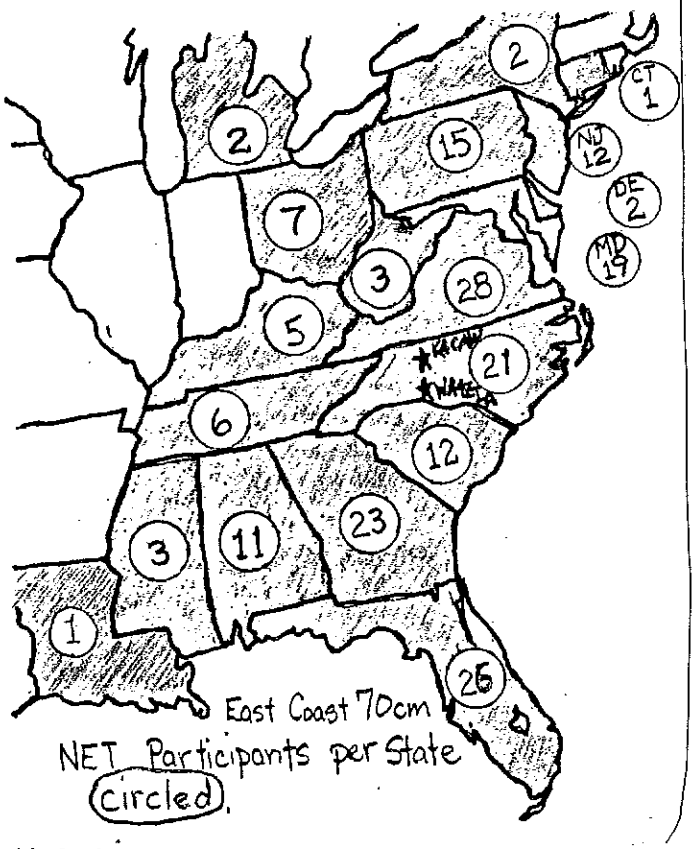
The Southeastern VHF Society and East Coast 70 cm NET | Newsletter

May 1983 edition



Welcome to The Southeastern VHF Society

For those of you new to the society let me take a moment to explain a little about us. The Southeastern VHF Society is a group of VHF/UHF and above experimenters concentrated in the southeast. With over 100 members in 28 states it is becoming a bit more than regional however. The core of the club formed out of the participants in the East Coast 70cm NET. This NET by being on 432 MHz proved a real drawing card for experimentally oriented people who needed to share their ideas both via the NET and later the Society and this Newsletter.

As a member in the Society we hope you will strive to uphold our motto in " meeting the technological challenge" by sharing your knowledge and expertise with others. Please feel free to copy the newsletter for interested friends or reprint our articles with credits to to authors and the Society in any local club newsletters.

None of us profess to being authors so feel free to join in yourself with any tidbits you come across. We'll be glad to try and help you polish up the format so you'll be proud to see your name on it (not that we're very good ourselves but we try hard).

Send any articles or information on your station (for our 220/432/1296+ Directory) to:

Charles S. Osborne WD4MBK
131 Saratoga Dr.
Lawrenceville, GA 30245
or call: (404)923-6938 home, 449-2614 office.

This newsletter is published quarterly: FEB, May, Aug, Nov.

The East Coast 70cm NET

Present totals on the NET are 202 stations in 19 states: FLA, GA, ALA, Miss, LA, TN, SC, NC, VA, MD, DEL, WVA, OH, KY, Mich, PA, NJ, NY, CT.

Our strange weather this winter affected the NET as well with winter propagation lasting well into early May this year. Lately we've had much better luck with W5UKQ LA and W5HUQ FLA being heard into NC at WA4ZIA NCS. No real openings to report however. We have had word of accassional openings in the gulf states however. W4GJO in nw GA worked almost to the Rio Grandein TX on 2m earlier in May but found no stations on 432.

The purpose of the NET is mainly to maintain contact between experimenters year round for SKEDs, news of openings, and especially to better gauge year round propagation on 432. The Net Control Stations are WA4ZIA Dexter McIntyre near Charlotte NC, and K4CAW Al Ross in Greensboro NC. Both stations are capable of phenomenal range send/receive on 432 SSB/CW typically out to 300 miles or more.

WA4ZIA begins the NET Wednesday nite at 9 PM EDT/EST with calls to the EAST. He works clockwise for the next hour then passing the Net over to K4CAW for calls to the northwest and northeast at about 10 PM. Please be patient as even if we only take a minute or so with each checkin the Net still runs close to 1 1/2 hours.

Charleston SC	9:05	
Jacksonville FLA	9:15 - 9:30	
Panama City FLA	9:30	WA4ZIA Net Control
Atlanta GA	9:40	
Huntsville ALA	9:45 - 9:50	
Nashville TN	9:50 - 9:55	
Louisville KY	10:00	
Ohio, Mich, WVa	10:05 - 10:15	
Western PA	10:15	K4CAW Net Control
Virginia, MD, PA	10:20 - 10:30	
NJ, NY, CT	10:30	

Outlying stations are encouraged to checkin with stations in the areas via relay if neccessary particularly if you are hearing the NCSs. Remote Net Control stations from time to time are: W5HUQ Fla, W4ODW Fla, W4GJO GA, WD4MBK GA, and others in the northeast.

* All paid Southeastern VHF Society Members should have received their Directories of 432 and up activity by now. If you have missed issues of the newsletter or not received the directory drop me a note. Some post offices apparently have much more "agressive" equipment and really grind up our newsletters which look like junk mail. If this is the case be sure to tell me. Requests for the directory received after March 1 are being held till we reprint the updated version this summer.

With our growth as a group in the past few months I anticipate we may have to go to a commercial printer either for the August or November issue of the Newsletter. Dues so far have covered all tangible expenses. Hopefully no increases will be necessary beyond our now $5 dues

Outlook on VHF/UHF Contesting '83/'84

Dayton '83 once again offered an opportunity for the ARRL Adhoc Committee on VHF Contesting to meet and debate the present and future of our contest structure. This year with a somewhat more clear consensus in our debates, I as a member of the committee, can give you a preview of coming attractions. If you feel strongly about these changes (especially if in favor, since the most vocal is always against) as always write the ARRL. Address your comments to: ARRL Adhoc Committee on VHF Contesting, care of John Lindholm W1XX. We have a 2.5" thick stack of letters so far, full of good ideas, some of which have been implemented.

Grid squares are inevitable as multipliers in VHF/UHF as Europe has shown. Expect to see them playing a vital role in all US VHF Contests as well. ARRL sections however remain as the areas over which awards are determined in the contests.

The UHF Contest is the pacesetter since it always requires the most technologically. Next year will see the UHF Contest move to September to better take advantage of propagation conditions above 220. This year it will see the introduction of grid locator codes. One popular incentive to work outside the local area is RANGE scoring. However, to use this with the less mathematical Maidenhead locators and 2x1 degree grid squares may be asking too much. An easy way of doing this has not been found. While most of us have computers now, this assumption should not be made for contest participation. As participants will gradually learn, using the full 6 character locator code will allow calculation of beam headings accurrately and quickly for those tricky UHF antennas.

Single op awards this year are valid in the UHF contest with categories for 220, 432, 1296, and 2304-and-up. 2304-and-up is also accentuated by more contact points. From now on 2304 and above = 16 contact points. One carryover rule from past years that was eliminated is the apparrent ban on 440 FM simplex in the UHF contest. The old rules stated 432-433 operation only. We hated to imply that 440 FM was uncontest-worthy. It just causes ill feelings where activity is scarce as is.

September VHF contest will become the August VHF Contest in '84. This should allow better conditions on 6m and 2m and even possibly some extra multipliers due to the Perseids meteor shower. Also this contest will likely become a VHF only contest with 6/2/220 and no 432+.

Sprints this fall. First set went over well so we've decided to have another series running 1296 first and so on ending with 6m on Sunday night weekend of the 10m contest (best night for meteors and best chance of Es).

Remember the above changes are tentative in many cases. The overall effects on the VHF/UHF/SHF contest program should be gradually improving for all. Your comments are needed and welcome.

Sprints Observations

2m Sprint almost went without notice here in the southeast. WA4ZIA in NC managed only a handful of contacts in a state with a very large SSB/CW 2m population. NC even had the NC SSB SWOT NET on Tues nights until TVI took it off temporarily. So even stations who didn't know about the contest should've been on looking for the NET, but weren't.

220 Sprint on the other hand netted more contacts for WA4ZIA and others in southeast even with less possible participants overall. In general it was an excellent activity booster.

432 Sprint brought on many "long time no see" stations to the East Coast 70 cm NET. One new station W3XO of "World Above 50mHz" fame joined us briefly for a contest contact. The NET's been on 3 1/2 years Bill, what kept you? 37 stations in 13 states were on the NET. Yet, the following week we still had 34 stn in 13 states so the contest had minimal impact on overall activity on 432.

1296 Sprint proved a pleasant surprise. Many stations it seems had been working toward contest date as a goal. WA4NJP in GA appeared on 432 the nite prior to the contest for the first time in many months. It seems he had to fix equipment to get back on 432 just to coordinate 1296 Skeds for hisself. It paid off as he grabbed both Florida (W4ODW) and NC (WA4ZIA) with 1W and a 4 foot dish during the contest.

For those of you who aren't ARRL members and thus don't have Jan '83 QST for Maidenhead grid locator codes you've heard on the bands, here it is:

First determine your longitude and latitude as acurately as possible, down to 2.5 minute resolution if possible. Most libraries or county planners can help on this.

1st Character: Longitude		2nd Character: Latitude	
F	60 - 80 degrees	L	20 - 30 degrees
E	80 - 100 "	M	30 - 40 "
D	100- 120 "	N	40 - 50 "
C	120- 140 "	O	50 - 60 "

3rd Character: Longitude					
60-61	9	82-83	8	108-109	5
62-63	8	84-85	7	110-111	4
64-65	7	86-87	6	112-113	3
66-67	6	88-89	5	114-115	2
68-69	5	90-91	4	116-117	1
70-71	4	92-93	3	118-119	0
72-73	3	94-95	2	120-121	9
74-75	2	96-97	1	122-123	8
76-77	1	98-99	0	124-125	7
78-79	0	100-101	9	126-127	6
80-81	9	102-103	8	128-129	5
		104-105	7		
		106-107	6		

4th Character is the same as the last digit of your latitude.

For optional 5th & 6th char. See January 83 QST.

Example: Lon: 84°, Lat: 33° = EM73

**********CONTEST INFO**********

* WBVP The Cambridge Ohio ARC will be looking for SKEDs in the June Contest. Phone at the site (614)489-5183, Site =40 1'N, 81 24'W @ 1300 feet. Contact KBAL.

* A major contest effort in Oklahoma is underway by KJ5Q / W5NZS. Looks like full power 6m-432 and maybe some 23cm as well.

* Look for W9UD Missouri multiop in June Contest.

* The "4-Landers VHF Group" in Georgia will be back on 3300' Mt.Oglethorp 50 mi north of Atlanta for June contest. Call will be WD4MBK this time. Equipment: kw on 6m-432. Ants.: 10el NBS on 40' boom on 6m; pr 16el F9FT on 2M; pr 15' NBS yagis on 220 SSB/CW, single yagi vertical; 4 19el RIW on 432; 45el loop and 4' dish on 23cm. For SKEDs call WB4NMA Ron Hooper 404-532-9357 or N3AHI Jim Holt 404-945-3655. [site: lat:34°30', lon:84°20', EM74]

* The Packrats (W3CCX) have decided to concentrate their club efforts on the UHF Contest rather than June Contest where they feel they can no longer be competitive from their relatively low hilltop in eastern PA. I applaud their decision. Their 100 member VHF/UHF group is one of the most well equipped clubs to attack the UHF+ contests. This is sure to spur UHF activity throughout the northest.

* WB3ESS will be taking SKEDs for the W3BBS contest group at (215)767-6861 9am-2pm weekdays, anytime wknds. They plan to have 16' dish and kw on 1296! from FN21 (PA)

SKEDS UPDATE

* K2RIW W5UKQ skeds update. So far Dick and John have heard only partials on sporadic meteor bursts however at the Louisiana to Long Island range this is quite encouraging. WB3ESS (Allentown PA) reported hearing W5UKQ for a 7 second burst during one sked session. The skeds continue: weekday mornings 7RM EDT on 432.085. W5UKQ takes 1st, 3rd, and 5th minutes. K2RIW xmits 2nd, 4th, and 6th minutes. W5UKQ and probably K2RIW as well listen following the sked for other callers.

* K4CAW K2RIW skeds also continue. With a couple of years of data they can now boast greater than 99 % success rate over the 550 mile path NY to NC. This means that at some time during the half hour a QSO quality series of exchanges results. SKED time 7:30 EST/EDT 432.0875 Tuesday evenings. K4CAW 1st 30 sec/ RIW 2nd 30.

* WB3ESS (Allentown PA) and W4GJO (nw GA) are SKEDing on Sundays at 10:30 on 432.085 2.5 min sequence. WB3ESS XMT first.

* W3RUE Ted Fabian is looking for stations in SC GA and other points southeast each night on 432.085 at 10:15-10:30. He calls 1st minute then listens for one minute and so on.

* A few words with manufacturers at Dayton Hamvention again confirms: No 220 SSB/CW equipment in the works at any major manufacturer, only new FM rigs. Looks like it's up to us. Can anyone convert IC-211s to 220mHz?

* Remember: Politicians cut red tape lengthwise.

* G4ANB of Maidenhead Grid locator fame made some interesting points about European UHF and above activity. Picture if you will contests which are run on the honor system. John says there is no real problem with people saying they worked someone when they didn't in Europe. No cards exchange hands neccessarily to verify awards. Contests are frequent and to win you must reach rates approaching low band contest work. Stations without 10GHz are severely handicapped. Mountaintop contest stations are located every few miles and cooexist simply by gentleman's agreement as to which 100 kHz segment belongs to which mountaintopper. Exchanges even on the microwave bands are: signal report, full 6 digit grid locator, calls, and even serial number. Often Range scoring is utilized with the judging stations entering log locators into computers to figure scores for the participants.

To think, we are having stations complain at even exchanging signal reports or 4 digit locator codes. As you see the Europeans are much more highly motivated by personal achievement and the complex goals of 3 GHz and up work.

Here in the US 3.3 and 5.5 GHz are the forgotten bands with less than a dozen capable of even getting on. In Europe they run power on these bands and need them for competition.

In short, here in the US we greet contests not as experimenters welcoming the increased activity, but as lawyers looking for loop-holes to take advantage of.

* Southeastern VHF Society Update. Our membership now stands at 105 members in 28 states and with recent publicity in several publications I expect a surge in growth. (Hope we can handle it.)

* East Coast 70cm Net. With the 432 Sprint Contest on NET night I expected to see a lot of northeastern activity on the NET. Still PA/NJ appear as one of our most highly populated 432 areas yet most dead activity wise.

On May 11 W5UKQ became station #202 into the NET and brought us state #19 Louisiana. John was copiable here in GA and just discernable in NC.

* The FCC has now proposed to deregulate the licensing of individuals in the commercial services. Reports amoung the broadcast industry are that if this is done they will have no choice but to devise their own exams to insure technical competance. [There goes our standardization of exams, gee thanks FCC,]

Also FCC licensing of persons in the CB and radio control services is now over. The rules now permit CB station operation without station identification. [Just what are they planning to do at the FCC when all this is over, play politics I suppose, while chaos and TVI reign supreme in the once orderly spectrum. ED]

An interesting example of unregulated services: YV5ZZ in Venezuala once had to put on a 432 beacon simply to hold the frequency for his EME activities. Bootleggers you ask? No, the interferors were government officials who simply decided to operate wherever they pleased. They were going to put a repeater on 432.000.

* Dayton Hamvention International VHF Conference

Thru the efforts of WA8ONQ this portion of the Hamvention went superbly. Attendance was always up close to 200 persons even with all the distraction offered by the Hamvention and other forums. The Noise Figure Competition was packed! Jim had arranged to have a spectrum analyzer and signal generators for general equipment testing (courtesy of the Cincinatti OH Hewlett Packard office) but very few people took advantage of it. Instead we were overwhelmed with over 100 preamps of all descriptions. At times we were doing as many as 25 tests per hour. Hopefully at Central States or other get-togethers that may use these machines they can get more than one HP8970. You see the machine has some very exstensive self calibration routines that can take quite a few minutes to null out all variations in readings. At Dayton we were too pressed by the crowd and time constraints to do anything but the most general quick calibration leading to good relative readings but not what should be considered absolute measurements. Again machine accurracy is specified at +/- 0.2 dB NF. The competition was keen lasting till 3 AM. Results: below:

* In doing Noise Figure measurements at Dayton one point was severely underscored for me about preamp construction. Don't expect to build 0.2 dB NF preamps using connectors with that much variation just in their loss. BNCs were in abundance at Dayton. In making well over 100 measurements I must say that anything with BNCs on it was far less consistant. Whether it was impedance variation or loss, all things affect the preamp tuning when you are down in the .2-.5 DB NF ranges we are now. Type N is by far the way to go for all factors: mechanical & impedance wise.

144 MHz	NF	Gain	device
K2VXO	.30 dB	27.4	MGF1402
Lunar	.42	22.6	PAG144 *
VE3DSS	.45		hb
Lunar	.46	23.7	PAG144 *
W1VD	.50	25.3	P144VDG*
K2VXO	.64	24.0	MGF1402

220 MHz	NF	Gain	device
VE3CRU	.18 dB	18	MGF1402
Terri K	.26	23.1	D432
K2VXO	.28	22.4	MGF1402
KB9NM	.33	21.5	MGF1402
K2UYH	.35	16.8	MGF1200
W1VD	.73	23.8	P220VDG*
W1JR	.75	22.7	ALF1023
K9HMB	1.74	12.8	P220VDA*

* Central States VHF Society 17th Annual Conference July 29,30,31 at the Doubletree Hotel in Overland Park Kansas (near Kansas City). KOTLM Tom Bishop is host of the conference.

The hotel is located at 10100 College Blvd near Highways 35 and 435. Room rates are $42 sngl or dbl. Express bus service available to/from Kansas City International Airport.

Speakers so far include: Don Hilliard WOPW, Bill McCaa KORZ, Dr. Tom Clark W3IWI, Russ Wicker W4WD, and Dennis Connors K2DS/7. Antenna Gain tests will be conducted by Marc Thorson WBOTEM. And as always preamp and converter noise figures will be measured.

1983 membership dues are $5 payable to Joe Muscanere WA5HNK, RT 5 Box 4736, Pearland, TX 77581.

WB5LUA Al Ward is handling the prizes so please help out with your donations where possible. Al is also finishing up this years 1296 Directory by 6/1/83 so hurry up with those station updates.

Sorry for the delay in the newsletter but I was holding it up for the noise figure data from WA8ONQ. He had the original copies of the data taken at the conference so I had to await its return before I could do the results. Data taken by : WD4MBK, WB5LUA, WA8HGX, WBOTEM.

* I've found why many of our noise figure competitions have lower NF readings than would normally be expected from the devices used. At 144 and 220 MHz the Q of the preamps is usually very high with 3 dB bandwidths less than 6 MHz. This is less than the BW of the HP8970 NF meter and most others. Therefore the calibrated noise values and expected values differ throwing the measurements off to the low side in NF. The HP8970 can compensate for this mathematically in its microprocessor correction routines but due to the variations in preamp bandwidths this is not a very feasible thing to do with 60 people standing around wondering why you are taking so long. The moral of the story is that the absolute accurracy of the measurement is proportional to the time taken setting up the equipment to account for all particular anomalies (calibration smoothing, room temperature, preamp actual bandwidth, connector/adapter losses for different input connectors, ...).

432 MHz	NF	Gain	device
WA8HGX	.50 dB	28.9	MGF1402
K3WHC	.54	15.3	MGF1400
JA3IAF	.56	20.0	"
W1VD	.60	16.3	P432VDG*
K3WHC	.60	15.5	MGF1400
K2VXO	.65	17.5	MGF1402
K3QCQ	.66	19.0	MGF1402
WD4MBK	.75	16.7	NE72089
W1JR	.75	16.9	DXL3501
WB3ESS	.77	16.6	MGF1402
JA8DXB	.77	20.1	MGF1400
WBWA	.78	20.9	MGF1402
WB4IZR	.78	16.0	NE72089
VE3DSS	.79	12.1	MGF1200
KC4EG	.85	17.3	MGF1402
WBOTEM	.88	22.8	MGF1402
JA8DXB	.92	22.0	2SK85
JA6CZD	.94	17.0	MGF1400
JA1UGF	.95	18.7	
Lunar	.95	16.8	PAG432*
"	.96	17.4	" *
WBOTEM	.96	21.1	MGF1402
K9HMB	.98	16.2	MGF1402
KB9NM	.99	13.8	DXL2502
JA4BLC	1.02	17.7	MGF1400
NOUU	1.07	16.1	NE64535
N4GJV	1.36	15.9	NE72089
K1WHS	1.48	10.0	DXL3501
K2UYH	1.54	20.0	MGF1400
"	1.54	18.8	MSC8800
Lunar	1.57	12.4	PAG432*
N4GJV	1.62	12.6	BFR-91
KB9RR	1.75	8.1	DXL2502
N4GJV	2.24	9.6	MRF-904
WA8HTL	2.72	9.1	NE64535

902 MHz	NF	Gain	device
Lunar	.35 dB	16.1	Dexel
"	.52	15.3	MGF1400
KCOW	1.09	15.0	DXL2502
K2VXO	1.37	10.0	MGF1402

1296 MHz	NF	Gain	device
K3MKZ	.42 dB	15.2	PARABOL*
W1JR	.57	16.6	ALF1023
WB3LJK	.62	12.8	PARABLC*
JH1UGF	.70	14.1	MGF1400
JH1OFX	.77	14.5	MGF1200
K2VXO	.77	14.5	MGF1402
WD4MBK	.77	10.8	NE72089
WBOTEM	.79	16.4	MGF1402
WB4IZR	.85	10.9	NE72089
WD4MBK	.90	12.6	MGF1412
WBOTEM	1.00	16.2	MGF1402
KCOW	1.07	14.1	
K2UYH	1.10	24.0	1503
JH1BRY	1.10	18.7	NE72089
WBOTEM	1.10	12.4	MGF1402
"	1.11	11.3	MGF1402
JA1VDV	1.26	15.0	NE388
W4VHH	1.37	11.4	NE72089
JR4BRS	1.49	12.6	MGF1400
K3QCQ	1.50	11.1	NE72089
K3WHC	1.66	14.1	MGF1402
JH1GYE	1.66	9.4	MGF1200
JR4BRS	3.07	15.8	MGF1400

* Commercial mfg.

* W5LFL Astronaut Owen Garriott has been OKed to operate from the Space Shuttle this fall. Due to international noninterference criteria and the expected pileups anticipate operation 144-146 MHz. Sept.30 STS-9

* Some interesting notes from recent conversations with some of the guys at the National Radio Astronomy Observatory, Greenbank, WVA. Their recent 432 EME activity with the 140' dish netted 270 stations, the smallest one a 4-yagi 40 watt station I am told. The 44 dB gain dish was made available as part of a 50 year commemorative project regarding the descovery of cosmic noise. The reason the station cannot normally be used for EME on an occassional basis is because of frequent use of other antennas on site at 1420 MHz or other frequencies where nearby harmonic interference would ruin important research.

In general the sensitivity of the observatory to interfernce is hard to imagine. Local home TV preamps oscillating are amoung the routine problems that their mobile van must locate and fix in order that what the 140' and 300' dishes can hear as well as conceivably possible. One radioastronomer attempting to obtain data on lightning bursts fom Saturn mentions that the dish can hear lightning "static crashes" from all over the US as well, making his job very difficult.

One astounding note to amateurs on the dishes' sensitivity: On a good summer day TV signals are visible on EVERY assigned VHF and UHF TV channel ! Some channels with many signals. Only channel 37 is blank. It is left as a continum or spot where radio astronomy measurements can be made in the midst of an otherwise totally blocked area of the spectrum.

Something to think about regarding radioastronomy data, especially interferometry, since phase is such an important factor in the measurements, all the preamps, waveguide, mixers, filters, and antenna wiring must be matched in length and phase at very high frequencies. Also both polarizations require similar constraints, leading to the standard configurations of back to back preamps one for each polarization even at 43 GHz. On the interferometry range even the local oscillators are microwaved back and forth betwwen sites to maintain the accurracy of the phase data.

One cannot appreciate the idea of low noise receivers until you've seen a radio astronomy 43 GHz front end. Tiny waveguide, plumbing for cryogenics to cool the assembly to only a few degrees above absolute zero, a two stage ruby MASER preamplifier pumped with 140mw at 80 GHz, all housed in a dewar vessel to be mounted directly at the feedpoint in a rotatable standard "cartridge" assembly that fits either the 300' or the 140' dish. These "cartridges" cover the various bands of interest and can be interchanged quite easily in a few hours to switch bands. The 140' antenna is a solid surface dish good to approx 25 GHz. Even at lower freqencies however gravity distortion of the surface is a problem. This is corrected in some cases by a Cassegrain subreflector which can be twisted or distorted slightly to compensate for the uneven pull of gravity on the dish surface.

Neat stuff radioastronomy, a favorite area of mine.

* Phase IIIB launch has slipped from the June 3 date due to fear of possible upper stage turbo pump problems on the Ariane launch vehicle. Better late than never. Keep our fingers crossed on a successful launch sometime in the late June timeframe. And remember to support AMSAT. Until Phase III goes up, their finances will be stretched. Let's all back the team before they are into the winning season. Membership: $ 16.

AMSAT, POBox 27, Washington DC, 20044 Flash: Launch set for June 16.

* An oft asked question:"Why not tuck an amateur satellite into an unused corner of the shuttle cargo bay?" Answer: This will likely never come to pass because of the dangers of the unstable Unsymetrical Dimethylhydrazine used in the kick motors. The insurance and testing costs required to send the satellites up in a manned mission would far exceed the actual cost of the amateur satellte itself. Therefore thank god for the European Space Agency and Ariane even if they are a real risk, they are the only ride in town. Even the Air Force and NASA are being forced to tighten up on the "wastefulness" of trying to integrate the low buck passengers like AMSAT onto their missions. Maybe if we support AMSAT better monetarily the money will be in the coffers to sway those decisions our way.

* CATVI seems to be spreading rapidly as some of the newer systems age. Aside from cracked hardline joints and leaky taps a major source of CATVI is in many homes. This is the wiring in and around the sets. Bad F connectors will still pass the strong 1 mw + CATV signals while radiating a portion.

Another possible source in need of research are the miriad of switches now available to select between RF to/from: video games, home computers, cable TV, video recrders, and regular outside antennas. Nowhere in any of the literature I've seen does it mention isolation figures. Many people may be rebroadcasting the cable signals on their outside antennas. Cable Companies are no better at combating the problem in that they seldom caution the subscribers to completely disconnect their internal rabbit ears from the TV when cable is installed. FCC stance so far has been exempliary. They avidly pursue violations but the problems are immense and growing. Most CATV installers I've spoken with don't technically understand the seriousness of their leaks much less how to locate and fight the problems. Typical leak levels in most areas appears to be S9 or greater at 145.25 video carrier channel E frequency.

* In case some of you had not heard, TVI has temporarily taken off one of the largest and longest running of the SWOT NETs on 2m. K4CAW quit calling the Tuesday NC SSB 2m NET in response to TVI complaints from a neighbor a block from his home. Even though the neighbor only had TVI problems on one set in the house and not on others this did not logically mean to him that the problems are in his set and not AL's station. One neighbor even insists that Al is an illegal CBer which attests to the mentality Al's up against (Al has antennas only for 2m and 432.)

Al is using his time off from the NET to redo his antennas. Down come the pair of 16 el KLMs on 2m and the four 16el klm on 432. Up go 8 19el RIW on 432 and at least one "Boomer" for 2m. This time portions of the array will be elevatable for Phase IIIB OSCAR.

The Care and Feeding of Transco's
by Kent Britain WA5VJB

In the last year I've aquired, rebuilt, tested and redistributed at least 50 RF relays, mostly Transcos. So I'd like to make several suggestions and observations.

The Transco Y type SPDT coax switch has been produced for over 30 years and is one of the more common surplus RF relays available.

Ratings RF: 500 watts CW at 1 GHz
10kW peak at 1 GHz
Loss 0.2 dB to 2 GHz (0,05 typ)
Isolation 50 dB at 1 GHz (55 dB typ)
11 GHz max rated frequency

Solenoid: 18-30 vdc latch
1-10 vdc dropout
100-120 ohm coil resistance
rated for 1,000,000 operations

When you aquire your Transco, first check for proper solenoid action. Next check resistance when the contacts are closed from 'IN to 1' and from 'IN to 2'. The exotic alloy used on the contacts tarnishes easily and a relay that's been sitting around for several months or years can show 50-100 ohms of contact resistance. Cycle the solenoid several dozen times until the contact resistance consistantly drops to less than 1 ohm. In stubborn cases remove the connectors with a thin 7/16" or 11 mm wrench. Now burnish the connectors with a fine wire brush or cardboard, reassemble and retest. If you have an "energize to open" solenoid you must energize/retract the solenoid while re-assembling or you will entrap the contacts.

Also on an older relay its not uncommon to have some of the plating flaking off the connectors. As long as the flaking is on the outside and not the inside, performance is not impaired.

An excellent find are the versions which have additional contacts actuated by the solenoid. Use this type for your preamp, wiring the amplifier antenna relay thru the external contacts of the preamp relay. This way you cannot switch the power amp to the antenna until the preamp solenoid is fully retracted.

Another suggestion is to power the relay from a poorly regulated power supply (voltage doublers from 12VAC work nicely). The supply will give you 28-30 vdc no load then drop to 15-20 vdc to hold in the solenoid. At a constant 28 vdc the coils dissipate 8-9 watts and get HOT!

* Finally got around to measuring the PIN diode losses in the 211 and 551 Icoms I own. At 144.5 the IC211 reads 2.7 DB loss from Ant connector to first RF stage input. IC 551 reads 1.16 dB loss from Ant input to preamp output phono connector. Also noted were significant amounts of local oscillator signals leaking back out the antenna ports on the 211. This is of note to us UHF /microwave stations that might hear these signals or their harmonics as weak signals in the microwave region without realizing they were coming from another antenna in our own arrays.

Return loss at the antenna inputs were also interesting: 23 dB on the IC551, and only 13 dB on the IC211. (Actually better than I was expecting.)

* K8CH Chuck Hutchinson needs our help. He has taken on the awesome task of bringing the ARRL's VHF Manual up to date! He needs short UHF/SHF articles. A preliminary outline of included topics

1. VHF/UHF... safety precautions, biological effects of RF energy
2. Overview of today's cm and mm bands as utilized today
3. Components and new techniques, microstrip etc
4. Propagation & System Performance , path loss
5. Antennas and feed systems
6. Transmission line & waveguide, cavities, circulators
7. RCVing equip projects: 420 MHz - 24 (48?)GHz
8. XMTing " " " " " " "
9. Gunnplexers and equip for 10/24 GHz
10. Test Equipment and Measurements, loads, power meters, counters
11. Filters and Interference, cavities, interdigital filters
12. Space Communications: EME & Satellite
13. Broadband Modes: ATV, PCM, Spread Spectrum
14. Where to start ; locating parts, useful surplus equipment
15. Further info: clubs, conventions, contests, bibliography

The book is targeted at 192-256 pages in I assume the large QST size format. The RSGB version of this covers similar material in 512 pages of very condensed projects. To do the material any useful justice at all would require similar number of pages. Therefore if we are limited to the number of pages mentioned the material will have to be VERY good and concise. Fortunately this can't be another "Antenna Anthology" (ie reprints from QST and the Handbook) because there are little if any articles to draw from on up to date equipment above 432 mHz. With the Europeans doing 10 GHz SSB/CW and troposcatter with traveling wave tubes, shall we say, we have a LOT of catching up to do! Good luck Chuck. I'll forward anything I can find that's of interest. Everyone please give Chuck a hand whether you think you are a writer or not.

* New RSGB VHF/UHF Manual 4th Edition is now in print. Available from ARRL for $17.50. It's 512 pages of some of the best microwave construction articles available. Well worth the money.

* On a sad note for us experimenters, VHF Communications Magazine is once again in limbo for US distribution. Ozzie Diaz WB6ICM who handled it for Selecto says "Unfortunatly due to conditions beyond my control have decided not to handle the VHF magazines anymore." So, anyone hearing of a new source please forward it to us.

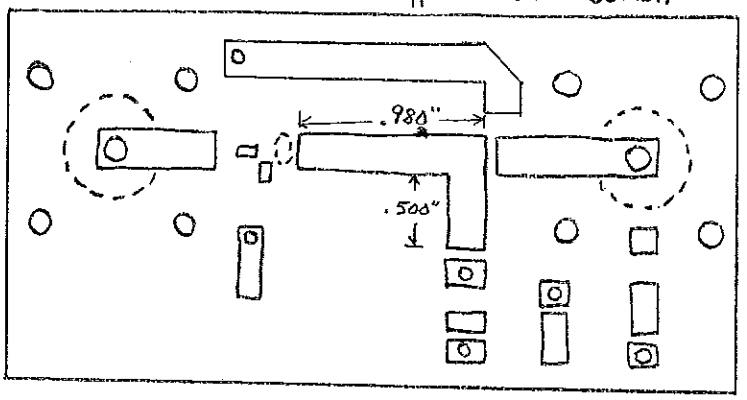
* At a components level let me declare the MGF-1402 1982's best buy. At around $14 each in unit quantities they seem to out perform even the more expensive NEC devices. Availability and delivery times are much better as well. They perform well and stably in most amateur designs giving NF of 0.3 at 144/220, 0.4 at 432, and 0.5 dB at 1296 in optimized designs.

* WD4JQV offers a tip on constructing 4-way 1/2 wave power dividers. Instead of placing 3 conectors on one side of the line and 2 on the other, feed it from the side of the line. This gives exactly the same distance from feed connector to each output connector. The difference is not very large but is measurable by amateur methods, in so far as power division.

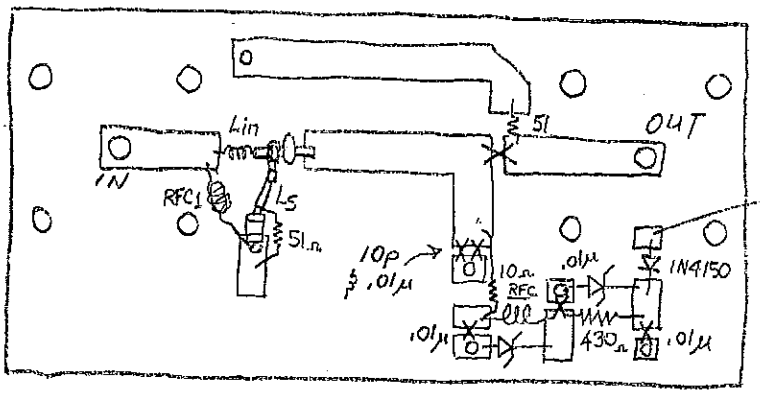
1296 MHz ULTRA LOW NOISE GaAsFET Preamplifier

By E.R. "CHIP" ANGLE N6CA

BOARD: RT DUROID 5880 $\varepsilon_r = 2.2$ 0.062"
o = EYELETS SOLDERED BOTH SIDES
FULL COPPER BACK SIDE (except ½" dia area removed around type-N center cond.

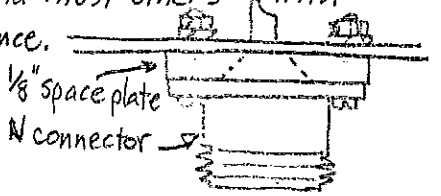


50Ω line widths = 0.182"



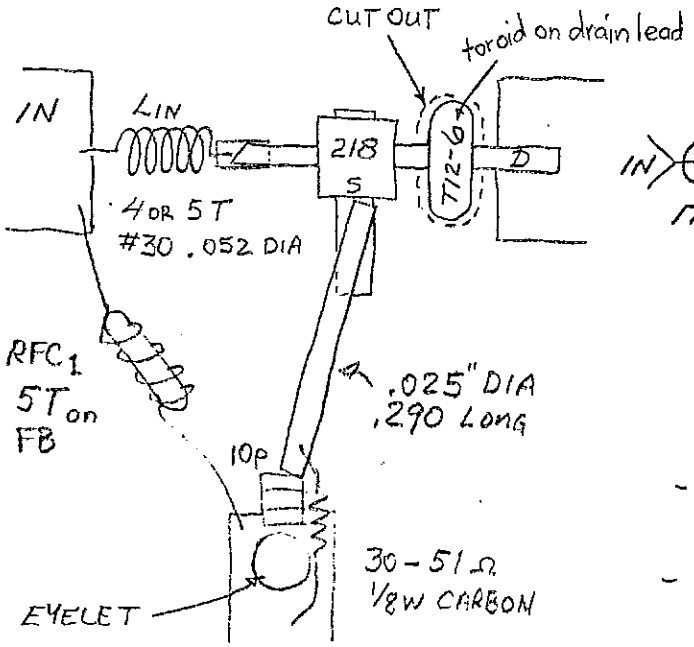
PERFORMANCE: 28 °K TO 34 °K HOT/COLD
N CASCADED STAGES
0.4 to 0.5 dB NOISE MEASURE
12 TO 14 dB GAIN
> 15 dB IN & OUT RETURN loss

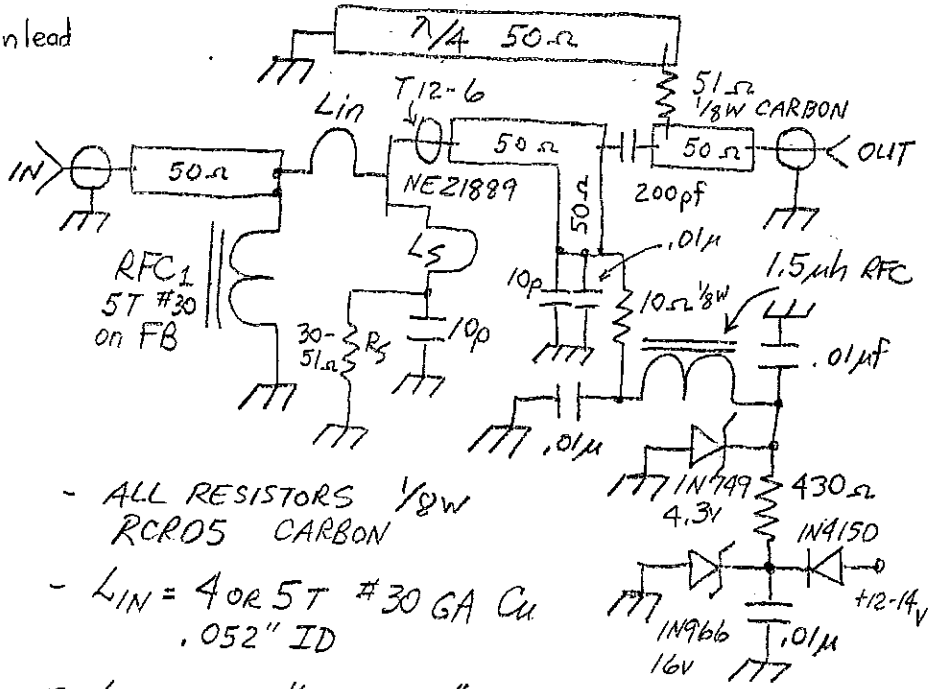
Q1: NEC NE21889
also works with MGF1402, NE72089 DXL2503A, and most others with varying performance.



Tune by bending Lin. very critical.

R1 - SELECT FOR 20 TO 25 mA TOTAL CURRENT - TYPICAL 430Ω
RS - 30 - 51Ω SELECT FOR 12MA IDS (MEASURE VOLTAGE ON RS.)





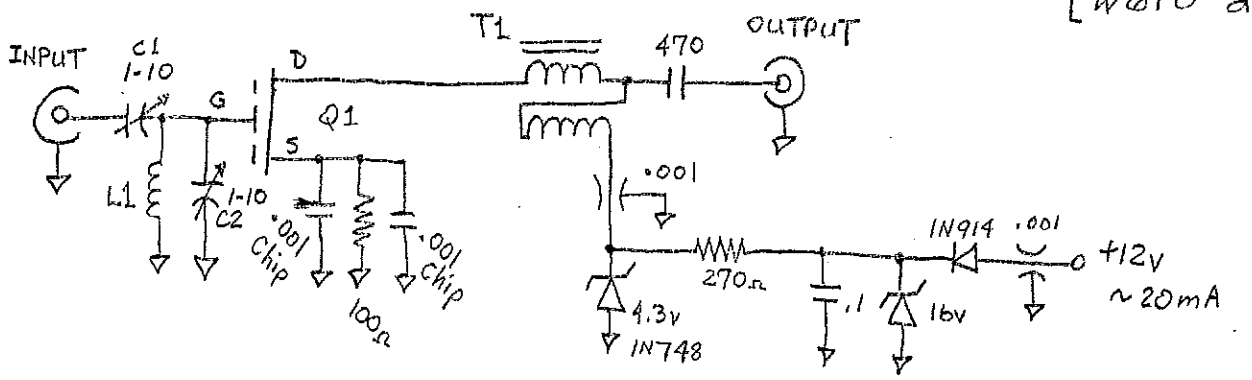
- ALL RESISTORS 1/8W RCR05 CARBON
- L_{IN} = 4 OR 5T #30 GA Cu .052" ID
- L_S = .290" OF .025" DIA Cu Wire
- RFC1 = 5T #30 GA on Ferroxcube 56-590-65/4B shielding bead
- Chip caps: Johanson: 10pf = 500R11N100KP

CAREFULLY!

- SHORTEN GATE LEAD (NOTCHED) TO 0.10" LENGTH
- SHORTEN SOURCE LEAD TO 0.10"
- CUT OFF OTHER SOURCE LEAD
- DO NOT CUT DRAIN LEAD

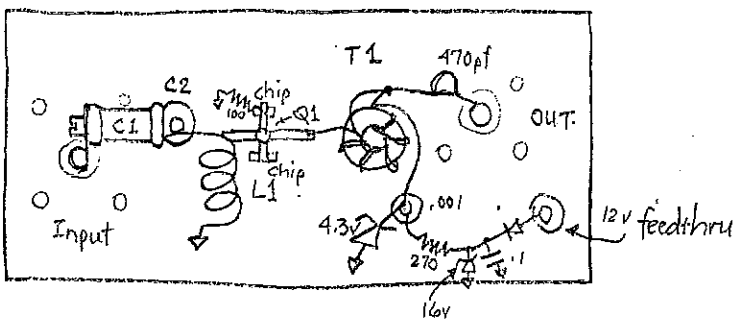
Collection of Preamp Designs

[W6PO design]



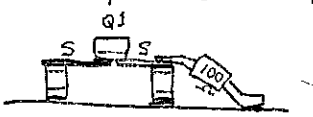
	144 MHz	220 MHz	432 MHz
L1	6T #14 1/4" ID x 1/2" long	4T #14 1/4" ID x 1/2" long	Copper strap 2 1/4" x 0.6" Space 0.171" above ground plane
T1	12T twisted pair #24 on Micrometals T37-0 toroid (4:1 xfrmr)	14T twisted pair #24 on Micrometals T30-0 toroid	5T twisted pair #30 on 1/4" dia Q-1 toroid

144 & 220 preamps



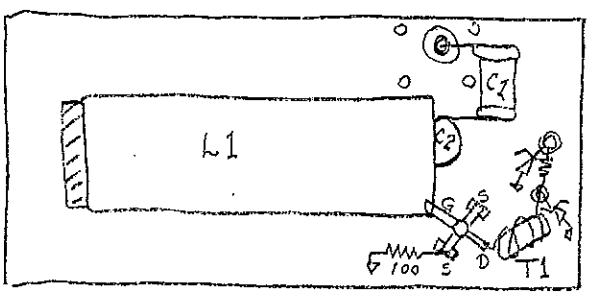
Q1 : MGF1200, 1202, 1400, 1402, NE72089, etc
ie: most any GaAsFET works

- mount GaAsFET using two chip caps on the source leads to space it up off ground plane,



- layout seems fairly non-critical but do keep leads short and inputs and outputs sepesated as this circuit often gives 20+dB gain,

432 preamp



- This design with variations is used in most of the comercial 144/220/432 preamps. It's a real winner at the Noise Figure Competitions giving 0.25 dB - 0.35 dB on 144/220 and 0.4dB on 432mHz depending on devices.

Southeastern VHF Society Newsletter
May '23

UHF N BNC SMA

by Kent Britain WA5VJB

Have you ever been bewildered by that alphabet soup of letters used to identify your coax connectors? Well, there are some interesting stories behind those letters.

Up until the 1930s binding posts and parallel wires were used for feedlines. When the first RF coaxial cables were marketed, the UHF connectors (PL259-SO238) were introduced for these new feedlines.

During WWII the requirements for a better connector for RADAR use prompted two designs. The first was developed at Bell Labs by Mr. Paul Neill or the type "N" connector. At the same time another connector was developed by Carl Concelman or the type "C" connector. By using "reactive cancellation" the inductance in the connector was balanced by changing the dielectric material used to fill the connector. Reactive cancellation allows the connector to have a low SWR well into the GHz regions.

Shortly after, Neill and Concelman collaborated on the design of miniature bayonet locking connector. Or the Bayonet Neill Concelman, BNC. Later for certain airborne uses an improved threaded version, the Threaded Neill Concelman, TNC was developed. (Anyone ever noticed how easily a Male "N" fits on a Female BNC or TNC?)

For precision microwave use a series of subminiature connectors were developed, the A, B, and C. Of these the A or SubMiniature A (SMA) is the most popular.

Now you can really show off by calling your local electronics emporium and asking; " Do you have a 220 MHz Rubber Duck antenna with a Bayonet Neill Concelman connector?"

* W4WSR Ot Fiebel in Jupiter FLA is in the process of designing a series of 1296 7289 tube type power amps for sale. Write to him for details: 18860 Loxahatchee River Rd, Jupiter FLA 33458.

* KCOW Jack Parker is selling 5" x 10.75" .062" teflon printed circuit board material for $12.
1420 E. Sweet Ave., Bismark, ND 58501

* Late News: AMSAT needs $12,000. Someone in Europe finally agreed to write $400,000 insurance on Phase IIIB at last minute for that sum. Please help out. Address on p.5.

* WB0TEM Marc Thorson is preparing to sell a variety of etched preamp and ring mixer circuit boards on teflon material for very reasonable prices. Price of an etched 1296 preamp board will be about $8! He also is selling teflon board material for the same price as KCOW. Contact Marc for details.

* Gerry K3MKZ of the VHF Shop is now importing for PARABOLIC & CUEDEE. He carries a wide variety of rare VHF/UHF supplies including good prices on Microwave Modules, RIW Products, ARCOS, Mutek, etc. Call or write for the latest catalog. Send SASE. → He carries most anything you'd want.

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Southeastern VHF Society Membership Application and station data sheet May 1983 issue

Membership $5 made payable to: Charles Osborne, WD4MBK, 131 Saratoga Dr, Lawrenceville, GA, 30245
Do NOT send SASE! We solicit information about your station on 220 SSB/CW, 432, 1296, and above for inclusion in our Directory published once yearly for members. Phone is optional but helpful for SKEDs or more limited circulation only to NET managers if so indicated. Please list info on antennas, preamps, power, and transverters or equipment.

Name.....Call..... phone (.....).....

Address .....State.....Zip.....

Longitude.....Latitude..... or Locator code..... Equipment: