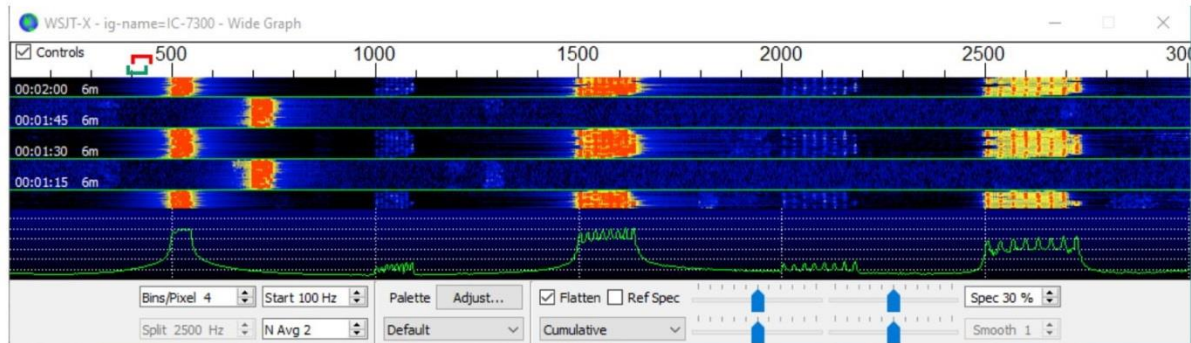


FT-8, Audio Frequency Harmonics, IC-7300

I received this email along with the screen capture from a local Ham.

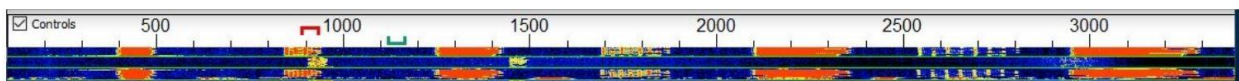
Seeing a lot of harmonics on your 6m signal..... how is your ALC? May wish to TX higher in the band to limit the higher harmonics....rather than TX in the lower end of the band?



I ask if he was certain that it was not at his end. He responded by saying he was not certain. I was not about to transmit higher in the band as suggested because that's not the solution. Setting up my SDR receiver along with running FT-8 on another computer I have in the Ham shack did not indicate any problem with my signal.

We later confirmed that he was running his receiver (IC-7300) with his AGC off. Apparently someone on the internet thought receiving FT-8 with the AGC off was a good idea.

It turns out that I also use an IC-7300 while on FT-8. I turned my AGC off when I heard him on FT-8. This was the result.



He was transmitting on 424 Hz. As can be seen the 3rd, 5th and 7th harmonics are prevalent with some even harmonic stuff in there.

The main issue is the odd harmonics generated by the overloaded receiver in the IC-7300 because the AGC is turned off. The problem is worst below 1000 Hz and the lower you go the more odd harmonics are generated. Above 1000 the odd harmonics will fall near or outside the receiver's bandpass, ~3000 Hz. At 400 Hz the odd harmonics will fall at 1200, 2000, 2800 Hz etc., so the lower you go the worse it gets.

So the conclusion is if you operating FT-8 with your AGC off you may be dealing with something similar to the above. Just don't blame the other guy.