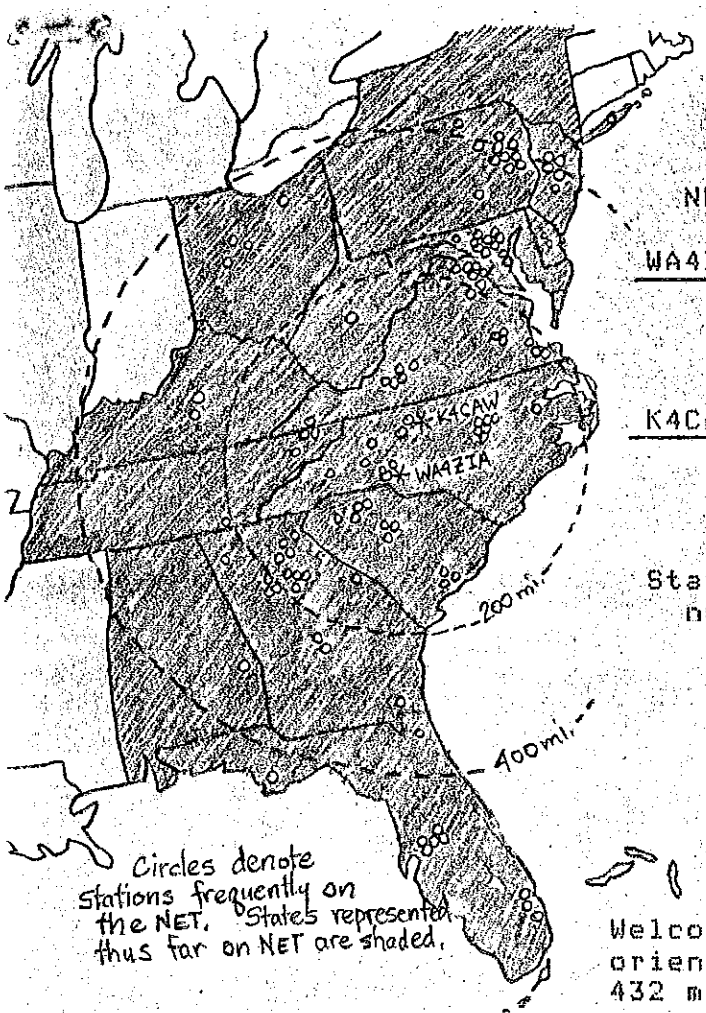


Circles denote stations frequently on the NET. States represented thus far on NET are shaded.

The Southeastern VHF Society
EAST Coast 70cm NET Newsletter

WEDNESDAY at 9:PM EST/EDT on 432.090 mHz

NET Control Stations — *Newsletter #2 May '82*

WA4ZIA Dexter McIntyre, POBox 544, Locust, NC 28097, ph(704)888-5039 — four 19el RIW ant @ 90', PAG432 preamp & NE64535 @ ant, 2C39 driving RIW kw, 7/8 heliax, AZ/EL

K4CAW Al Ross, 2404 Springwood Dr, Greensboro,NC 27403, ph(919)292-3105 — four 16el KLM @ 80', PAG432 @ ant, 30w KLM to ARCOS kw, Echo70 7/8 heliax

States represented thus far on the NET (and approx number of stns participating in NET follow):

FLA	10	MD	12
GA	15	WVA	1
AL	1	OH	4
TN	5	DEL	2
SC	10	PA	10
NC	13	NJ	5
VA	17	NY	1
KY	2		

Statistics to Date 5/'82
109 stns in 15 states
Records:
most checkins:
33 on April 1,'82
most states present:
12 states Mar 18,'82

Welcome to 70cm, Amateur Radio's most experimentally oriented band. For those of you who are newcomers to 432 mHz you will likely find things far from what you expected. Most people are lead to believe in the concept of line of sight communications out to perhaps 30 miles. Nothing could be farther from the truth Typical range for a 10watt single antenna station even in winter may reach 150 miles. Stations with 1kw and four antennas are finding that year round contacts out to almost 300 miles are the norm.

Propagation can take a variety of forms: airplane scatter, EME, FAI, ducts, meteor scatter, computer processed, troposcatter, satellites, lightning scatter and others waiting to be found.

The East Coast 70cm NET as you may gather from the name is very definitely not local in nature. The NET was started in Sept '79 by WD4MBK at NC State University's VHF/UHF Project Lab (callsign W4ATC). The day and time were picked following discussion between K2UYH, W3XO, WD4MBK, W4FJ, and others at the '79 Central States VHF Conference in Dallas, TX. That fall and winter many tales of poor winter conditions were shown to be only self fulfilling prophecies. Winter as a rule since the NET's beginning has given us many new states as well as quite stable conditions on the whole. Range while slightly reduced is still hundreds of miles with typical equipment. In inversions 1200mi is possible !

As seen in the NET statistics, the East Coast 70cm NET is likely the largest coverage area NET of its type in the world. We have heard of none that come close to it. The Net has been, and likely will continue to take a leadership and motivation stance in VHF/UHF/SHF activity in the southeast. We hope you all will make the effort to try and join in even if only occassionally The Net's goals center on the proliferation and coordination of experimental efforts. SKEDs are arranged and aided, information exchanged, and newcomers helped. We all realize that activity causes activity so do your part to help 70cm continue to grow. It's to all our benefits.

Please do your part by copying the Newsletter and passing it along to friends. In coming months the Newsletter will be taking on an expanded coverage with tips and comments on happenings and projects on the other VHF/UHF/SHF bands. Your ideas are welcome. Pass along to WD4MBK Charles Osborne at: 131 Saratosa Dr, Lawrenceville, GA 30245. Ph(404)923-6938.

Purpose and Procedure for the East Coast 70cm NET

The Net serves a variety of purposes: (1) A concentrator of activity. These dependable signals each Wednesday allow evaluation of changes and improvements in station equipment. (2) News of openings, experiments, or SKEDs between people of similar interests. (3) A cause of activity in various states. *We count ALL stations on the NET frequency whether QS or not. This means we encourage everyone to relay in weaker or more distant stations you may be hearing that Net Control may not copy. These stations are certainly a valuable part of the NET, just as much an asset to our band as the kilowatt multiantenna stations. They often hear the NET well and so are just as much a part of the evenings activities as anyone else. Please encourage your friends with OSCAR equipment to get on and give it a try, they'll be pleasantly surprised.

The NET begins at 9:PM EDT/EST with calls to the southeast (Charleston SC). By 9:10 the NCS is beaming Florida. 9:25 Macon GA, Columbia SC, and Auburn AL. Between 9:30 and 9:45 toward the large group in the Atlanta GA area. 9:45 toward West, Chatanooga TN, N Georgia. 9:55 Bristol TN, KY, IND, southern OH, Ill., southwestern VA. 10:00 OH, WVa, Mich. 10:05 due north into western Pennsylvania, NY, Md, Va. 10:15 eastern PA, MD, NJ, DC, Del, Long Island, RI, Mass, CT. 10:45 : the NET Control Stations (K4CAW has been calling the Northern sweep and WA4ZIA has been calling the Southern half which seems to work very well) have generally finished by this time and backtrack counterclockwise to close the NET in the south if no additional checkins are found. These times are +/_ 10 minutes and of course depend heavily on activity levels and comments encountered in various areas of the NET.

From time to time other stations will act as remote Net Control Stations to look deeper into areas out of reach of WA4ZIA/K4CAW. Currently W5HUQ relays from Jacksonville FLA for stations to the south and WD4MBK near Atlanta looks into ALA, MISS, LA for a few minutes with the Net Control's permission.

Reprinting this Newsletter

We would like to encourage anyone with access to good copying equipment to feel free to pass copies along to your friends. Our attempts at writing a newsletter are certainly not copyrightable nor would we want to. Spreading information about our UHF bands and activity is probably one of the best things any of us could do to help amateur radio grow and mature in technolog.

One of the best places to make these newsletters available is at hamfests. You never know who has a hidden interest or misconception about the bands. All too many people think 30 miles is the limit up in the "microwave bands" 70cm and 23cm (432 and 1296 mHz). Leaving 10 or 20 copies at the head table at a hamfest may bring new faces out of the woodwork that you otherwise would never meet. I've done my part, please lend a helping hand in your area.

Many of last month's readers will recognize some of this newsletter as reprints, particularly our beginners info and rules of the road. This is because they were so well received around the country. We'd like to thank each of you who took the time to write back both in support of the Southeastern VHF Society and the content of the newsletter. I plan to gradually condense down the newcomers info into a standard block that will be a permanent part of the Newsletter series. This is especially necessary with all the handouts going to hamfests where most people haven't heard of the net and pickup the handout out of curiosity.

National Calling frequencies

50.110 , 50.200
144.200 432.100
220.100 1296.100

Remember : QSY at least 5khz after establishing contact on the calling frequency. Don't jam weak contacts for people in other states nearby. Just because you don't hear anything is no license to ragchew here.

A Few Common Sense Rules For VHF/UHF Operation

To provide for everyone's enjoyment a few common sense rules for operation on our VHF/UHF/SHF bands should be passed alons to all involved. For instance, callins CQ. This is not HF. Contacts are seldom 40 over 9 so the passins of key information clearly and concisely is of prime importance. If we hear someone sendins their call over and over with no other call attached it doesn't take much suesswork to know that they are callins CQ. Think about it. Your callsisn and location (due to narrow antenna beamwidths) are far more vital pieces of information than incessant CQs. Generally a 30 sec. to one minute call, with similar listenins time before the next call, will sive listeners time to orient the antennas and copy your call if marsinal. Durins times of meteor showers shorter exchanses with rapid repeated callsisn info should be used. At most, 3-4 CQs per exchanse are best on VHF/UHF.

It is this common sense courtesy which shows you are becomins a master of the art of VHF communications. You'll win contacts instead of irritated listeners who refuse to work you.

NEWS

Beacons: FCC preliminary actions indicate 70cm beacons are to be placed at 432.070-432.080. Should work OK till a couple dozen are on, then what?

NEW Band: A new band at 902 mHz should be open soon if FCC red tape can be cleared. Central States VHF Conference in Baton Rouse this summer already has preamp and converter competitions for this band on the asenda !

Central States VHF Conference, July 30 - Aus 1 in Baton Rouse Louisiana. Write WB5LBT for details. I highly recommend this to all VHF/UHF/SHF experimenters as one of the years most valuable activities. You'll learn more in three days at this conference/lecture series than in three years on the air. A really well orsanized meetins of the top experts in VHF/UHF today. The conference is usually attended by amateurs from over forty states and many countries.

Satellites: word has it that this summer's hish elliptical satellite will carry a 1269 to 435 transponder. Best set to work on the 1269 mods for your 1296 equipment. 800 kHz will be available and sradually more "on"time for this transponder will be used to encourase its use instead of the inevitably overcrowded normal 100 kHz wide UHF/VHF other transponder. 75 watts to a 28 element or less loop yasi should do the job nicely on the 1269 uplink.

June Contest Effort: the combined forces of WB4NMA, WD4MBK, WA4OYH, N5BAR, W4VHH, GW3NJY, WD4JQV, WD4IIS, W9IP (from Illinois), and others will lead to a truly spectacular setup for the June 12/13 contest. Plans are soins well for a full lesal limit setup on 50 mHz - 1296! We plan to attempt almost beacon mode operation on 1296 usins a follow the hands of the clock antenna pointins scheme (IE: lookins North on the hour, East at 15 past, Southwest at 30 minutes into the hour etc). We hope anyone with any way of senerating a signal on 1296 will sive it a try. Remember, most of the 1296 stations active in the USA have less than 10 watts yet enjoy amazins success. Tentative equipment:

50	mHz:	IC551, 4CX1000A
144	" :	TS700, Henry 2002, pr F9FT
220.1	" :	MMT220, pr 4CX250B, K2RIW 19el 26' lons yasi, NE720 GaAsFet preamp
223.5	" :	? ,60w, 12el yasi
432	" :	IC451, K2RIW kw pr 8930, four or more 19el RIW yasis

MGF-1412 GaAsFET, (may be capable of EME with this setup)
1296.1 " : IC251, hb linear transverter, 2C39 to 2C39 to OZ9CR to four F9FT
NE72089 GaAsFET preamp (may also be capable of EME with large
station. Any takers?) Contact WD4MBK for SKEDs 220 and up.
We always operate from atop Mnt. Oglethorp (3290', 50mi N of Atlanta).
Look for similar setup in Sept. Contest.

Sotheastern VHF Society News

In a word, the response has been 100 % enthusiastic with lots of personal letters of encouragement and offers of help. For now this publication will serve as our newsline and the East Coast 70 cm NET as our on the air media of exchange. Shall we say, the perpetuation of the NET will serve as a cornerstone of the group's goals and ideals.

For those of you new to the news of a Southeastern VHF Society, what we are doing is helping to tie the experimentally oriented VHFers throughout the southeast together into a useful cohesive group. Via the Newsletter and 70 cm NET we hope to perpetuate, aid, and encourage experimental efforts using 50 mHz and up. Also underway is a directory of 70 cm stations in the eastern US. This will tie in with efforts on 1296 and 432 along similar lines in other parts of the country. (Send WB5LUA a large SASE for latest 1296 national list)

Perhaps next year, if all goes according to plan, we can hold our own miniconference/meeting here in Atlanta. A key proponent of the group, N5BAR, Dick Hanson, says Hewlett Packard could provide the meeting facility and hopefully test setup for a noise figure contest similar to the very successful ones held by the Central States VHF Society. All we need is the continued support and buildup of membership showing that the interest is there for such endeavors.

Also remember, if you haven't sent us any stamps or the proposed $ 4 membership, that our generosity with the exorbitant mailing costs might run out at any time. If you'd like to continue receiving the newsletter send the stamps/funds to WD4MBK Charles Osborne,131 Saratosa Dr. Lawrenceville GA 30245 While sending the above drop us a list of your station equipment for the directory and any comments on things you'd like to see.

Sources of VHF/UHF Equipment

K4GMJ, Maurey McMahan of Greenville SC is sole distributor for RIW Products line of power dividers and the superb RIW-19 19el 432 yagis. From personal experience I can say Maurey offers friendly help and advice in the VHF field. His prices are reasonable and afterall if someone has to make a profit it may as well be a friend, right? Maurey carries a variety of VHF items in his home operation so give him a call in the early evening or weekend for latest info.

VE3CRU, Hans Peters, Box 6286 Station "A",Toronto, Ontario, Canada M5W 1P3 is your best source of Microwave Modules equipment. Import costs have driven most small dealers of MM out of that line in this country. Hans offers deals in many cases that show he is more interested in promoting activity on a given band (220 especially) than in making wide margin profits. The prices below are from a January 82 price list. Call: (416)759-5562 for latest quotes. Occasionally he imports in a large block of equipment giving even lower prices for say hamfests like Dayton where he was able to offer another 20% off.

MMT432-28 (or 50)	$285	MMT1296-144	$384
MMT220-28 "	$259	MMT432-144	$330
MMV1296 Varactor	$ 81	MMS-384 1/2w local oscillator module	$57
MMK1296-144	$123	MMC220-144	$ 51
MML432-100	$432	MML432-50	$207

Technical Corner

Due to a variety of questions regarding my comments on GaAsFET protection last month, I decided a few examples were in order.

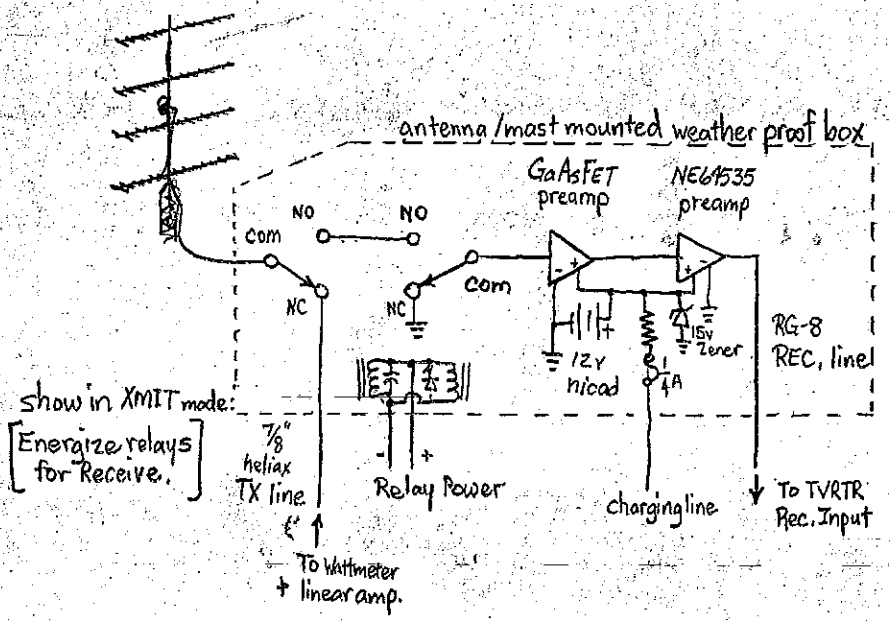
GaAsFETs on the whole are fairly high power devices in term of front end overload capabilities compared to the older preamp methods with NE64535s. Relay chatter and transient problems are what most often seems to set the devices. With a gate structure of often only .5 microns, its easy to see why a nearby lightening storm could vaporize the gate.

The point I wished to pass along was that by placing a short on the input to the preamp there would be no resistance across which a destructive voltage could develop. Also the open circuited relay contact is no protection from lightening. Afterall the stroke has just jumped a few miles so even what's induced in a nearby hit will readily jump the relay gap to get to the precious preamp. If you don't believe it just lay the coax on your desk as a storm goes by and listen to the crackles and pops as it jumps across the N connector. *Also at 432 and above the relay contacts act as RF coupling capacitors lessening TX-RX isolation.*

A method I highly recommend which shorts the preamp input on transmit is shown below. Note that this setup applies power to the relay only on receive instead of the normal case of power on transmit. What this allows us to do is to remove relay power when leaving the station, thus automatically shorting the preamp and protecting it from unforseen storms.

If at all possible use a "failsafe" style relay which has an internal switch actuated by main contact closure. This signal should be used to key the bias on the final amplifier. It insures that no RF is generated until after the antenna relay is closed. Again, remember to achieve at least 60dB of transmit to receive port isolation or use a seperate relay to ground the preamp input on transmit.

One good trick to use to filter the preamp DC line is a small nicad battery. Most preamps draw only 10ma @ 12v so a trickle charged battery will last a long while. Any spikes within reason will be soaked up nicely by the battery. Note: there is no advantage in removing power from the preamp on transmit. In fact this may make it more succeptable to RF damage at its input.



Advantages:

1. You can NEVER transmit into the preamp output accidentally, even under relay failure.
2. Blown preamp cannot stop you from getting on the air. In a case like that simply put another preamp and relay in station and do not key relay up on tower.
3. Grounds preamp input for both transmit protection and lightning safety. If power is off in station preamp is protected unlike normal system where power off places preamp on antenna.
4. Low losses due to only 1 relay contact in whole transmit path and 2 contacts in receive.

Disadvantages:

1. Weatherproof box required.
2. Two coax runs, but receive line may be RG-8.

Next Newsletter: Aug. 1 See you on 70cm, 220 mHz and beyond.
" " Topic of Tech. Corner: 1296 mHz easy TVRTR scheme using MMS-384 to go SSB on 23cm.

73, Charles Osborne
WD4MBK