IT'S NOT YOUR MICROPHONE, IT'S YOU!

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Those of us who foray into the “phone” bands have all heard some G-dawful modulation.

There are the “wi-fi audio guys” who, to me, sound like fingernails scratching a chalkboard, but I'll admit some like the way that stuff sounds. I don't, but that's neither here nor there.

There are the over-processed guys who have fallen victim to AKTR* Syndrome, and as long as they believe what they do, will never, ever sound good.

(*AKTR = All Knobs To Right. This is a method where the operator simply turns all the knobs on his transmitter fully clockwise, keeping adjustments very simple.)

There are the “radio dispatchers,” who sit back in a chair about two feet away from their microphones and operate from that position. They always sound crappy, without exception. This method of operating creates a very under-modulated signal unless the operator also follows the AKTR philosophy, in which case, then you can hear his heart beat, clock tick and cat meow, and those items all modulate his rig about the same as his voice. Along with lots of room echo.

There are the mumblers. There are the cross-talkers: You know, guys who talk across their microphones rather than into them, honestly believing the mythology that somehow that works better. There are the yellers who elevate the pitch and intensity of their voices every time they're on the air, and never use a conversational tone until the rig's shut off.

There are those with lisps and various impediments to normal speech, and while many of those could be cured by simply listening to their own voices played back by a tape recorder, most have never even tried this.

And then, there are the drawlers. These are folks who don't actually live in the deep south, and really don't have a southern drawl, except when they're on the radio, when they suddenly develop one. Or if not that, then some other silly accent they don't really have.

Why is it that only about ten percent of all hams using the phone bands actually sound good on the air?

Pssst: It's usually not their microphones, or even their rigs. They really don't need audio equalizers or other means to add “fidelity.” What the ones who sound lousy really need is a way to listen to how badly they sound, and learn how not to sound like that.

<u>Some useful hints</u>

No matter what kind of microphone you use, use it as you would a “hand mike.” If your lips are more than an inch or so from the front of the microphone, you're too far away. If you've never operated this way: Trust me, it works, and you'll sound a whole lot better as soon as you start operating this way.

Don't talk “across” the microphone. That looks silly, and doesn't sound any better, at all.

Use conversational tone. Don't elevate the pitch or volume of your voice simply because you're on the air. Speak normally, as you would to someone sitting in front of you.

Practice enunciation, using a tape recorder or digital voice recorder. Most people, especially if they've never been broadcasters, have a very incorrect impression of how they sound. The tape playback clears that all up.

Adjust your transmitter (assuming the mode is SSB) so that the “ALC” indicator registers just a bit on voice peaks, and goes dead between voice peaks. If the “ALC” scale on your particular transmitter goes from 1-10, and the “highlighted” area where you're “supposed to” use it is a range from 2-7, adjust your mike gain so that a very occasional peak indicates about a “5,” and normal speech is down around “2.” Background noise, including the cat, the dog, the TV in the next room, and everything else, should indicate absolutely nothing.

If you do operate SSB, and most of this discussion concerns SSB operation, by all means try to buy, build or borrow a true PEP wattmeter. A normal wattmeter cannot indicate PEP, and PEP is what counts when you're operating SSB. Some wattmeters have a “peak” or “PEP” position, but do not have a power supply operating them, nor internal batteries to power the PEP circuitry. If you have a meter like that, rest assured it is *not* a PEP meter, period. It's impossible for it to be, because peak reading circuitry consumes power, and cannot work by magic.

The reason I stress the “PEP meter” point is that so many hams look at their average-reading wattmeters and try to modulate their rigs so these meters indicate whatever the output power of their transmitter is supposed to be. If you do that, you're guaranteed to sound crappy on the air, and you'll probably achieve such reports. A 100% modulated SSB transmitter will usually indicate 20-30% of actual output power on a typical (non-PEP) wattmeter. That same transmitter will indicate 100% of actual output power on a PEP meter, and this will make you feel better and also provide you with great insight about the difference between peak and average power. (Remember, the average power of a high-level modulated AM transmitter is 25% of PEP; however, all of that is the carrier, so even if you don't say a word, you're running an average power of 25% of PEP, and that power is entirely wasted: Which is why suppressed-carrier single sideband became popular in the first place.)

Most microphones, regardless of design, work best under full sound pressure, e.g., when you provide them with as much sound pressure as they can handle without damage. In the case of communications mikes, that's a lot of pressure. You can't provide that pressure from across the room, a foot away, or usually not even from two inches away, unless you're screaming. With normal voice modulation, you'll want to be right up against the microphone. It's what sounds best, and it's what works. Take a look at any broadcast studio and you'll see announcers right up on their microphones. Ditto any concert with vocals. You never see anybody back a foot from the mike. That doesn't work.

Get in the good habit of close-talking the microphone, no matter what the environment, or what type of microphone it is. I've never come across a microphone that didn't sound better under full sound pressure.

<u>Desk mikes</u>

Desk mikes are silly.

Okay, I'll go a bit further (although I really could have ended it there). They're not only silly, but they always cost more than hand mikes, and never sound better. For radio operating, what works, if you have one hand free, is a hand mike. If you don't have a hand free, then a boom mike, or boom headset. Anything that puts the mike element right in front of your lips.

Problem with desk mikes is that most are not designed to be comfortably used if you want your lips up against them. They're too short, so you have to lean over. Or, they're too *something*. If you can mount a desk mike so that it's the same height as your mouth when you're comfortably seated at your operating position, great. But rarely is this the case. Which brings me back to my first statement: Desk mikes are silly.

The ambient

The ambient is your operating environment: What's around you. It should be quiet, so that nothing other than your voice modulates your transmitter.

If you have a wattmeter with different scales of sensitivity, here's a great test: Set the wattmeter to its most sensitive position, preferably something like 5W full scale, or maybe 20W full scale. Then, run as much power as you can (preferably a kilowatt), and key your push-to-talk switch with your mike gain and any processor or compressor set as they would normally be set for your operating. Count to three and look at the meter. Does it indicate anything at all? It shouldn't. It should just lay there, reading zero.

If it reads anything at all, that's too much, as you have background noise modulation which is extremely distracting to anyone trying to listen to you. I say *trying*, because hard as I try, I usually can't listen to anybody with that much background noise. And “any” is too much.

Get rid of the noise source, or make adjustments to your station.

Distortion

Any that can be discerned as distortion is too much. There's distortion in everything, so we'll never achieve “zero.” But you shouldn't be able to *hear* any obvious distortion, other than that caused by propagation. On HF, and even sometimes on VHF, there surely is distortion created by “the path” (propagation) that isn't actually there when the signal leaves the transmitter. But most of us who have spent any time operating know the difference.

Best way to avoid distortion is to not overdrive any stage of the transmitter. Not the mike preamp, or the balanced modulator, or any of the driver stages, or the final amplifier. In an SSB transmitter chain, all modulated stages are linear and can operate pretty much distortion-free if not overdriven.

Overdriving the mike preamp can be pretty easy to do, with some rigs. All you need is too much mike gain for the voltage the mike is producing. Close-talk the mike as repeated *ad nauseum* above, and adjust your mike gain for slight ALC activity. That's usually the right amount; although, with some rigs, it may not be. It really pays to listen on a second receiver, using headphones, if you can.

Headphones

Using headphones can create a better-sounding, better modulated signal for you!

How? A few ways...

Headphones allow you to use your transceiver's MONITOR function (if it has one - all the “high end” rigs do, and some of the mid-line rigs do, too), so you can listen to yourself and see how you sound.

Headphones allow you to use a second receiver (if your transceiver has no MONITOR function), to do the same thing.

Headphones also allow you to operate in a very quiet environment. It's peaceful and serene, and you can hear signals in headphones that *nobody* could hear in any speaker in the world. When SONY developed the *Walkman,* they realized the magic of a set of $2 headphones. The headphones bring the sound close to your eardrums and allow you to hear a range of frequencies you can't hear if those same sounds are generated by million-dollar speakers across the room. Once you get used to operating with headphones all the time, it's unlikely you'll ever go back to a speaker.

(BTW, other members of your household will thank you for ditching the speaker. “Radio receiver noises” represent a majority of the noise pollution generated by hams in their own homes, and using headphones eliminates this.)

And, headphones set the stage for the greatest boon to two-way radio communications: The boom headset, which includes a microphone that you can have planted directly in front of your lips to create the best modulation you'll ever have. Better than desk mikes, anyway.

Equalizers and such

Nah.

Ham radio would be nothing without experimentation, and by all means, feel free to experiment! However, in lieu of $500 worth of modulation-altering add-ons, most operators would benefit more from $500 worth of professional vocal training. Improving your diction, enunciation and voice timbre is something that you can take with you everywhere you go, for the rest of your life; it will make you a better public speaker, a better telemarketer, and a better communicator in all facets of life and for most, I'd highly recommend this over electronic gizmos that work only with your transmitter.

Conclusion

If you don't get stellar reports of full, rounded, smooth, punchy, great modulation - it's probably not your microphone's fault. It's far more likely the operator. Learn to close-talk, adjust levels properly, minimize room noise, and really articulate. Practice with a tape recorder or DVR, and work on your own voice until you think it sounds great. When you do, others will, too.

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