15 Oakdale Ave., Nashua, NH 03062.

## SWAP SHOP

FOR SALE: 2 RIW-19 432 Yagis, \$35ea.  
4-way 432 power divider \$30.  
Both yagis + power divider \$90.  
CONTACT: Gary Hitchner, WA2OMY  
215-539-6409

FOR SALE: Heliac feedline, 1/2", 7/8",  
connectors, new + used.  
CONTACT: Rick Connor, WC2K  
609-268-0736

AVAILABLE: Parabolic dishes - 6, 10,  
15, 25ft fiberglass w/feeds  
50, 90, 100 deg INA's. Dish  
mounts, motors, controls.  
All removed from commercial  
uplink/downlink service.  
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resale!

CONTACT: Rick Connor, WC2K  
609-268-0736

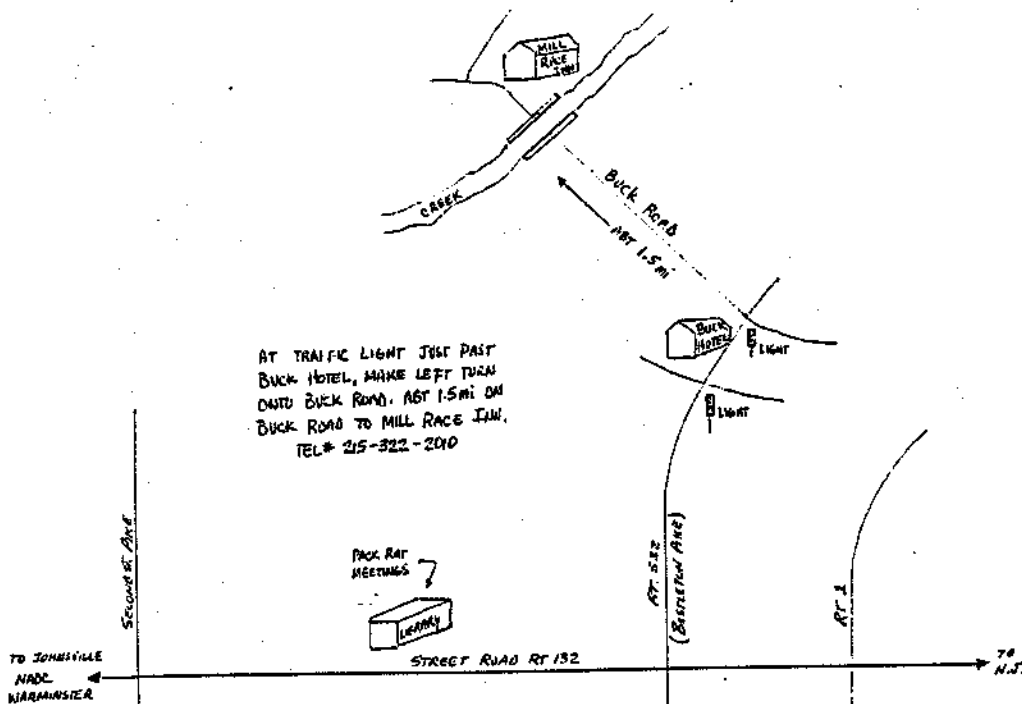
MISSING: 1 orange, long-handled shovel. Last seen at Chestnut Ridge, June 1990.  
CONTACT: Bob Cook, N2SB, 609-722-0132

## 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.

## MAY 4, 1991 LADIES' NIGHT

The location of the 1991 Pack Rat Ladies' Night Banquet will be the Mill Race Inn in Hatboro, Pa. The place is easy to find and not far from our meeting site:



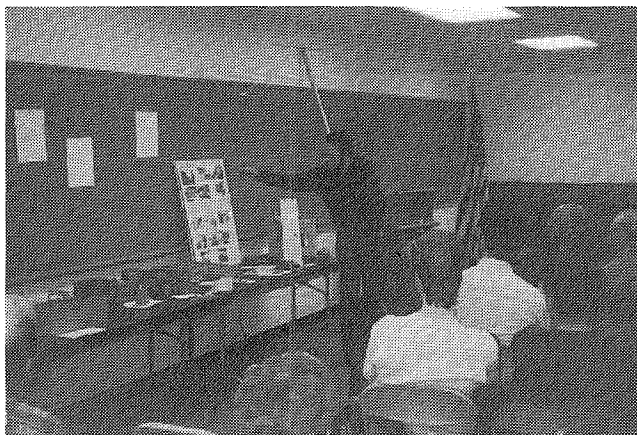
PACK RAT HOMEBREW NIGHT 1991

Homebrew Night has always been the premier meeting of the year for the Pack Rats. In a world of handle-pullers and appliance operators, the Pack Rats have been stand-outs in the technique of home construction of VHF/UHF/SHF equipment. This year, Homebrew Night revealed that the art of VHF and above home-design and construction by club members continues to flourish. With such great effort exerted by each of the entrants, the judging task was especially difficult. In addition to the plaque awards in four categories, all participants will receive Certificates of Achievement for excellence in homebrewing. The 1991 field:

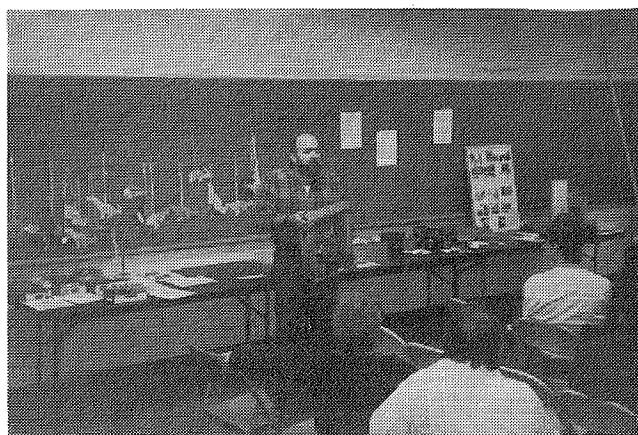
- Dick Comly, N3AOG:** "Super Rover" consisting of 8' rotating parabolic dish with interchangeable feeds for 903-3456 MHz, fitted into the bed of his pick-up truck. 903, 1296, 2304, 3456 no-tune transverters completed in one-piece machined aluminum enclosures. Interdigital filters for 3456 MHz from machined brass.
- Brian Taylor, N3EXA:** 1296 MHz "no-tune" transverter kit complete with 5 watt PA and preamp.
- Dave Backford, N3CX:** Pure homebrewed 5.7 GHz transverter for 144 MHz IF, consists of home-etched boards, milled compartments, LO osc. design. 3456 MHz PA using pair of IMFETs for 11 watts output. Pair of 2304 MHz amplifiers combined with Sage wireline, 17w in for 80w output. 3SK40 144 MHz preamp.
- Dave Mascaro, WA3JUP:** Application of two commercial 903 MHz amplifiers combined with Sage wireline for 150 watts linear output.
- John Kedziora, KD3VI:** Rugged, portable VHF hi-power wattmeter. Simple-to-build 1296 50 ohm dummy load. 144 MHz calibration oscillator/marker.
- Bill Murphy, W0RSJ:** 3456 MHz PA modified and adapted from commercial service.
- Rat Cawthorne, WB3DNI:** 3456 transverter using TVRO LNA's for TX and RX modules. 30 mW output, 144 MHz IF. 1296 MHz PA, Class C, 5-6 watts drive for 43 watts output.
- Walt Rauscher, N3EVV:** Solar/battery system constructed to supply 240 watts continuous duty. All equipment in his VHF/UHF station is powered by the efficient, solar-charged, battery supply. Modified chart recorder monitors system status.'
- Paul Drexler, WB3JYO:** 144 and 220 MHz "rover" yagis. 3456 MHz "no-tune" 2m IF transverter constructed in weather-proof tower-mounted enclosure, complete with heater, thermostat; accessory 144 - 28 MHz IF and control unit. Original designed and constructed high-performance 2 meter transverter.
- Dave Zimmerman, W3ZD:** State-of-the-art CMOS memory keyer, constructed from QST article and installed in existing Ten Tec keyer unit.

Congratulations to the following participants who are awarded plaques for outstanding homebrewing in 1991:

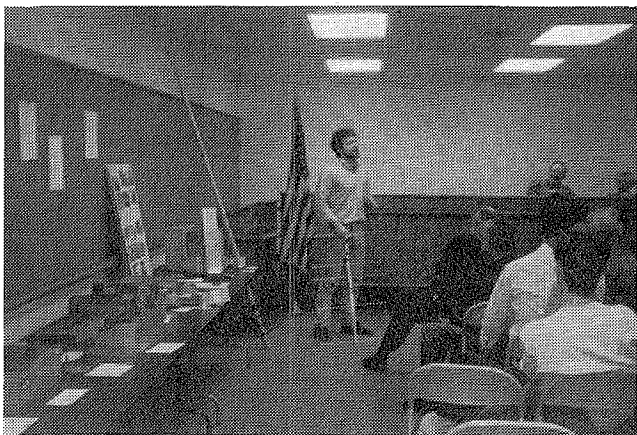
**MOST AMBITIOUS PROJECT - Dick Comly, N3AOG**  
**MOST UNIQUE PROJECT - Walt Rauscher, N3EVV**  
**BEST CONSTRUCTION - Dave Backford, N3CX**  
**BEST DESIGN - Paul Drexler, WB3JYO**



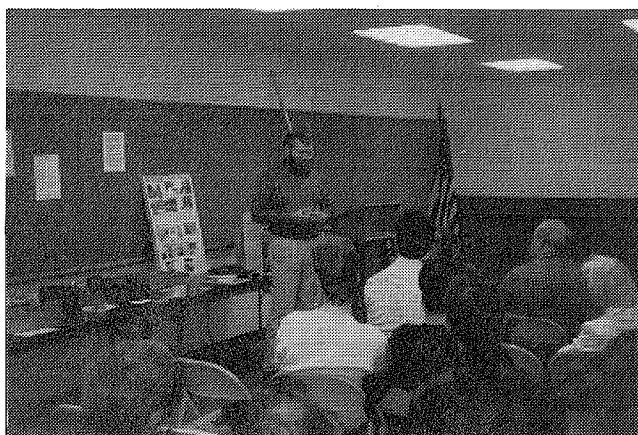
WALT, N3EVV



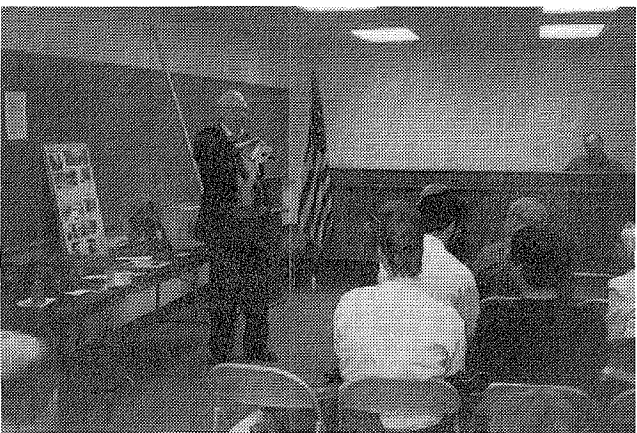
DAVE, N3CX



PAUL, WB3JYO



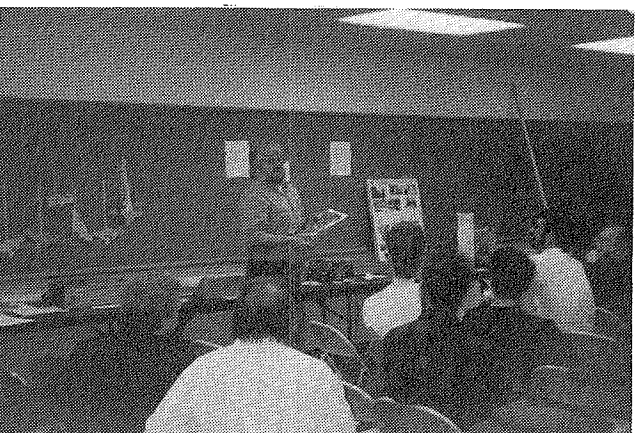
PAT, WB3DNI



DAVE, W3ZD



JOHN, KD3VI



DAVE, WA3JUF



JUDGES: WA2GFP, W3IIT, WC2K

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## A "CRUNCH-PROOF" 50 MHz RECEIVE CONVERTER

Circuits for a complete 50 MHz transmit converter were presented in Cheesebits over the past several months. A companion receive converter will be included over the next several issues; a block diagram is shown below. The converter was designed for contest operation in high signal level environments; considerable effort went into making it as overload-proof as possible without sacrificing sensitivity. The converter has been in use for over a year and handles strong signals very well. All circuits use straightforward point-to-point construction.

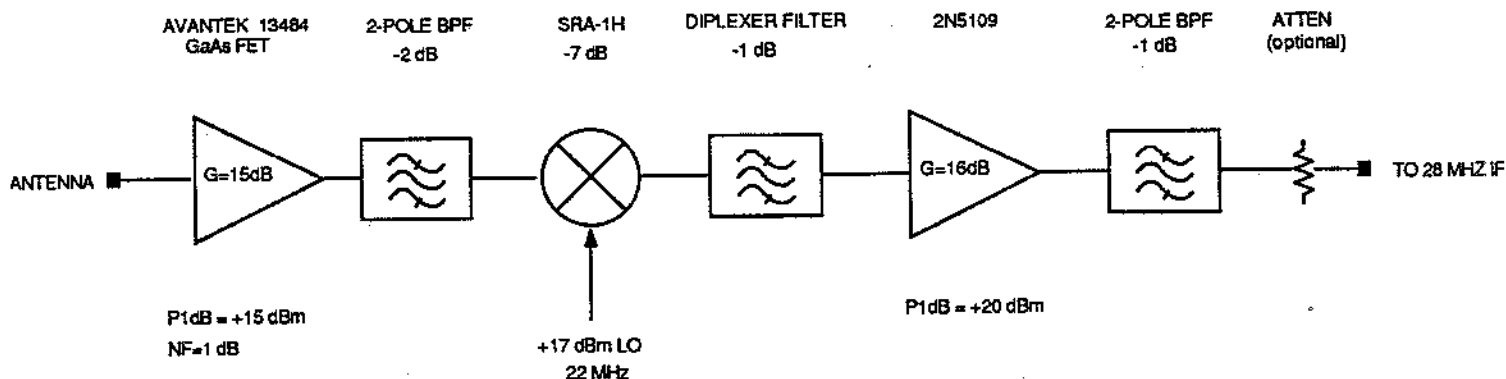
The heart of the receive converter is the Mini-Circuits high level SRA-1H mixer, identical to that used in the transmit converter.<sup>1</sup> The SRA-1H requires a 50 mW (+17 dBm) LO as previously described.<sup>2</sup> By using a high level mixer larger signals can be handled without the mixer going into compression. Careful attention was made to limit the conversion gain to provide good sensitivity without driving the 28 MHz IF rig into distortion. Both the preamp and postamp have moderate gain and have been biased for best compression characteristics to minimize distortion. An optional attenuator may be used following the postamp to reduce the gain if needed.

### REFERENCES

1. "SRA-1H High Level Mixer," WB3JYO, Dec 90 Cheesebits.
2. "A 22 MHz Oscillator Chain," WB3JYO, Nov 90 Cheesebits.

WB3JYO 3-91

### 50 MHz RECEIVE CONVERTER



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 NOISE FIGURE = 1dB  
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