

ALC Adjustment Procedure

[Alan Applegate \(K0BG\)](#) on February 8, 2005
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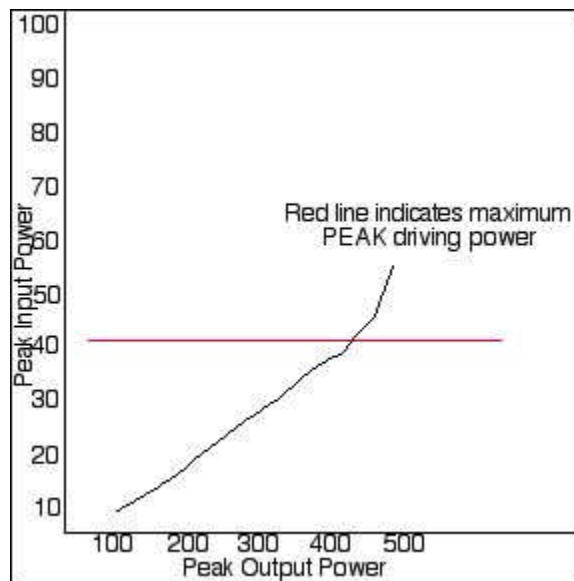
ALC Adjustment Procedure:

Contrary to popular belief, modern HF amplifiers do not require a full 100 watts to drive them to full output. The truth is, most tube amplifiers only need about 65 to 80 watts for full rated output, and some as little as 40 watts. Depending on their input circuitry, some solid state designs require just 25 watts! Regardless of their design (tube or solid state), over driving any amplifier produces a lot of negative results. Intermodulation distortion (IMD) is increased, tube (transistor) life is shortened, power supplies are over stressed, and the resulting splatter is anger inducing.

With the exception of most solid state mobile amplifiers, almost every modern amplifier has an ALC output. ALC, which stands for Automatic Level (Linearity) Control, provides an adjustable negative-going DC voltage which is fed back to the transceiver to control the amount of drive to the amplifier. If it is connected, and properly adjusted, ALC can limit or eliminate the aforementioned negatives. The problem is a lot amateurs never connect the ALC believing that the 100 watts PEP their transceiver delivers can't overdrive their amplifiers. This is an erroneous notion. Even when it is connected, all too often it is not adjusted properly.

The proper level is easy to arrive at and requires just two pieces of test gear; a dummy load and a peak-reading wattmeter. The dummy load is necessary for obvious reasons. The need for a peak reading wattmeter is less obvious. Without getting into a deep technical discussion about power supply dynamics and other esoteric data, let's just say it is best to adjust the ALC by transmitting via SSB while monitoring the PEP.

Before we start let's go over what we're going to do. We're going to set the ALC just at the level where the power out is just below the point where the amplifier transverses into non linearity (the chart at right was made for a fictitious solid state amplifier, but clearly shows the transverse point). Then we're going to increase the ALC slightly so we're well into the linear portion of the amplifier's power curve. So here we go.



First, set the transceiver to put out its standard 100 watts PEP (into a dummy load). Your speech patterns are important here, and rather than say "test, test", recite your address, city and state.

Next, tune up your amplifier like you normally do, but with the ALC disconnected. WATCH YOUR DRIVE LEVEL! 30 to 50 watts is typically enough for tune up purposes. When you're finished put the amp in standby.

Next, hook up the ALC and turn the amplifier's ALC adjustment pot fully on (usually clockwise). Turn on the amplifier and transmit in SSB again with full drive. If the ALC is working as it should, the peak power out will be well below what it was without the ALC connected. Slowly decrease the ALC level while continuing to talk. At some level, the peak output power will stop increasing. The control should be turned back up until the power again drops. A good rule of thumb is 10% down

from the peak power out. This keeps the amplifier well within its linear curve. If you're not going to use any built in speech compression, this is where you want to stop (more on this in a minute).

The last item is to readjust the transceiver's drive level. It should be reduced just to the point where the peak power starts to drop off. Next, turn the amplifier to standby and measure the peak power out of the transceiver. Increase it by about 10%. There's a good reason for this. Using a little more ALC than is required, and with just a little more drive than is required, will provide a moderate amount of RF compression. If you intend to use speech compression, you'd be well advised to increase the ALC level an additional 10%. Remember, compression puts heavy demands on power supplies, no matter how well they are built. Whether excessive IMD is caused by overdrive or power supply dynamics, splatter is splatter!

The aforementioned is applicable to tube or solid state amplifiers alike. However, if you're using an amplifier without an ALC output (SGC SG500, Ameritron ALS-500, etc.) then I suggest you read the article on my web site geared toward those units. Incidentally, most of the new series of solid state amplifiers hitting the market these days, require the ALC to be connected as it is an integral part of their built in self-protection scheme. What's more, solid state amplifiers are much less forgiving of overdrive than most tube ones, and extra caution is warranted.

To close, allow me to add a few bits of wisdom. It is indeed possible to drive any amplifier with more power and get a little more power out of it. What you have to do is ask yourself, is it worth it? Not only does overdriving cause excessive IMD (splatter), it taxes every other part of your station, and shortens the lives of every part in it. And for what purpose? Do you really believe an extra 50 or 100 watts out will make that rare DX station suddenly hear you out of the pile up morass? I seriously doubt it. But I do know this. A good, clean signal with just a hint of RF compression is a prescription for increased contacts, to say nothing of the comments you'll receive about having a clean, clear signal, and one free of trash and splatter. Moderation is the key. Think about it!

Alan Applegate, K0BG

<http://www.k0bg.com/>

Member Comments:

This article has expired. No more comments may be added.

ALC Adjustment Procedure

by [AP2WF](#) on February 8, 2005

[Mail this to a friend!](#)

A very comprehensive and nicely written Article. I really chewed every word of it, visualised and enjoyed it as long time back I faced this problem and worked on ALC circuits. I would like to highlight another malfunction of the power supplies (mostly home brewed power supplies) that comes very apparent with over driving is the tunable hum. I would further add in favour that even with a relatively low drive to keep the amp output within limits and ALC to a level not reducing output will act as a limiter for safety. Ofcourse there will be no RF Compression. I have experienced it improves intelligibility and overall signal quality. Lastly the ALC connection also needs to check and guard against stray pickups if necessary. DX station will, however, recognise your signal further through your Audio quality.

....the obligatory FD pitch

by [KA4KOE](#) on February 8, 2005

[Mail this to a friend!](#)

...and of course, coupled with a fan dipole, you can't go wrong, dude!!!

Less IS more!

by [KT8K](#) on February 8, 2005

[Mail this to a friend!](#)

People need to realize that, in this case, less is definitely more.

Splatter puts enough energy outside the receiver passband that the signal strength at the receiver may actually go down, not up, when the amplifier is overdriven. A clean signal means more signal IN the passband of the receiver, and you can have a stronger signal with a lower output power if you don't splatter.

Distortion and splatter have been around a long time (witness the Old Man's diatribes on "rotten QRM"), but, here again, less is more, i.e., less splatter equals more fun for everyone.

Good reception & 73 de kt8k - Tim

RE: Less IS more!

by [W9WHE-II](#) on February 8, 2005

[Mail this to a friend!](#)

Bravesemo!

This article should be COMPULSORY reading for hams getting their 1st Amp. Wayyyy too many hams fall into that old conterter credo....."all knobs to the right"!

W9WHE

RE: Less IS more!

by [KE1MB](#) on February 8, 2005

[Mail this to a friend!](#)

Less is more... Try to explane to some people that a watt meter takes into account all of the power comming from your xmitter. And not all of that power is comming from the fundemental either. Amost all devices come with a spec sheet that tells the user at what point the best IMD preformance can be obtained. This is where I believe the device should be run. For example the famioius 2SC2879. This device has a IP3 of 60db or better when run at half power. That means eight of these devices with maxium output rattings of 120watts each, should only be asked to produce 500watts.

RE: Less IS more!

by [ACOH](#) on February 8, 2005

[Mail this to a friend!](#)

<<"For example the famioius 2SC2879. This device has a IP3 of 60db or better when run at half power. That means eight of these devices with maxium output rattings of 120watts each, should only be asked to produce 500watts.">>

My newly built K2/100 uses two of these in the KPA100 final stage and is rated @ 100W so the finals are derated 50%.

Some will argue that ALC isn't neccesary if you know how to tune an amp. Some people just can't learn to keep their hands off that load control for adjusting the amps power out. All fine adjustments to amp output should be done with the power out control on the Transmitter/Transciever.

RE: ALC Adjustment Procedure

by [W5AOX](#) on February 8, 2005

[Mail this to a friend!](#)

The biggest problem with this article, Alan, is that those who need to read and follow this procedure the MOST will blow right past and ignore it.

"... This doesn't apply to ME, I know what I'm doing..."

"..I've been QRO for Yo-these-Many-Years, I ALREADY know what I'm doing..."

"ALC? I think I got one of those knobs somewhere in back of this thing... I ain't got time to mess with such nonsense...."

Another trouble: If DX or rare ops would refuse to respond to distorted splattering it would be a good thing. That would leave them with fewer dawgs in the pileup though...

Jim W5AOX

RE: ALC Adjustment Procedure

by [WB2WIK](#) on February 8, 2005

[Mail this to a friend!](#)

Nice job.

Problem is, of course, that many things make operators sound terrible on the air, and overdriving amplifiers is only one of them -- probably not the biggest one, either.

I worked a guy on 40m SSB last night who was barefoot with an IC-706Mk2G (normally a pretty good sounding rig), and he sounded terrible. Very overdriven, overmodulated sound; could hear every breath, the door bell, the telephone -- way too much background noise, and lots of distortion. Evidently the mike gain was (I'm guessing) full "up," and didn't need to be. Sounded just like somebody horribly overdriving an amplifier, and he didn't even have an amplifier.

I just wish people would listen to how they sound on the air as a requirement prior to making a first contact.

I also wish people were required to use two good wattmeters prior to making their first contact using an amplifier. The first meter should measure exciter power and be in the "input" line to the amp. The second meter should measure output power and be in the "output" line from the amp. Apply a CW drive signal and slowly increase drive until the output meter stops rising at exactly the same rate as the input meter, and stop there: How much power is that?

Most would be surprised to find the answer is usually about one-half of whatever the amplifier is rated for.

WB2WIK/6

RE: ALC Adjustment Procedure

by [LNXAUTHOR](#) on February 8, 2005
- who uses ALC anyway?

[Mail this to a friend!](#)

: -)

- seriously, tks for the article...

RE: ALC Adjustment Procedure

by [NO9E](#) on February 8, 2005

[Mail this to a friend!](#)

Overdriving an amplifier by a cheap transceiver INCREASES readability. Here it is why.

Cheap radios have AF processor, which is not terribly useful. A radio with speech processor off has an average power of only 5% of peak power, a miserable 5W out of 100W. By contrast, an expensive radio with RF processor can have an average power up to 40%, or 8 times higher. With cheap radios, the manufactures allow for deliberate overdriving at some stages so that the average power increases to 10-15% at low splatter levels. One can achieve even more by overdriving an amplifier to have RF processing at the QRO level. Then the average power can increase perhaps to 30%, of which perhaps 5% will be splatter but the rest 25% would be RF-processed power.

Many users of cheap radios noticed that overdriving helps them make that DX... (while driving everyone else nuts).

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ALC Adjustment Procedure

by [WA2JJH](#) on February 8, 2005

[Mail this to a friend!](#)

ALC, A MUST, for on the air anyway.

I got my 600W all solid state (4 mrf-150) up to 200W out with 4 W in.

Next jump is 400W as soon as cooling fans are in. Then the rated 600W

I have found that mil rigs will optimize the ALC for better peak power with less distortion.

I built a -12V supply for the ALC back to the driver rig. I am going to use a summing op amp.

Alc will be a function of SWR, heatsink temp, and a simple demod of the SSB envelope circuit. Excessive peaks will be summed into the op amp.

Yup I know a CPU is a nicer way to go. However I think my 4 parameter method by simply summing error voltages will work just fine.

I have decided not to fold back power until I have greater than 2:1 swr.

Many times ALC can act as a type of RF speech compression.

The original kenwood Ts-520 DX switch simply reduced the delay and attack time of the ALC to the 12by7a driver tube.

The result was clean but punchier sounding TX audio.

RE: ALC Adjustment Procedureby [N6AJR](#) on February 8, 2005[Mail this to a friend!](#)

Belive it or not I never use ALC. I set my amplifiers manually. I just sold my 811h, and am using a IC-2KL for most of my stuff I run them behind the IC 756 most of the time and / or the 746 some of the time, but I usually run the 746 to the Alpha. I ran the ts 2000 through the 811H.

On the 2 KL there is a "alc set" knob in the back of the rig and I bring up the amp till it "flat tops" where more power does not get mor output and back it down a tad from there. I check this on all bands and adjust it for a happy medium. I can drive the 2KL to probably 800w if I push it but I run it at 450 top 475 watts in a HOT DX battle, but most of the time and usually only about 300 watts. I find that 2 to 3 hundred watts will get you out of the noise, and short of stacked monobanders at legal limit, the power from 300 to 500 watts is unnoicable on the far end.

on the alpha I basically tune it the same way. when the antenna is resonant, I bring up the amp with 5 or 10 watts (in the cw mode on the amp)and get in the ball park, then I kick it up to about 35 watts input and check the settings, then go to SSB and tweek it again. I make sure the meters don't read higher than the stated max for each function, and then I back it down a tad by lowering the input a watt or two..

This running slightly less than Max smoke will keep you amp in the linear portion of their work area, with out melting things. Always tune the amp for max out and drop the input a tad. the amp will be resonant at max out. (you will find that "dip the Plate and Max the load" is also where the power out is maximum.) but check to be sure.

I had a couple of clipperton L's and when you hooked up the ALC on those you got a motorboat from them so I learned to do it other wise. Please read you manuals and follow their instructions, but remember the difference between a couple hundred watts and legal limit is less than an s unit. so max smoke ain't worth it.

ALC Adjustment Procedureby [KA3TKZ](#) on February 8, 2005[Mail this to a friend!](#)

Great article! This is just the info I need, I am getting an amp soon. Thank you.

Whitney
KA3TKZ

RE: ALC Adjustment Procedureby [W4VR](#) on February 9, 2005[Mail this to a friend!](#)

Some people are actually better off staying away from ALC unless they follow a prodedure such as the one you describe; in fact some amplifier manufacturers (Alpha for example) recommend not using it unless you have an older exciter (Drake line, etc). If you follow the manufacturer's recommendation with regard to drive power you should not have any problems. Now, Solid State amplifiers are a different matter; without ALC you can really overdrive the amplifier and be broad as a barn door. ALC between exciter and amplifier is manatory with SS amps.

ALC Adjustment Procedureby [KE4ZHN](#) on February 9, 2005[Mail this to a friend!](#)

Nice article. Now, if only we could get more amateurs to use less mike gain. You may have a little too much mike gain if the crickets in your back yard at night show 1500 pep on your meter. :-)

RE: ALC Adjustment Procedureby [NOTONE](#) on February 9, 2005[Mail this to a friend!](#)

Like a few others, I don't use ALC. I do all my RF clipping intentionally, in the low-level stages of the radio, prior to the SSB filter. I've modified rigs to make this happen correctly. Then, I use two log amps, sample the aamplifier's input and output, and subtract, which gives me a sample of the garbage the amp is creating. I have a level detector - if the "garbage" exceeds 30dB below the amplifier's output, then it ALCs.

I find that the internal ALC detector on most amplifiers is just plain wrong - it causes gain reduction AFTER the splatter has been created.

Alan's procedure is a very good starting point, but I disagree with the notion of pushing the rig enough to create RF compression, unless you know darned well that the circuit you're compressing is intended to do that correctly. RF compression after the SSB filter generates splattter just like an overdriven amplifier. My mod to his procedure is to back down gain everywhere to the point where the ALC needle on the rig NEVER makes any kind of reading.

AM

RE: ALC Adjustment Procedure

by [WA2JJH](#) on February 9, 2005

[Mail this to a friend!](#)

notone-am, your system sounds very good to me. I may employ a similar process to my quad mrf-150 amp.

One can get up to 800W out of 4 mrf-150's(push pull combinerless)

You are using a comparator type adjustment.

You seem to have only 2 states. Amplify with no adjustment.(no ALC OR ANYTYPE OF CORRECTIVE SIGNAL FEED BACK.)

If there is any type of distortion, then and only then you cut the drive until distortion is below the kimit you set on your comparator.

Hmmmmmm....I guess with your PSUEDO ALC scheme a minimum of attact and instant off is interesting to my app.
73 tnx mike

RE:the obligatory FD pitch

by [K4JSR](#) on February 10, 2005

[Mail this to a friend!](#)

Sorry, Alan, but I must point out to Philip that the Dipole Fan is used for cooling the antenna when you over drive your amplifier. You can dress him up, but you just can't take him anywhere! :-P

Alan, your article reminds me of all of the mistakes that I ever made with an amplifier. The worst was believing that you could not over drive a pair of

4-400As, grounded grid. I thought I had read everything before I built my "Moose", but all I can do is apologize to all of those nice hams that I saturated with "splatter" until I learned better.

Fortunately, my one and only amplifier was that one and I outlived it 33 years ago. Maybe some day when I

am a bit older and a bit more of a curmudgen I will build another amp. For now I am happy to run barefoot and spreading Athlete's Foot spores every where! :-D

Enjoyed the article. The ham bands should be a bit better for your advice and wisdom.

(No, Philip, a WISDOM is not an off center fed antenna!) Sigh!

73, Cal K4JSR

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RE:the obligatory FD pitch

by [K4JSR](#) on February 10, 2005

[Mail this to a friend!](#)

Sorry for the double post. My mouse steak!

ALC Adjustment Procedure

by [WA1RNE](#) on February 10, 2005

[Mail this to a friend!](#)

This adjustment procedure is good, but even if it's followed to the letter, there is a "variable" that is very difficult to account for;

Individual transmitter ALC attack and decay time characteristics.

To my knowledge, I don't believe any OEM's are implementing a standardized ALC Attack/Decay specification.

Instead, I have read and experienced that the opposite is true - and in some cases, the Attack time difference was as much as 10:1!

No wonder there is so much inconsistency in ALC use. You get one person telling you it's the best thing to do and they have experienced great results. You accept this recommendation and try it out on YOUR rig and obtain totally different results.

If you're really interested in checking the performance characteristics of ALC operation with your particular exciter/amplifier, I would start with this procedure, then use a scope or station monitor to confirm whether or not you are obtaining the best performance.

73, Chris

RE:the obligatory FD pitch

by [WA2JJH](#) on February 10, 2005

[Mail this to a friend!](#)

CALBERT!!!!!!!!!! IT IS WORSE ENOUGH YOU DOUBLE POST.
HOWEVER THAT MOUSE-SOMETHING PUNCH LINE WAS VERY
WAS A VERY ""CHEESE--EY", if not sleazy cheap attempt at some type of humor!

Then again maybe dolphins find your type of humor funny! Dolphins do have a larger brain than us.

Then again my humor has been unfairly subject to lambastic, caustic, trailer trash, and non cerebral attacks!

YOUR F(R)IEND MIKE WA2JJH

FRI-END FIEND DEIRF DENPH D'-KNEIF FRI-DNEE

FRND. think this is bad....drive your self nuts with
the biblical code and ther types of psuedocryptology!

Be warned M&M lyrics played backwards and translated
to 1000 B.C. arameic are where it is at!!!!!!!!

RE: ...ALC and the ZEN of CALBERTS flatuosis error

by [WA2JJH](#) on February 10, 2005

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FRND.
think this is bad....drive your self nuts with
with the biblical code to CW/ANTI CW wars. QRP-QRO.

LC FILTERS, MOSFETS, and the names of people who will have no impact on the biblical code. AKA the Hindenburg
uncertainty principle of LED ZEPPLINS!!!!!!!!

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RE: ...ALC and the ZEN of CALBERTS flatuosis error

by [K4JSR](#) on February 10, 2005

[Mail this to a friend!](#)

Mike-A-Zoid,

Cheesy dolphins give our lives porpoise.
Sorry you could not join all of us at Ruth's Crisp
Mouse Steak House for some victuals and potable liquids last Friday. We had a ball.

I just noticed an ad for Isopole antennas at the top
of the page. I wonder if N6AJR has invented the
fan Isopole?

I wonder if their erp is calculated against an isotopic source? I wonder if you would get more power
radiated from the antenna if the coax was in *LINEAR*
lengths?

Flatuosis error? Sir! At my age I never pass a rest room and I never, ever trust an eruption! You'll know
what I mean in a few years!

What has this got to do with Alan's ALC and amplifier
posting?

73, Fat Calbert HEY! HEY! HEY!

ALC Adjustment Procedure

by [WA2JJH](#) on February 10, 2005

[Mail this to a friend!](#)

Best ALC circuit I have seen is in the HARRIS RF-3200.

The CPU use's the RX AGC, an A/D sampler at the RF out. Bear in mind(run) The commercial rigs have always on
speech processing, the CPU controlled ALC HAS NO PUMPING. It also changes the attact and decay time constants.
An HF commercial rig has far stricter standards.

It is a balance act to get a clean signal as well with one with "punch".

sure certain rigs and amps work well with no ALC LINE.

Such as using an Ft-1000 in class A mode and driving an amplifier for less than AB1 full power operaton.

Or your one of those dudes that buy a HENRY EXPort 5KW in, and limit your output by driving it with 30W for that legal
1500W output hi hi.

I guess there are rigs that hold their PEP to a more constant level then others. Some amps have much greater lattitude for
sudden rf spikes.

It is a scary thought of taking the ALC voltage from an old heath amplifier and feeding it in to a FT-100D.
A properly adjusted Heathkit run about -15V peak for thier ALC. However one can get up to -45V.

I found I could run my single 8873 SB-230 with any rig and NOT use ALC.

Decay and attack timing is another beast to deal with. Run the rig with no mods on attack and decay, you will be OK.

ALC Adjustment Procedure - IC-PW1

by [KK9H](#) on February 11, 2005

[Mail this to a friend!](#)

For those who own an Icom IC-PW1 amp, look at this link.

<http://www.qsl.net/kk5dr/pw1.htm>

About half way down the article is a description of how to adjust the ALC for this amp which varies from the setup

procedure in the PW1 manual, but is similar in concept to the method described here.

I have my PW1 set as described in this article and run my exciter at about the 25 watts level which gives me a full 1 KW out. Keeping an eye on the PW1's ALC meter is an easy way to ensure that I have the exciter's output power set correctly. I look for roughly a 1/4 scale deflection on voice peaks. On the air reports have been very complimentary.

RE: ALC Adjustment Procedure

by [K1DA](#) on February 11, 2005

[Mail this to a friend!](#)

What is the radio snob definition of "cheap radio" I have an FT102 I paid 500 bux for new with an rf clipper and an S line worth who knows what new with no processing at all.

RE: ALC Adjustment Procedure

by [K2WH](#) on February 11, 2005

[Mail this to a friend!](#)

ALC Adjustment Procedure Reply

by WA1RNE on February 10, 2005 Mail this to a friend!

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RE: ALC Adjustment Procedure

by [WA1RNE](#) on February 11, 2005

[Mail this to a friend!](#)

K2WH, any idea what happened?? I was trying to create another post and my computer hung, but I don't think it had anything to do with these posts....

ALC Adjustment Procedure

by [KB8ELK](#) on February 11, 2005

[Mail this to a friend!](#)

I think it is important to point out to the casual observer that all amplifiers are not created equal, and have their own tuning characteristics and requirements.

Depending upon the class of amplifier, and it's configuration, and component configuration, the drive level requirements vary widely.

Consider the drive requirements of an SB-220 vs an AL-1500. When is ALC necessary or even appropriate ?

The questions are :

Do you really know how to LOAD your amplifier ?

Can you tell when it's over driven ?

ALC is a bandaid for those who can not answer the above questions.

KB8ELK

RE: ALC Adjustment Procedure

by [W4CNG](#) on February 11, 2005

[Mail this to a friend!](#)

I use NO ALC. I know how to drive, load, and tune my Amplifier on HF. My Bird-43 Wattmeter with the 1000 watt 2-30Mhz slug in the unit is necessary to do the job correctly, while not exceeding the grid current specs, and the Plate current specs while tuning the proper knobs for maximum RF output. I know this because I was brought up in the old school where you had to know how to tune things up after you learned the theory and took your test using a pencil and paper to calculate the answers to the one answer per question with no multiple choice answers to select from. For you book learned folks, good luck getting it right before you blow up your expensive tubes in your amplifiers.

Steve W4CNG

ALC Adjustment Procedure

by [WA1RNE](#) on February 12, 2005

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Here's some interesting information about ALC use from a well known HF amplifier OEM, Alpha Radio Products. This is a quote from Alpha's manual concerning the use of ALC with their Alpha 87 amplifier.

One of the key take-away's is, you cannot predict the dynamic characteristics of the transmitter's ALC system from one transceiver to the next - unless of course, you measure it and/or obtain the specifications from the OEM. Attack and Decay times will vary as well as the control voltage range and threshold level.

So, although you can adjust the amplifier's ALC level using a procedure such as K0BG's, Alpha's, etc., you should be able to limit splatter and distortion products but you may not end up with a transmitter/amplifier that is truly optimized for maximum average power on SSB.

I believe Alpha's guidelines are a good reference, which also includes cautionary statements around monitoring grid current which is another indication as to whether an amplifier is being over-driven. This will also ensure longer tube life. Other OEM's usually state this as well.

From the Alpha 87 manual:

"ALC is a system used in transmitters which is similar in operation to AGC in receivers. When the signal at some reference point in an amplifier chain exceeds a preset level, a bias voltage is generated and used to reduce the gain of a preceding, low level driver stage. The effect is to more or less limit drive and output to the preset level.

ETO does not generally recommend the use of ALC from amplifier to transceiver
**because smooth, distortion free operation requires that the characteristics of the ALC bias source be matched to those of the controlled stage.

****But** tranceiver ALC control characteristics are not standardized; each model has its own unique gain and dynamic characteristics. (Internal ALC in tranceivers works well because the ALC source and controlled stages are designed together as a system.)

ALC feedback from Alpha 87A to tranceiver normally isn't necessary because the power output of most modern tranceivers can be quite accurately controlledand because the Alpha 87A's grid current limiting system easily absorbs occasional drive peaks. Extensive tests with TS-859, TS-940, TS-950, IC-761, IC-781, FT-1000 and TR-7 tranceivers have revealed no need for Alpha 87A to tranceiver ALC feedback to achieve excellent results.

However, the 87A does incorporate an excellent and versatile ALC generator so that the rare cases where tranceiver output cannot be controlled adequately usually can be handled by using the ALC feedback if the tranceiver has an input for negative-going-from-zero ALC. (This type of ALC is standard with most modern tranceivers)

In this case connect the tranceiver ALC input to the Alpha 87A's phono-type ALC jack with a shielded cable and turn the ALC adjust pot fully clockwise to start (except set to mid rotation when using Icom tranceivers).

The adjustment goal is to use the smallest amount of ALC feedback (the least clockwise rotation of the ALC pot) that will eliminate overdrive faults and distortion. No hard and fast universal procedure exists but the following....."

A post from the TenTec archive from contesting.com also said: "I have had my 87A for 10 years, I have used it with a very wide range of tranceivers and have never found it necessary to utilise the 87A ALC output."

Here's the web link for Alpha: <http://www.alpha-amps.com/manuals.asp>

73, Chris

ALC Adjustment Procedure

by [WA2JJH](#) on February 12, 2005

[Mail this to a friend!](#)

How about this. All new rigs and amps will have to have a BLUE TOOTH CARD.

You set up your rig any way you like. The BLUE TOOTH INTERFACE in Your New amp will read your rigs ALC constants, flat top drive level, -33db down level, then come up with an ALC curve approximation.

All the correction will be done in the amp!. The amp will switch in attenuators or adjust ALC generator to add or subtract ALC SLOPE, time delay, and attack.

The goal would be max PEP(1497w), minimum distortion, and meet FCC IMD and spur specs. -33db down 2 tone, 40 db down.

If the Amp Cpu decides it is a matter of too much mic. gain or speech proc. the amp goes into LID mode.

The amp is bypassed. The RF out of your rig gets routed to a DUMMY LOAD. THE BUILT in speech synth will tell you what to crank down on your rig.

MIKE GAIN DOWN, DOWN MORE, CUT OFF SPEECH PROC. PLEASE READ MANUAL ON MAXIMUM COMPRESSION. YOU HAVE JUST CUT 200 HOURS OFF THE AMPS LIFE

LID ALERT!

IT HAS BEEN DETERMINED YOUR THE TYPE THAT SHOULD NOT HAVE AN AMP.....
TUBE FILIMINTS WILL BE DESTROYED IN 5 SECONDS.

YOUR CREDIT CARD NUMBER HAS BEEN FOWARDED TO US. YOU
WILL BE BILLED \$800. NEW TUBES WILL BE "DROP SHIPED"
TO YOU IN A JIFFY BAG,