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My Personal Notes On Rig Setup & Software Setup For WSJT Mode

The Whole Point Of All Of The Below Is To:

1. Be Sure Your Sound Card 3D-Stereo Is Turned Off
2. Do Not Overdrive Your Rig Audio In
3. Set The WSJT Tones To The Same Output Level
4. Have The Correct Operating Bandpass For The WSJT Tones
5. Alert You To The Fact That Some Rigs Have Trouble With WSJT When Using Speech Processors and Transmit/Receive Equalizers.

*** Note For Windows XP Users**

IF: Your Sound Card Line In does not have enough recv gain

I never noticed this till I upgraded to Win XP from Win98. In WSJT options when I select the "Adjust RX Volume Control" the mixer that comes up shows the normal LINE IN + it now shows a RECORDING mixer control. BOTH will affect the incoming level to the wsjt sftwr while in the recv mode.

If you are having tbl with not enough gain with your LINE IN all the way up see if u also have this RECORDING control and turn it up. Makes a ton of diff here.

I use a soundblaster AWE32 sound card running Win XP. You may need to (in the mixer) be sure your advanced controls are turned on (options/advanced controls) , and then click on the ADVANCED button to select RECORDING to have it shown in main mixer panel.

IF: Windows XP starts up with your comm port keyed in operate

In Windows XP just click on START and look for WINDOWS UPDATE. Run a WINDOWS UPDATE. After you have completed all the latest Windows XP updates the comm port trouble will go away.

WSJT FSK441

A.) IF OTHERS SAY THEY CAN NOT DECODE YOUR SIGNAL

- 1A.) Be sure "if" you have any "3D Stereo, Surround Sound, or similar" turned On to "TURN IT OFF". Look in your windows mixer "advanced options". In some PC's it will not appear there but will be found in a program folder for your particular sound card.

You may find that your sound card and software does not support this so it will not be a factor. You might also need to check tone levels as below.

B.) TONE LEVEL SETUP CHECKS

"If" you have a problem with getting each of the (4) WSJT tones to be of equal value or "if" you find that your "average" reading wattmeter shows a difference when sending out muti-tones vs. a single tone try the below (a PEP meter will not be able to show any difference between multi-tones vs. a single tone).

***Note #1- It has been reported that some rigs work fine on tone A-B-C-D tests, and test for single tone vs. multi-tones power out on an avg. reading wattmeter with the speech processor turned on and with ALC action. It seems to depend on the particular rig. If you have trouble try the below.**

TIPS FOR GETTING THE (4) TONES (A-B-C-D) SET TO AN EQUAL POWER OUT, PLUS WAYS TO CHECK FOR SINGLE TONE VS. MULTI-TONES TO BE SURE THEY PUT OUT THE SAME AVG. POWER.

EQUIPMENT NEEDED

A power meter set to avg for the setup.

PRE-SETUP CRITERIA

(Suggested PC and Rig Initial Setup for trouble shooting purposes)

- 1B.) Turn OFF SPEECH PROCESSOR "if" available.
May or may not be needed. See note #1 above.
- 2B.) Turn OFF any XMIT EQUALIZER "if" available.
May or may not be needed. On Kenwood TS-2000 so far it has been found to be needed to turn it off.
Other rigs that have a form of XMIT EQUALIZER may or may not need it turn off when running WSJT.
- 3B.) Set rig bandpass to 2400hz "if" you have a way to pick different xmit filter bandpass. The max. frequency transmitted by WSJT is 2205hz.
Too narrow of a xmit bandpass could affect transmission of the highest frequency tone sent "2205hz".
- 4B.) Set windows SOUND CARD TONE CONTROLS to MID-RANGE for BASE and TREBLE if available. Look in windows mixer advanced settings or the program folder for your type of sound card.

***Note- You may find that your sound card software does not support this so it may not be a factor. You might also need to check tone levels as below.**

- 5B.) "If" you have "3D stereo or surround sound etc" and it is turned ON as shown in MIXER ADVANCED SETTINGS be sure to turn it OFF. Very Important "if" you have it and it is turned on to turn it off.

See also section 1A.) above for other ways that might be needed to find this option in your PC "if" your PC has it.

- 6B.) Set rig MIC GAIN to NORMAL SSB talking position

SETUP

(Set Windows Mixer For Initial Testing)

- 7B.) In WSJT put out MULTI-TONES RRR and ADJ windows MIXER WAV OUT from minimum to point where ALC meter just starts to move. Then turn MIXER WAV OUT *down* slightly (so that there is *no* ALC meter movement).

***Note- If your rig doesn't have an ALC meter, send MULTI-TONE RRR and adjust windows MIXER WAV OUT from minimum to point where power output**

of rig stops increasing. Then turn **DOWN MIXER WAV OUT** until power out of rig drops to approximately 50%.

****ALC method works best.**

(Set Tones A-B-C-D)

8B.) In WSJT, SET TONES A-B-C-D for same power out (use WSJT setup)
***but make sure you NEVER see any reading on ALC meter during this step*. If any indication on ALC meter, go back to step 7B.) and reduce MIXER WAV OUT further before continuing. Make sure all 4 tones show equal power out and that there is no ALC reading on any of the tones before continuing to the next step.**

***Note - If your power output varies by more than about 20% among the four FSK441 tones, you may wish to adjust amplitudes of the generated audio tones individually. Amplitude settings can vary from 0.000 (off) to 1.000 (full amplitude). They refer to voltage, not power. So if your measured powers are 100, 100, 100, and 200 Watts in the four tones, you should set the amplitude numbers to 1.000, 1.000, 1.000, and 0.707 (because 0.707 squared is equal to 0.5).**

***Note- If no ALC meter, make sure power out of rig never goes above 75% of max. output. If it goes higher on any of the tones, reduce MIXER WAV OUT to keep below that level. Make sure all 4 tones show equal average power out and that this power is less than 75% of maximum output as noted before continuing to the next step.**

IF YOU DO NOT HAVE A POWER METER SEE BELOW

***Note- It has been reported that one does not need a power meter to adjust the tone levels, just use an ammeter and adjust to maximum current draw. This works so long as you don't try to increase the audio input beyond the maximum current draw, lest you start overdriving the audio and splattering all over the band. Many power supplies have a built-in amp meter which is accurate enough for this purpose.**

****ALC method works best.**

(Set Windows Mixer For Final Testing)

9B.) In WSJT put out MULTI-TONES RRR and ADJ windows MIXER WAV OUT from minimum setting up to point where ALC meter ***just*** starts to deflect. This should keep audio drive level to an amount to reduce distortion (if you have a rigblaster inline you should be able to leave it at it's previous drive out setting this way).

***Note- your "AVERAGE" vs. pep POWER OUT during this step to be used for comparison to SINGLE TONE RRR check below in step 10B.)**

***Note- If your rig doesn't have an ALC meter, send MULTI-TONE RRR and adjust windows MIXER WAV OUT from minimum to point where power output of rig stops increasing. Then turn DOWN MIXER WAV OUT until power out of rig drops slightly.**

****ALC method works best.**

(Final WSJT Setup and Check)

10B.) In WSJT put out SINGLE TONE RRR and ADJ rig MIC GAIN if needed so that the SINGLE TONE RRR matches the previous MULTI-TONES RRR on a "AVERAGE" power reading wattmeter as in step 9B.). (It should be close by this point) (may need to reduce mic gain slightly to drop SINGLE TONE RRR to the previous MULTI-TONES RRR "AVERAGE" power level).

***Note- You may or may not need to make any adjustments here.**

11B.) Set drive to amp via power control on rig for desired output power level.

***Note - All 4 tones should now produce the same power out plus muti-tones should now read the same as a single tone on an avg. reading wattmeter.**
