

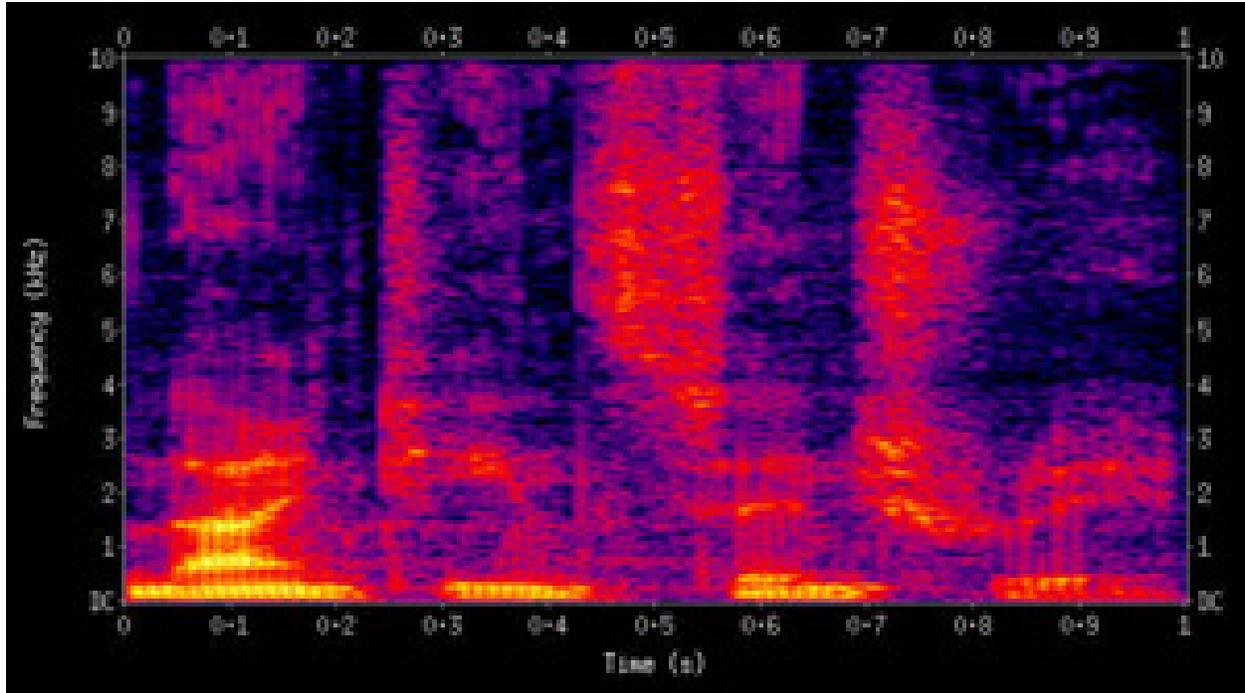
The ESSB Mentality: Why this is so bogus

By Terry A. Churchfield W3EUT

He is always getting great audio reports, but he can't cut through the noise or the QRM, what is he doing wrong? Maybe he should have "more power"....ARGHHH!

There are so many myths regarding Extended Single Side Band (ESSB) that I can't put it all together without being long-winded or boring. I decided a long time ago that I would try the ESSB thing and see just what it does for me. I was amazed how much time and energy I wasted. Time, well I spent days tracking down ground loops, EMI, RFI, noise bridges, equalizers and on and on. I wasted hundreds of dollars and gained nothing, not an ounce of difference in my signal. Actually, I got lousy reports and I offended a bunch of my fellow fraternity members. Yes Amateur Radio is a fraternity and we must remember that each time we fire up our radio. We must remain courteous and considerate when on the air.

ESSB started out west and has slowly progressed east and north. **Ignorant users of this crap honestly believe that '6 kHz' wide is acceptable and legal. There "booming" audio sounds like a small freight train when you are only a little above them or below them depending on which side band they choose.** In their case I call this "Extremely Sloppy Side Band". **That is just what it is sloppy.** The audio gurgles because the midrange and highs are crushed by the weight of an extremely "wide" audio spectrum that "no body is hearing".



Let me use simple terms. Take a look at your receiver. What filter are you using for SSB reception? Is it 2.4 kHz, 2.8 kHz or 3.0 kHz? Well if it is, you are not hearing much more than "one half" the signal that "Bunky" is transmitting. He could be running a 2 KW station and all you hear is 1 KW PEP. Why is that? Because, dummy dumb, dummy thinks that all his power is

making him sound like "Walter Cronkite". Yes he has a case of "cronkitis". That rare but self-inflicted disease that affects the brain of abnormal Amateur Radio Operators. They honestly believe they are HI-FI Amateurs.

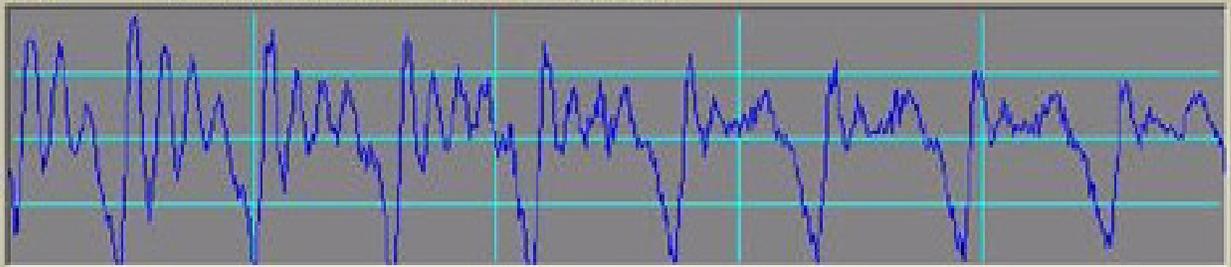
They honestly think they can transmit a 6 kHz wide signal and not take up 6 kHz of bandwidth to do it. These idiots also believe they have some secret power that places all their energy into every note their melodious voice generates. Yes every word, every "ooh" and every "ahh" has the power of this secret stuff that great signals are made of. They have a word for it VOODOO audio. *Go ahead "Google" that term.*

There are hundreds of these boneheads pushing 10 pounds of crap into a 5-pound bag. But before anyone can do it, you must modify your radio, that is right, modify the PASS BAND (in the IF of course) so your radio can talk "wide" and of course, hear "wide" too. **In the pattern above you notice that "CQ DX" when shaped on an analyzer, very little power is displayed much above 1500 Hz. Now do the math, you are pushing a bunch of useless junk through the last 4500 Hz.**

Let me go back about 50 years when we started to play with Single Side Band Suppressed Carrier - Amplitude Modulation (SSBSC-AM). At the time we were using Dual Side Band Full Carrier - Amplitude Modulation (DSBFC-AM) and we would call these guys using SSBSC-AM everything in the book. **We had 10 kHz wide IF circuits and three of these SSBSC-AM users would fit inside one of our DSBFC-AM Band Widths.** The FCC allowed us to broadcast inside 6 kHz mainly because that was just about all we could muster up on DSBFC-AM without expensive equipment to compress and stretch the power ratios out to 10 kHz. At 10 kHz we could pass so much more, but all of our "voice impressions were hanging" out around 1500 Hz, so why were we wasting all this energy to fill up a voice spectrum we did not use? That is my thought today, why are so many of these guys wasting bandwidth with 6 kHz wide audio?

Look at the chart below, what crosses your mind after I overlay a 3.0 kHz wide SSBSC-AM bandwidth filter over top of this audio print? Most of the "booming" is gone and those notes above 3.5 kHz are not worth hearing because they are not part of the normal "voice spectrum". Even the greatest Soprano on earth can't strike much of a voice pattern above 4500 Hz. And if she did (no man is going there folks) the energy would be wasted, because the greatest vocal energy remains below 1500 Hz. Walter Cronkite could push his voice well above normal levels, but he concentrated on 300 Hz to 1500 Hz for the greatest impact. If you take a single audio tone across a 6 kHz spectrum you will see that most of the power is generated between 500 Hz and 2000 Hz. So why not concentrate your 1 KW into that spectrum? Why waste all that other power out beyond the ability of most modern receivers? Why broadcast a "poor" signal that generates Inter-Modulation Distortion (IMD) all over the band? Are you so alone on this planet that you must act out of control?

Audio Sample Window 0.085 Integration Time 1.360 sec



Frequency Band Frequencies = 100 - 500, 500 - 1500, 1500 - 4000 Hz



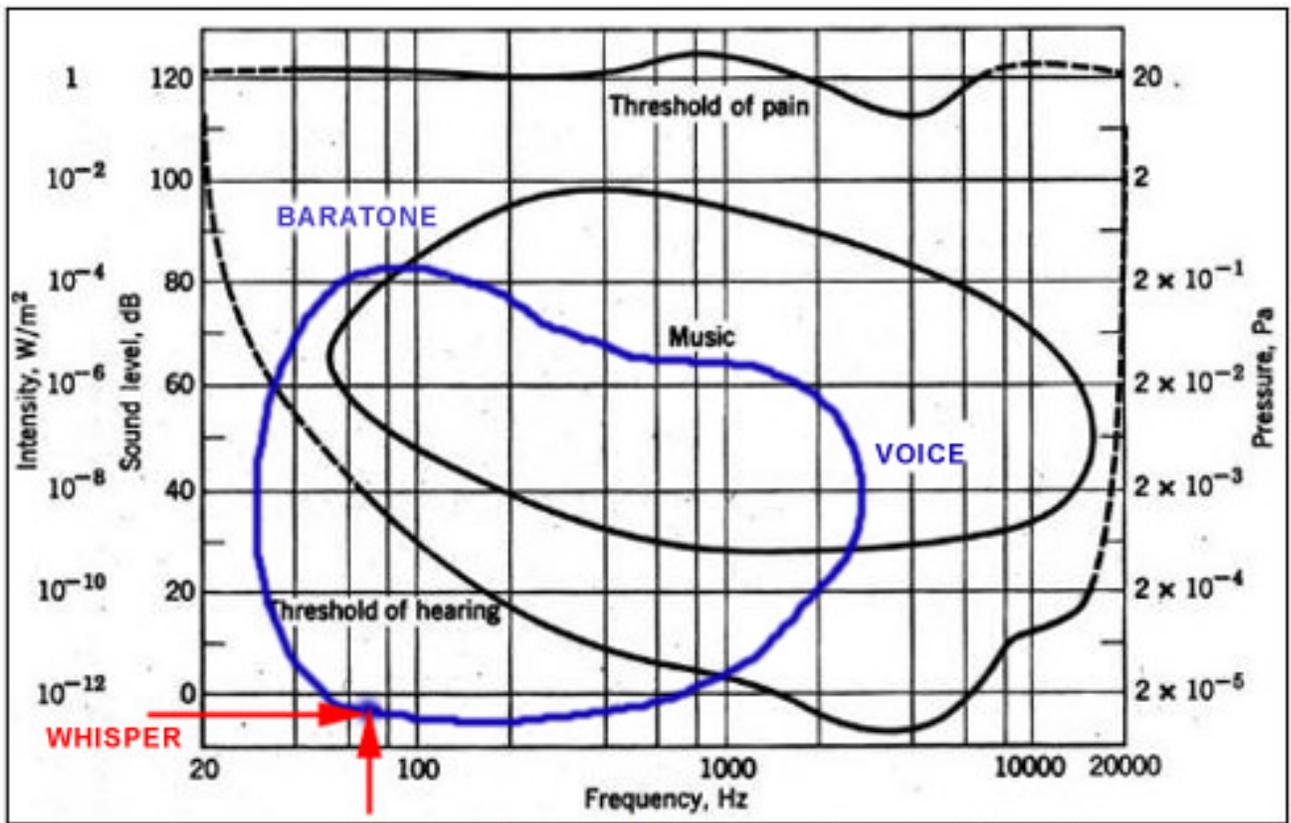
	Band 1	Band 2	Band 3
Reference dB	01.7	76.9	69.2
Analysis dB			
Difference			

Magnitudes are based on the levels reported by the sound recording device. Due to effects caused by automatic gain control, adjustable volume controls, internal computer noise, and other factors, these numbers should only be used as a general reference.

In a simple explanation, it takes more than just a few twisted knobs to screw up a perfectly good radio. No one listening on your center frequency is hearing your wasted power above 3 kHz, so why waste it at all?

In closing the vowels (A, E, I, O, U) when spoken will spike audio levels below 300 kHz. The sounds of words that contain consonants like (B, K, P, T, V) are generated at higher than VOWEL frequencies. **True intelligence in voice communications has been studied by Bell Labs for almost a century.** Vowels are low in frequency and consonants are higher, so it requires a concentration in these simple ranges for maximum intelligence. **Amateur Radio is a communication venue where voice is the dominant generator, not instruments or two-tone sounds (we don't use two tones to send CW).** **The voice spectrum, according to Bell Labs is 300 Hz to 3000 Hz.** That is SSBSC-AM audio as presented in an FCC approved AMATEUR radio transmitter with a 2.8 kHz wide passband filter. In the chart below, you can see the NORMAL patterns of an average male voice. The power lies in the spectrum between 100 Hz and 300 Hz. The area traced out in BLUE is considered legible intelligence.

Do you really think Bell Labs cares what you believe? **Get with the program and work on your audio inside the spectrum between 300 Hz and 3000 Hz.** Those 131 band equalizers are great for receive audio after the fact, but placing them in your microphone chain is a waste of power and money. Maybe now you understand why there are only 7 bands for a microphone EQ used with Amateur Radio transmitters. You don't need what you aren't using. ESSB is, in my terms, worthless.



Average Sound Intensities for Human Hearing
(Courtesy of Bell Telephone Laboratories)