Mt. AIRY V.H.F. RADIO CLUB, INC.

CHEESE BITS

ARRL Affiliated Club

W3CCX
CLUB MEMORIAL CALL

Volume LI **May 2010** **Number 5**

PREZ SEZ:

'Tis HAMFEST season and the local efforts have been underway. The PACKRATS ran the outside vendor area for the TRENTON COMPUTER FEST. The following week was the Warminster Hamfest (without the obligatory rain).

April is also the start of the Conference season. We started spring with the N.E.W.S VHF Conference in Connecticut. Several other PACKRATS attended the Connecticut meetings and rushed off to Kentucky for the Southern States VHF Conference the following weekend.

Of course, the biggest Ham gathering of the spring is Dayton. Our board meeting coincides with the Dayton weekend. This year our meeting is the week after Dayton. The one time I got to Dayton I did find some very useful parts for my station. With so many goodies, and a lot of stuff, I needed to shop carefully to get the best use of my resources.

Reports from Dayton indicate that eBay has taken a big toll on the number of vendors and thus the amount of good stuff available at the country's biggest hamfest. In the same way the local hamfests are feeling the influence from the armchair marketing and shopping system. Still there is nothing like having the opportunity to see and touch the product and speak directly to the seller before you make that buying decision.

Like may clubs in the area we are faced with a decision on the fate of our HAMARAMA effort. Putting on HAMARAMA requires a lot of manpower and planning. Your opinions are welcome. Please join the Board of Directors meeting next week by telephone or offer your opinions at the General Meeting on May 20th.

The next big activity on the agenda is the June VHF sweepstakes. This is a major effort for the PACKRATS. We transport towers, antennas, power distribution equipment, computers, rigs, test equipment and food for the weekend to Big Pocono State Park above Camelback Ski Resort on June 11th. Setup is Friday and Saturday morning in an effort to make the first contact at 2 pm local time Saturday afternoon. We require manpower to assemble and operate the stations through Sunday evening and pack it all up and put it away Monday morning. Your presences on the mountain will make the task all the easier. Even if you can not physically be on the mountain, we need you to help the club efforts; so like the January effort, get on the air and submit a log. Also pray for good weather and lots of enhancements on the bands. With the improving sun spot counts we may have some really exciting 6 meter and possibly 2 meter activity to keep the interest going for the weekend.

Speaking of 6 meters, our May meeting will feature a presentation on a really

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PACKRAT BEACONS - W3CCX/B
FM29jw Philadelphia, PA
50.080 144.284 222.064 432.286 903.072 1296.245 MHz
2304.043 3456.207 5763.196 10,368.062 MHz (as of 1/08)

MONDAY NIGHT NETS

TIME	FREQUENCY	NET CONTROL
7:30 PM	50.145 MHz	K3EOD FM29ll
8:00 PM	144.150 MHz	N3ITT FN20kl
8:30 PM	222.125 MHz	K3TUF FN10we
8:30 PM	224.58R MHz	W3GXB FN20jm
9:00 PM	432.110 MHz	WA3EHD FN20kd
9:30 PM	1296.100 MHz	K3TUF FN10we
10:00 PM	903.125 MHz	W2SJ FM29LW

Visit the Mt Airy VHF Radio Club at: www.packratvhf.com or www.w3ccx.com

impressive 6 meter array on a rotating tower. As usual, the meeting is at 7:30 with the meet the speaker dinner at Giuseppe's at 6 PM.

I have seen reports from those who have been participating in the Spring Sprints.

With my work schedule and lots of family activities this year I did not get on the air. Also, I am still recovering from the attack in March. The biggest effect has been the lack of sustainable energy, requiring a lot more sleep.

I am still planning to prepare the food for the Camelback Mountain efforts so no one will go hungry. I have not settled on a menu so if you have suggestions or a special dietary need let me know soon and we will see if we can accommodate – no promises but we will try our best.

I hope to see you all at the May meeting, meanwhile: *LISTEN FOR THE WEAK ONES*

73 de W3GAD

Editors Column

Our next meeting will be at the Ben Wilson Senior Center, 580 Delmont Avenue, Warminster PA., on Thursday May 20th, 2010. The meeting starts at 7:30 pm with a pre-meeting dinner around 6:00 pm at Giuseppe's Pizza 1523 West Street Road (at the shopping center diagonally across from our meeting site). The Packrats usually are in the back dining room.

This months meeting features "The Making of a Powerhouse 6m System in FM28" . Come see what it takes to build a **250 foot rotating tower** with **5, 50 foot boom, 6m antennas** on it and see what it is capable of working. The speaker is, Al Waller K3TKJ.

Thanks to many Packrats this was the **first month** there was more material than there was room! Apologies to **W3HMS, NE3I, WA3SRU, and WA3BZT**. Your articles & pix will find their way into Cheese Bits soon enough. We, of course, can always use more. Don't hesitate to crank up your word processor for Cheese Bits!

Enjoy this issue Cheese Bits

73, **Lenny W2BVH**

Converting a Commercial TV Transmitter's Driver Amp for Ham Use

By John Sortor, KB3XG

This month we present **part 1** of KB3XG's article on how to use the driver amplifier from an NTSC (analog) TV transmitter on 6 meters. Several club members were able to get these drivers when they were scrapped by WCBS-TV after the conversion to digital broadcast was completed. For members who have a driver, the article is directly applicable. Everyone, however, can learn quite a bit from it. It is also a great example of superb engineering writing that we all can use as an example.

A quick point of perspective: each driver makes well in excess of 1000 watts; a formidable amount of vhf power to any ham. Many of these were required to drive WCBS's output stage which made approximately 100,000 watts. --Ed.

Introduction:

The recent transition from analog to digital TV made some of the analog TV transmitters obsolete. Obsolete hardware usually ends up as scrap or in the hands of surplus dealers. In this case several hams with professional contacts were able to keep the modules out of the dumpster and into the hands of appreciative VHFers. This article describes how to put the Harris channel 2 transmitter into amateur service on the 6 meter band.

Circuit description: (see 1/4 module schematic on p. 5).

The channel 2 amplifier consists of four 1/4 modules. Each module consists of 2 push pull pairs with an on board 2-way splitter and 2-way combiner.

T1/T8 is a 2-way zero degree hybrid used to split or combine two 100 Ohm sources. The shields and center conductors are split at the center point to keep the port to port amplitude balanced.

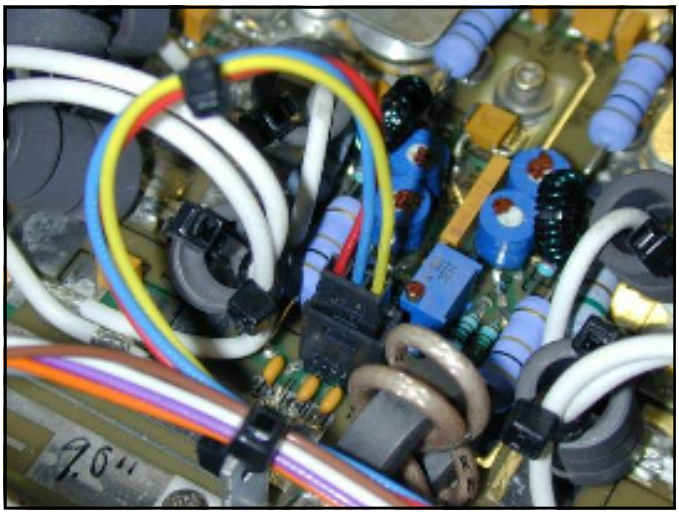
T2/T3 and T4/T5 are two 4:1 transformers in series transforming 100 Ohms unbalanced to 6.25 Ohms balanced or 3.125 Ohms at each gate.

T6/T7 is a single 4:1 transforming 100 Ohms unbalanced to 25 Ohms balanced or 12.5 Ohms at each drain.

A regulated +15 VDC is applied to pin 1 of J1 (red wire) to provide gate voltage. The gate voltage of each MOSFET is biased to draw a drain current of approximately 0.5 Amps for class A-B operation. It was not necessary to readjust the gate bias pots.

A balance transformer (T9) is connected across the isolation resistor (R15) of the output hybrid (T8). If both push pull pairs have the same Pout, the output voltage at the detector (CR1) is zero. If there is a fault with one or more devices, the detector sends an alarm to the control board. (pin 2 of J1 blue wire).

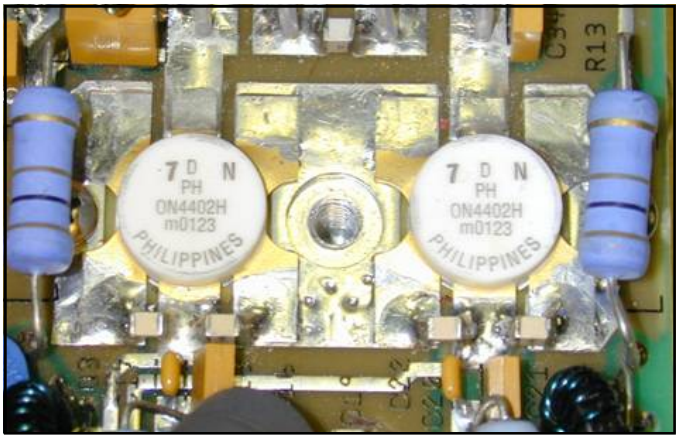
A thermistor (R1) attached to a solder tab is mounted directly to the hearsink between the devices. A bypass cap (C1) is mounted on top of the thermistor. If a fan fails or the airflow becomes impaired the current through the thermistor increases, the gate bias voltage decreases, the devices are biased off, and an alarm is sent to the control board (pin 3 of J1 yellow wire) .



Gate bias/alarm connector & over temp

RF balance transformer and alarm

RF devices:
Very little information is available for the RF power MOSFET's (on4402h) used in this design. I believe the devices were manufactured by Phillips Semiconductor but I could not find an equivalent in any of the old Phillips data books. The transistor looks like a standard 0.500 6L (6 lead) package but it does not have mounting ears. The transistor is held tightly to the heat sink with a spring clamp and 2 aluminum cone shaped caps. The omission of the mounting ears allows the devices to be placed closer together. This reduces the inductance between the devices and makes it easier to match down to the low impedance of the gates. Harris must have spent a lot of money developing this device for this design.



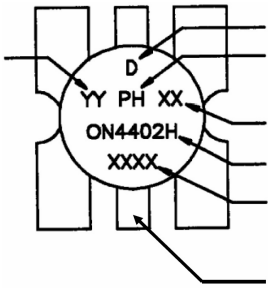
Phillips custom 0.500 6L transistor package

Device clamp to insure good thermal

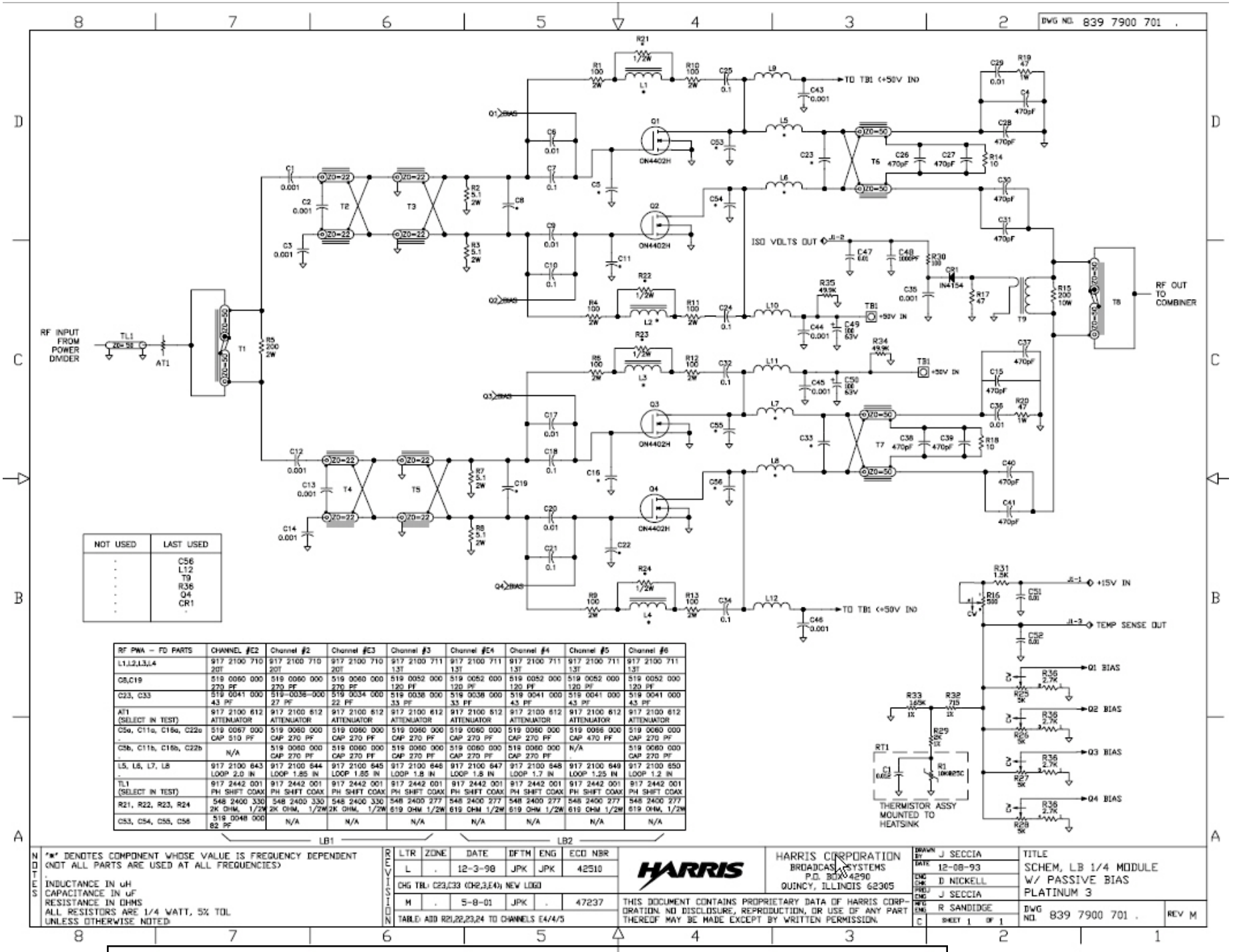
I was able to locate the following device information from Harris online:
on4402h N-channel enhancement D-MOS

Drain to source voltage max	110V
Gate to source voltage max	20V
Drain current	9A
Total device dissipation	150W
Max junction temperature	200C

Four devices are used with power output of 275 watts peak power



Legend:
"D"= Drain
"YY" = Gain Code
"PH" = Mfr (Phillips)
"XX"= Gate threshold code
"ON4402H" =Device type (part nr)
"XXXX"= Date code
Tab directly below drain is Gate



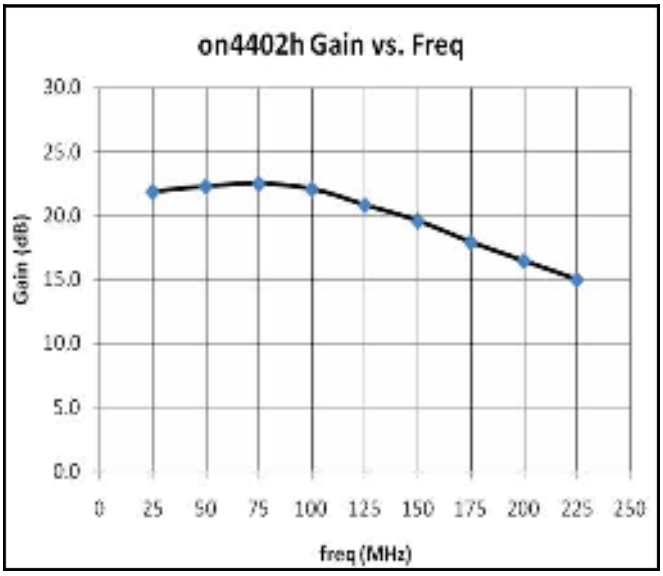
RF PWA – FD PARTS	CHANNEL #E2	Channel #2	Channel #E3	Channel #3	Channel #E4	Channel #4	Channel #5	Channel #6
L1,L2,L3,L4	917 2100 710 20T	917 2100 710 20T	917 2100 710 20T	917 2100 711 13T	917 2100 711 13T	917 2100 711 13T	917 2100 711 13T	917 2100 711 13T
C8,C19	519 0060 000 270 PF	519 0060 000 270 PF	519 0060 000 270 PF	519 0052 000 120 PF	519 0052 000 120 PF	519 0052 000 120 PF	519 0052 000 120 PF	519 0052 000 120 PF
C23, C33	519 0041 000 43 PF	519-0036-000 27 PF	519 0034 000 22 PF	519 0038 000 33 PF	519 0038 000 33 PF	519 0041 000 43 PF	519 0041 000 43 PF	519 0041 000 43 PF
AT1 (SELECT IN TEST)	917 2100 612 ATTENUATOR	917 2100 612 ATTENUATOR	917 2100 612 ATTENUATOR	917 2100 612 ATTENUATOR	917 2100 612 ATTENUATOR	917 2100 612 ATTENUATOR	917 2100 612 ATTENUATOR	917 2100 612 ATTENUATOR
C5a, C11a, C18a, C22a	519 0067 000 CAP 510 PF	519 0060 000 CAP 270 PF	519 0060 000 CAP 270 PF	519 0060 000 CAP 270 PF	519 0060 000 CAP 270 PF	519 0060 000 CAP 270 PF	519 0066 000 CAP 470 PF	519 0060 000 CAP 270 PF
C5b, C11b, C18b, C22b	N/A	519 0060 000 CAP 270 PF	519 0060 000 CAP 270 PF	519 0060 000 CAP 270 PF	519 0060 000 CAP 270 PF	519 0060 000 CAP 270 PF	N/A	519 0060 000 CAP 270 PF
L5, L6, L7, L8	917 2100 644 LOOP 2.0 IN	917 2100 644 LOOP 1.85 IN	917 2100 645 LOOP 1.85 IN	917 2100 646 LOOP 1.8 IN	917 2100 647 LOOP 1.8 IN	917 2100 648 LOOP 1.7 IN	917 2100 649 LOOP 1.25 IN	917 2100 650 LOOP 1.2 IN
TL1 (SELECT IN TEST)	917 2442 001 PH SHIFT COAX	917 2442 001 PH SHIFT COAX	917 2442 001 PH SHIFT COAX	917 2442 001 PH SHIFT COAX	917 2442 001 PH SHIFT COAX	917 2442 001 PH SHIFT COAX	917 2442 001 PH SHIFT COAX	917 2442 001 PH SHIFT COAX
R21, R22, R23, R24	548 2400 330 2K OHM, 1/2W	548 2400 330 2K OHM, 1/2W	548 2400 330 2K OHM, 1/2W	548 2400 277 619 OHM 1/2W	548 2400 277 619 OHM 1/2W	548 2400 277 619 OHM 1/2W	548 2400 277 619 OHM 1/2W	548 2400 277 619 OHM, 1/2W
C53, C54, C55, C56	519 0048 000 82 PF	N/A	N/A	N/A	N/A	N/A	N/A	N/A

NOTES
"*" DENOTES COMPONENT WHOSE VALUE IS FREQUENCY DEPENDENT (NOT ALL PARTS ARE USED AT ALL FREQUENCIES)
.
INDUCTANCE IN uH
CAPACITANCE IN uF
RESISTANCE IN OHMS
ALL RESISTORS ARE 1/4 WATT, 5% TOL UNLESS OTHERWISE NOTED

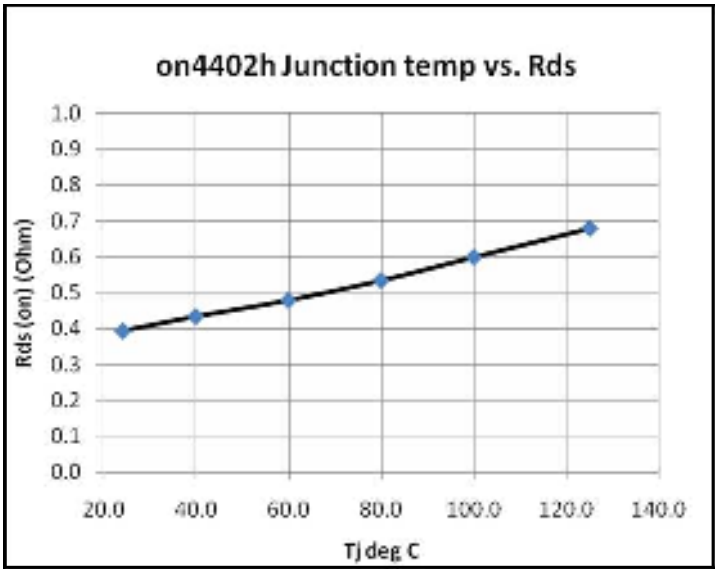
REVISION	LTR	ZONE	DATE	DFTM	ENG	ECO NBR
	L	.	12-3-98	JPK	JPK	42510
	CHG TBL: C23,C33 (CH2,3,E4); NEW LOGO					
	M	.	5-8-01	JPK	.	47237
	TABLE: ADD R21,22,23,24 TO CHANNELS E4/4/5					

DRAWN BY J SECCIA
DATE 12-08-93
ENG CHK D NICKELL
PROD J SECCIA
MFG ENG R SANDIDGE
SIZE C SHEET 1 OF 1

Figure 1 Schematic of 1/4 Module . For a **higher resolution** picture, email the Editor



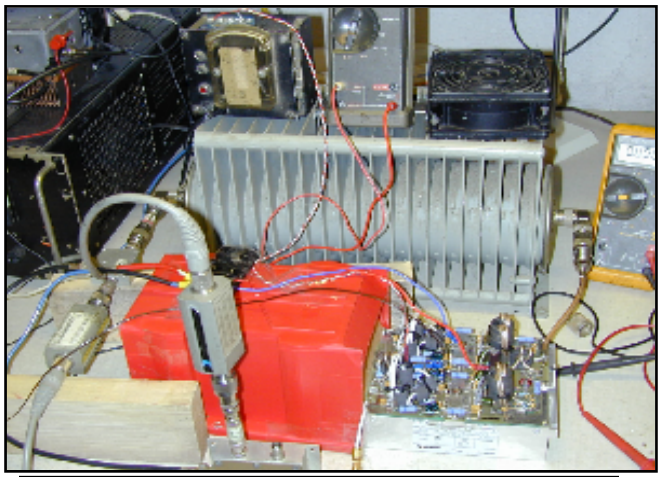
Pout = 100 Watts idq = 50 mAmps
Vds = 50 Volts ZdL = 9.1 Ohms



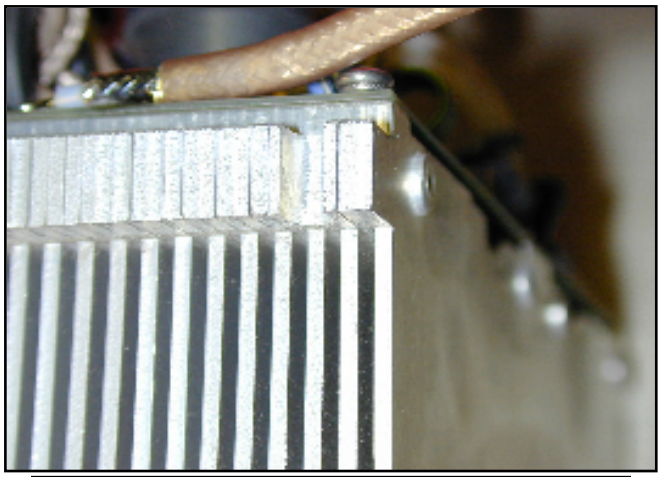
On resistance vs. Temperature

Cooling:
I have used plastic parts bins as air plenums to test various modules and amplifiers. I cut the back off of the bin and the opening is a perfect fit for a 4.5" fan. I use a piece of foam to keep the air from escaping around the top of the heat sink. This allows the fan to build up pressure and force all of the air through the heat sink fins. The flange temperature did not exceed 43 deg C under any test condition. The rule of thumb that my friends at ST use is to add +100 deg C to the flange temperature. So the die temperature is only +143 deg C which is very conservative.

I found the Harris heatsink design interesting. Harris took several plates of 0.100" aluminum, riveted them together, and machined the top surface. I'm sure this is much more expensive than an extruded aluminum heatsink but there is a thermal advantage. Heat exits a power device straight down in a 45 degree cone into the heatsink. Most extruded heatsinks have wide fin spacing so the fin under the device gets very hot while the other fins become ineffective heat radiators. The device package is 0.5" wide so at least 3 fins are illuminated by the heat cone in the Harris design. The fins run parallel to the devices so there is not more than 1 heat source on any single fin.



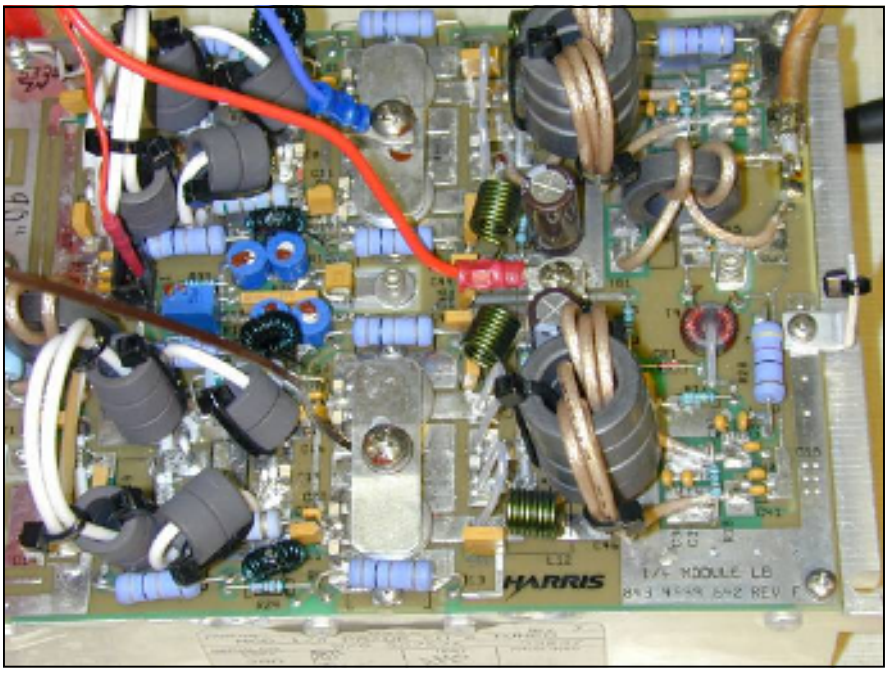
1/4 Module Test Setup



Harris Stacked Aluminum Heatsink

CW testing:

A single ¼ module from the channel 2 TV transmitter was tested under CW conditions. I tested the amp over the design bandwidth (54-60 MHz) to establish a benchmark and then recorded data at 50 MHz. I applied +50 VDC to the single terminal block at the center of the board, (thick red wire) and ground to the device clamp. (thick blue wire) The thermocouple (thin brown wire) was placed under the clamp between the devices and the gate bias (+15 VDC) was connected to pin 1 of J1. (thin red wire).



1/4 Module Under Test .

Pout @ 3 dB Compression = 390 Watts

freq = 50 MHz

Pin W	Prev W	Pout W	Ids Amp	Vds volt	Flange degC	Rtn dB	Gain dB	Eff %	Pdiss W/dev	2nd -dBc	3rd -dBc
0.48	0.017	50	4.22	48.4	38.2	-14.6	20.2	24.5	38.6	-44.0	-33.0
1.06	0.039	100	5.87	48.3	40.8	-14.3	19.7	35.3	45.9	-40.0	-29.0
2.24	0.095	200	8.10	48.1	43.0	-13.7	19.5	51.3	47.4	-32.0	-25.0
4.20	0.197	300	10.12	48.0	41.8	-13.3	18.5	61.8	46.4	-31.0	-21.0
8.00	0.390	390	11.70	48.1	40.6	-13.1	16.9	69.3	43.2	-29.0	-18.0

freq = 54 MHz

Pin W	Prev W	Pout W	Ids Amp	Vds volt	Flange degC	Rtn dB	Gain dB	Eff %	Pdiss W/dev	2nd -dBc	3rd -dBc
0.56	0.050	50	4.18	48.1	37.0	-10.5	19.5	24.9	37.8	-40.0	-31.0
1.24	0.115	100	5.77	48.0	38.6	-10.3	19.1	36.1	44.2	-44.0	-29.0
2.60	0.250	200	8.00	48.1	41.2	-10.2	18.9	52.0	46.2	-35.0	-24.0
4.60	0.440	300	9.75	48.0	40.2	-10.2	18.1	64.1	42.0	-34.0	-21.0

freq = 60 MHz

Pin W	Prev W	Pout W	Ids Amp	Vds volt	Flange degC	Rtn dB	Gain dB	Eff %	Pdiss W/dev	2nd -dBc	3rd -dBc
0.66	0.102	50	3.96	48.4	36.6	-8.1	18.8	26.1	35.4	-39.0	-34.0
1.45	0.225	100	5.46	48.3	39.4	-8.1	18.4	37.9	40.9	-37.0	-30.0
2.95	0.450	200	7.47	48.2	39.4	-8.2	18.3	55.5	40.0	-36.0	-27.0
4.70	0.730	300	9.04	48.1	37.6	-8.1	18.1	69.0	33.7	-36.0	-24.0

Return Loss:
The return loss was poor (-8 dB) at 60 MHz. This caused RF to get into the thermocouple giving erratic temperature readings. There is a fixed power attenuator (AT1) at the input of each quarter module. This pad varies from -2.75 to -3.25 dB on the 4 quarter modules in the transmitter plugin that I have. Each ¼ module must be adjusted at the factory to meet a gain and phase window so the modules can be efficiently combined. In general the output of an amplifier is tuned for efficiency and linearity and the input is tuned for return loss and gain. Phase tuning is accomplished by tweaking the input for the required phase angle at the expense of input return loss. The fixed attenuator improves the input return loss and can be used to tweak the amplitude with no further change in phase. The good news is that the return loss looks good (-14 dB) at 50 MHz so no tuning or tweaking is necessary.

Power Output:
The module was first tested at the Harris Pout specification of 275 Watts for 4 devices. At 50 MHz and 300 Watts the efficiency was still increasing and the power dissipation per device (45 Watts) was well below the Phillips spec of 150 Watts out so I felt comfortable increasing the drive. The amplifier is about 3 dB into compression at 400 Watts out which agrees with the data the Maryland group published and the Phillips Gain vs. Frequency data (on4402h Pout = 100 Watts/device).

Harmonics:
The combined amplifier will require a high power, low loss, low pass filter if it is to be used at 1500 Watts out. The 2nd harmonic is suppressed (-30 dBc) due to the push pull configuration. (Splitting and combining at 180deg suppresses even harmonics). The circuit does not provide any suppression for the 3rd harmonic. The 3rd harmonic of a single module is only -18 dBc at 400 Watts out so 1500 Watts - 18 dB = 25 Watts out at 150 MHz.

2-tone testing:
The test setup was reconfigured to measure linearity or 2-tone (PEP) performance. A 2-tone test is equivalent to operating an amplifier at 50% duty cycle. The power dissipation of the active RF devices and transformers is half. The drain current is also half.

freq 1 50.05 MHz
freq 2 50.15 MHz

Two Tone Test Results

Pin W	Pout W	Ids	Vds	Flange	Gain	Eff (pk)	3rd order	5th order	7th order
Pk	Pk	Amp	Volt	degC	dB	%	-dBc	-dBc	-dBc
1.02	98.0	4.12	48.4	34.4	19.8	24.6	-40.0	-45.0	-60.0
2.20	200.0	5.60	48.3	39.8	19.6	37.0	-35.0	-48.0	-50.0
3.70	310.0	6.76	48.2	40.8	19.2	47.6	-28.0	-42.0	-47.0
5.64	410.0	7.87	48.1	42.8	18.6	54.2	-22.0	-39.0	-46.0

Conclusion on Two tone testing:
The Phillips devices are very linear. The commercial standard for 3rd order IMD products is -30 dBc. At 300 Watts peak the 3rd order IMD is -28 dBc. The ham standard for 3rd order intermod products is -20 dBc so this amplifier will sound great on SSB at 400 Watts peak for a single ¼ module.

1500 Watt testing:
Next month I will discuss the RF performance of 4 combined ¼ modules and show what mechanical and electrical modifications are needed to integrate this amplifier into your 6 meter system.

73xg

Highlights from the April Meeting

Featuring Packrat Awards and a Presentation by ARRL Contest Manager Sean KX9X


Home Brew Award
BEST
CONSTRUCTION
SDR-1000 Interface
Paul Sokoloff
WA3GFZ
2010


Home Brew Award
BEST USE OF A
MARIO RAFFLE ITEM
Leany Whitfield


The Mount Airy VHF Radio Club, Inc.
Home Brew Award
BEST
IMPROVISATION
Rover Masting System
Michael J. Sabal
KB3GJT


THE MT. AIRY VHF RADIO CLUB
2010 A.R.R.L. January
V.H.F. Sweepstakes
Third Place
Single Operator High Power Category
Joe Taylor K1JT 130,509 points
Toward the total club score of 2,699,809 points

Arecibo EME in April

Hams were afforded a **rare opportunity** to work EME in April when KP4AO was QRV from Arecibo off the moon with the 1000 foot (60 dBi) Arecibo dish. Operations took place between 432.045 and .060, April 16-18. It was theoretically possible to work EME with 50 watts and a short yagi.
I asked Packrats to send email reports if they worked (or tried to work) KP4AO. The response was **overwhelming**! Here are **just a couple** of the reports. **Thanks to everyone** who submitted a report!! I'll try and get more into Cheese Bits in a future issue.

From Phil WA3NUF: I was fortunate enough to work KP4AO on SSB yesterday afternoon. My station consisted of the following:
FT847 + DEMI 432-28 Xvtr + 0.5 dB NF preamp
Amplifier = AM6155 @ 350 Watts out
Antenna = single RIW 19
Coax feed to the station was ~ 20 ft of 1/2 in hardline + LM400 jumpers

The antenna was clamped to a ladder sitting in the driveway.

WA3NUF Antenna and high tech mount

From Rick K1DS: I was able to work KP4AO on CW today (4/18) at 19:57 UTC. I was caught off guard as I kept sending CW during each call "up" not expecting to get a response and then I heard them come back to me. I used a 30 el single yagi 9WL long, az-el and a WD5AGO cavity preamp with a 1' jumper from the antenna, and 20' of coax to another preamp in front of the FT736R in the van. Used a D1010 amp for 100W output. I changed the position of the elevation arm between Sat and Sun as the moon was so high that the antenna was too close to the van.

K1DS setup for KP4AO QSO

A Note from Bill K3EGE

It was a great honor to accept the 2010 Packrat of the Year award at the April 2010 General meeting. I had no idea and was totally surprised!

The **Packrats are a GREAT group** of hams. I look forward to supporting the club in whatever ways I can in the future. It is a true pleasure to be a part of such a fantastic group.

With a sincere... **THANK YOU**.

73, Bill - K3EGE

K1DS 432 Sprint Mobile

Armed with the newly acquired 432 long beam, I was active for the first 2.5 hrs of the 432 sprint with 26 QSOs from FN43 north to FM07 south. Great reports running 100watts. Hopefully the 4 bay of these antennas will get me on EME. This was a lot better activity than the 222 sprint last week, although the band conditions were similarly poor.

Rick, K1DS

KB1JEY 432 Sprint Notes

I also got on the air with a borrowed ICOM IC-7000 and the Ernie W3KKN Mirage brick. I was able to make 4 contacts in two grids for a **whopping total of 8 points**, which is disappointing. Still for all I know, I could be in the top 10 Pack Rat scores :-(Given that I am in the trees (for now), using a single shortened antenna, and not able to attract potential contacts on the lower bands, it was not unexpected. It was also another incentive to learn Morse code.

When I get permanently set up, I think I will go to hard-keying of the Mirage. Futzing with the auto-sense delay did not give me the result I sought.

For Sale: Henry Tempo VHF ONE Plus

with the SSB adapter 144-148 mhz. USB & LSB & FM - no CW. The radio puts out 25 watts high and 7 watts low (adjustable), measured with a Bird meter. It is in near "Mint" condition and comes with the manual and mic. Asking $150 for it and will bring to a meeting to save shipping. --George WB3IGR

Also Motorola Spectra 902-927 MHZ FM. The radio is already programmed to do the FM repeaters. Comes with a speaker and mike, but no power cord. The radio puts out 12 watts as measured with my Bird 43 meter. First $100.00 takes it. --George W3VVP

The Wayback Machine

Gleaned from the pages of Cheesebits, May, 1960

de K3IUV

The thought occurred to me while researching the Rodanthe dxpedition, that it might be nice to have a recap article of 50 years ago in Cheesebits (like they do in QST). I will continue to generate it until I run out of old issues! It's great fun reading through the old ones. --Bert

We'll carry the **Wayback Machine** as a monthly feature as long as Bert has the time to create them and his historical material holds out! -Ed.

1. President at the time: W3CL, Harry Stein
2. 1960 Jan contest, top score in the US, W3KKN, 27,048 points. Highest score ever recorded, to date Announced by W1HDQ
3. A recap of the founding of the Packrats on 5/15/1956 was prepared by the editor (Helen Brick) to honor the 4th anniversary.
4. A nice article by Smel A. Rhat, bemoaning the lack of activity on 6 and 2 meters *(nothing changes!)*
5. Announcement that the "Civilian Space Agency" plans to launch a 100' inflatable passive communication satellite this spring. Named ECHO, tests will be run after deployment, from California (xmit at 2390 Mc) to NJ (xmit at 960 Mc). Author's note: *that's Megacycles for you young hams.*
6. Announcement of the club's hidden transmitter hunt, May 14th, 50.7 to 51 Mc. First prize, $10.00.
7. Technical article. Schematic and construction details for a "Rush suppressor for Super-regenerative receiver", by Ted, W3BVR.
8. Acknowledgement of a donation of a 12" speaker for the club PA system, by Bob, W3GXB.
9. Voted to membership, W3LHF (later W3ZD), Dave Zimmerman (now SK).
10. FCC approved ARRL petition to set 50.0 to 50.1, and 147.9 to 149.0 as CW operation only, effective 6/6/1960.

Events

For inclusion, please direct event notices to the editor.

VHF/UHF Spring Sprints Contest May 8, 2010. 6 Meter Sprint.

Dayton Hamvention Convention / Hamfest - May 14-16, 2010 One of the largest ham events in the US. See http://www.hamvention.org/ for details.

ARRL June VHF QSO Party Contest - Jun 13-14, 2010 Details to follow at http://www.arrl.org/contests/rules/2010/june-vhf.html, when available

Valley Forge Hamfest and Computer Fair Hamfest - July 18 2010. See http://www.marc-radio.org for details

CQ WW VHF Contest— 3rd full weekend in July. Details to follow.

ARRL UHF Contest - Aug 1-2, 2010. Details to follow
ARRL 10 GHz and Up Contest—Aug 15-16, 2010. Details to follow

ARRL September VHF QSO Party Contest - Sept 12-13, 2010. Details to follow

Mid-Atlantic States VHF Conference - Sept 25, 2010. See add, this page. Details to follow.

ARRL 10 GHz and Up Contest— Sept 19-20, 2010. Details to follow

ARRL International EME Competition Contest— Oct 10-11, 2010. Details to follow.

ARRL International EME Competition Contest— Nov 7-8, 2010. Details to follow.

Save the Date

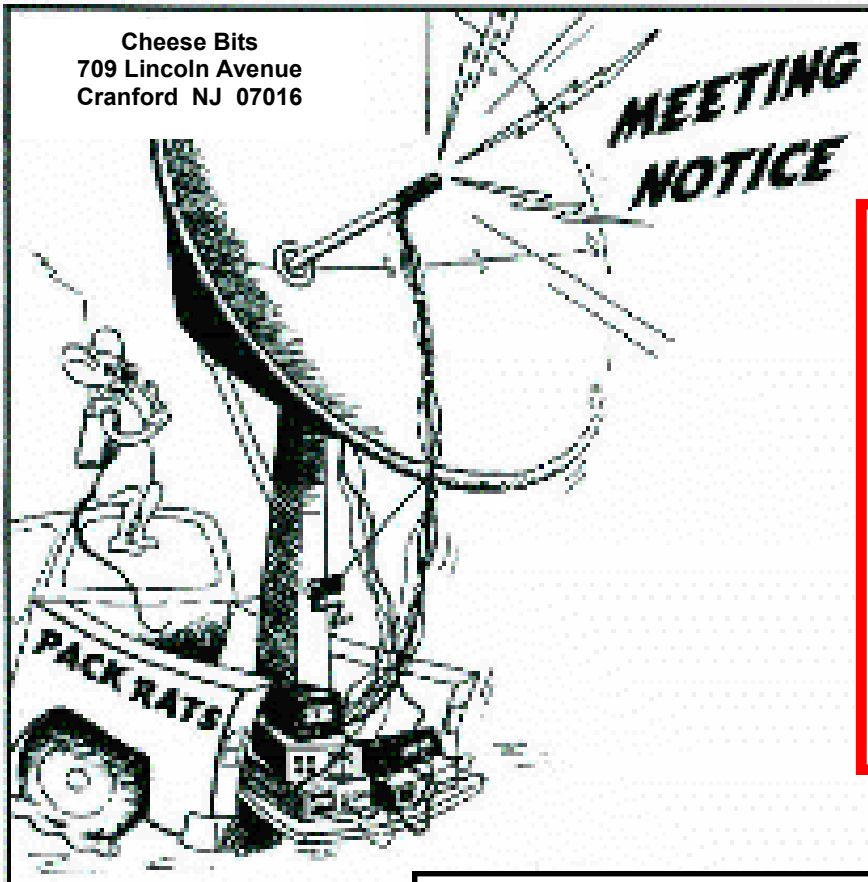
Details are not yet set in stone, but here here's what we know so far:

Sat Sep 25th for the **Mid-Atlantic States VHF Conference**

NEW LOCATION: Quality Inn Conference Center--969 Bethlehem Pike--Montgomeryville, PA 18936

CALL FOR SPEAKERS, PAPERS: send info to : pdrexler<at>hotmail.com
One Day Conference for experts and beginners alike hosted by the PACKRATS VHF Club
One price $70 early-bird includes CD, light breakfast, lunch, snack & buffet dinner
Raffles and Door Prizes--Indoor selling and outdoor tailgating
VHF gear testing--Friday Night Hospitality Room--FREE
BEGINNERS SESSION (must register)

Cheese Bits
709 Lincoln Avenue
Cranford NJ 07016



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