

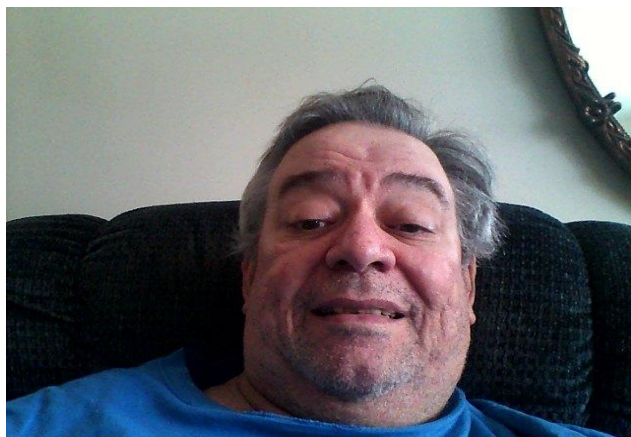


YARC-MITTER

**PRESIDENTS
CORNER**

SEPT. 9TH. NEXT CLUB MEETING

JULY ,2012



WELL ITS OVER, FIELD DAY THAT IS. THE PAPERWORK IS BEING DONE AND SUBMITTED TO THE ARRL, PICTURES ARE AVAILABLE TO SEE AT THE CLUB WEBSITE, WWW.YARC.ORG,. I WANT TO THANK EVERYONE FOR YOUR HARD WORK. THE LOGISTICS INVOLVED SEEMED TO FLOW MUCH SMOOTHER THAN LAST YEAR. EVERYTHING WAS SET UP ON TIME AND READY TO GO WITH TIME TO SPARE. TEAR DOWN WENT SMOOTHLY, WE HAD PEOPLE WHO WERE THERE AROUND THE CLOCK AND REALLY HELPED. LET ME SAY MANY THANKS TO YOU ALL FOR A JOB WELL DONE. REMEMBER IF YOU WOULD LIKE TO GET A CLUB EMAIL ADDRESS THAT WONT EFFECT YOUR CURRENT EMAIL ADDRESS GET IN TOUCH WITH KF2FH AND HE WILL BE GLAD TO SET IT UP FOR YOU RIGHT AWAY.

JOHN---WB2AUL 73'S

SWAP MEET

THE CLUB HAS FOR SALE 4—5 ELEMENT 2METER BEAMS, MADE BY MAXRAD. THESES ARE COMMERCIAL BEAMS AND HAVE NEVER BEEN USED. THE ASKING PRICE IS 50.00 EACH. FOR FURTHER INFORMATION CONTACT WB2Aul



JOIN RENEW THE ARRL THRU THE YARC, THE CLUB GETS \$2.00 FOR EVERY RENEWAL AND \$15.00 FOR EVERY NEW MEMBERSHIP FOR DETAILS CONTACT WB2AUL



NEED HELP, HELP STUDY ING FOR UP-GRADE . GET IN TOUCH JOHN, WB2AUL, HE MIGHT BE ABLE TO HELP YOU

STUDY AND PASS YOUR EXAM.

NEXT VE TESTING WILL BE HELD ON AUG. 5TH., AT 830AM . PLEASE BRING TWO FORMS OF ID. ONE ID MUST BE A PICTURE ID. TESTING IS HELD AT THE 1ST PRECINCT ON EAST GRASSY SPRAIN ROAD IN YONKERS NY. FOR FURTHER INFO CONTACT AC2T AT 914-237-5589



AUG. 5TH

RETIRED GUYS/GALS LUNCHEON

THE NEXT MEETING OF THE RETIRED GUYS/GALS WILL BE HELD ON JULY 19TH. THURSDAY AT MONT OLYMPOS RESTAURANT IN YONKERS. THE TIME IS 1200 PM NOON, YOU DO NOT HAVE TO BE RETIRED TO JOIN US, EVERYONE IS WELCOME ,MEMBER OR NON MEMBER ALIKE IS INVITED. FURTHER INFO CONTACT WB2AUL

914-969-6548

ANY ARTICLES/PICTURES

ANY ARTICLES.PICTUES WILL BE WELCOMED TO BE PRINTED IN THE YARC-MITTER, JUST SEND THEM TO WB2AUL@YARC.ORG

FOX HUNTERS

THE NEXT FOXHUNT ,JULY 15TH., LOCATION LENORE PRESERVE, JUST OFF NORTH BROADWAY IN YONKERS NY. REGISTRATION 830AM



WHAT DO YOU MEAN SPLIT

FIELD DAY REPORT

DAN AA2HX AND MYSELF, WB2AUL ARE IN THE PROCESS OF DOING THE DUPE SHEETS AND THE OTHER PAPERWORK WHICH HAS TO BE SUBMITTED TO THE ARRL. WE HOPE TO HAVE EVERYTHING OUT BY JULY 7TH. THE PICTURES OF FIELD DAY WILL BE POSTED ON THE CLUB WEBSITE,WWW.YARC.ORG



NY STATE SENATOR



ANDREA STEWART COUSINS



ANOTHER WEAPON

OUR SECRET WEAPON AT FIELD DAY



**MORE PHOTOS WILL BE SHOWN ON THE CLUB WEBSITE
WWW.YARC.ORG**

DAVE N2EHGS' CORNER

From: myles landstein <myles.landstein@gmail.com>
Subject: Fwd: rig n linears
Date: June 6, 2012 5:04:28 AM EDT
To: Wb2aul@aol.com

*****This can be published providing nc4lm mal eiselman gets full credit for the below*****

maybe another topic i'll show a simple how to build a linear on paper with a tube.

On May 16, 2012, at 3:40 PM, NC4LMal@aol.com wrote:

Hi Myles,

I am not sure of which linear design is the best but have some ideas that might light the way for you.

The best parameter or test is the distortion level of the linear. The higher the negative number the less is the distortion or change from the input quality.

That number should be better than or equivalent to -30 dB.

But there is much more to consider.

A transistor output final, whether from a solid state transceiver or linear, basically has the final device more directly coupled to the antenna. In that way any noise or spurs that are off the intended frequency, loads onto the coax for transmission. A tuner in this instance acts like a filter and is helpful for reducing those spurs from getting to the antenna. In a tube final, either linear or exciter, there already is a tuner in the line - called the load and

plate controls. So you don't necessarily need an additional expensive space taking device in the shack with a tube linear.

In a transistor amp (applies to either linear or exciter) elevated SWR causes a reduction in output power usually starting somewhere about 1.5 to 1 level. By an SWR value of three to one there is less than 1/10 of your output available at the SO239. That protection cutback circuit is required as SWR problems will quickly blow solid state final devices. That is not the case with tubes. A good tuner can cost \$500 or more as well as occupying more desk space.

Then there is the matter of efficiency and this is a crucial parameter. Solid state devices are never more than about 40 efficiency. They can be made to work at greater efficiency but not without becoming illegal and very dirty sources of RF. That is why transistor transceivers require power supplies producing 13.8 volts at 20 amps. Computing those figures reveals 276 watts of power input for 100 watts of RF output. Since there is some voltage sag at the DC input to the amplifier (at heavy loads across the wires from the power supply) and other uses for the input energy for 100 watts of RF output. That is 40% efficiency. There is a bias control inside each transistor transceiver and by adjusting it you can get some 20-30% more power output from the same input but IT IS NOT CLEAN and those radios would not pass the FCC requirements and so become illegal and a nuisance.

Solid state amplifiers usually require a separate power supply adding to the cost and again robbing desk and/or in some instances floor space.

Tube amplifiers on the other hand are 65 to 70% efficient. Therefore they require significantly less power from the AC line to produce the same output power and leave less heat to dissipate in your room. The formula for the heat added to your room is simply the Input power from the wall socket minus the power going up the coax to the antenna - anything else winds up in the room as heat.

So lets look at an amp producing 1000 watts keydown continuous RF power. With a solid state linear, the power input would be 2500 watts for 1000 out at a legal distortion level (40% efficiency). The difference here is 1500 watts (the input power @ 2500 W minus the RF output @ 1000 W) and that is dissipated in your room as heat. Most of the kW solid state linears use 50 volt at 48 amp power supplies - just shy of 2500 watts input. You pay the electricity rates for that extra 1000 watts for a SS linear for the identical output to a tube amp. Over the years and with heavy time usage, that can add up significantly in costs to several hundred dollars. And remember here, if you live in a warm environment you will need to use air conditioning so that you don't wind up in a puddle of sweat. That is yet another and additional cost for the cooling.

On the other hand - Lets look at ceramic tubes and glass tube amps (ceramics are slightly better in efficiency to 70% and glass is about 60-65%). So with tubes, to get 1000 watts of output (using 66% efficiency) you need 1500 watts of input versus 2500 for SS linears. That saves you 1,000 watts of electricity from your wall plug. Consequently, and if you live in a warm environment (Fla all year or summertime elsewhere) the heat from the 1000 extra watts will require your air conditioner be used. So as far as cost to operate a solid state linear there is a negative double whammy. As you can see this is not as simple or straight forward as one would think. And don't be fooled by the fact that the cabinet of one or the other device does not get hot - that is only related to how well the cooling fans work and/or are designed or how many fans your amp uses (usually one fan for tube amps and several for SS amps i.e. the amp itself and also for the power supply.)

Tube amp = 1500 W in for 1000 W out: 500 watts (room heat)

SS amp = 2500 W in for 1000 W out: 1500 watts (room as heat)

Electrical costs; 2500 W vs. 1500 W for running the amp. Add to that the air-conditioning costs to remove the excess heat (1000 watts) developed by the SS linear. And in fact that extra kW of heat might overburden a room AC so that it is no longer capable of cooling to the degree that you might want or need. In that case you will have to get and install a larger unit. If you are not using a separate room AC unit you will have to cool the entire house to a get lower comfortable temp for the shack - that is very inefficient. And of course smaller lower power amps will have proportionately lesser effects.

And then there is cost of the device and its accessories. Transistor amps appear to cost much more, especially when you have to add the cost of accessories, I.E. - power supplies, 6 gauge stiff connecting wires to handle 50 amps for the power supply, and tuners with their stiff RF connecting cables. And that does not take into consideration wasting of space on your desktop and the rats nest of stiff wires that are incurred. The majority of tube amps (SB 220, the usual MFJ, Dentron) have the power supplies built in (exception is some of the Drake and other amps which have outboard supplies). The built in tuner in tube amps (Plate and load controls) can usually handle a 2/1 to 3/1 SWR without any problems. Some of the less expensive amps like the MFJ are advertised as only capable of handling 40 to 80 ohms.

So here is a table of comparisons:

Tube Amps Solid state Amps

Efficiency better worse

Cost to buy less more

Cost to operate less more

Desk space improved less

Distortion N/A N/A (by design)

Spurs less more

Integration of wiring simple complex

Filament power (2 tubes) 36 to 170 watts none

Room temp control better worse

There is one minor inconvenience and that is you have to tune up a linear. But to be truthful in most cases you also need a separate tuner for your solid state linear to keep it happy. In regard to this, tuning a linear is like learning to ride a bike - it can be learned quickly and once you learn the procedure it stays with you for life.

So which would I get - for me, undoubtedly a tube item of ceramic design. Ceramic tubes are somewhat more efficient (60 vs 70%) than regular glass and use less filament current. Each 3-500-Z uses 85 watts of filament power and in most linears it is on all the time. That is 170 watts for a two tube amp. An MLA 2500 uses 18 watts each for the 8875 tubes for a total of 36 watts of filament power for a dual tube amp.

So now you know the REST OF THE STORY. Go out and get one and have some fun.

Mal

N2EHG Landstein

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