Adjusting "SLANT" problems in your SSTV software

Digital Master 780

In SSTV mode, click on the "options" tab, then a window will open, now click on "sound card calibration".

Operation is simple:

- Make sure your internet connection is working.
- Press *NTP Client* and make sure you have at least one valid time server selected.
- Select *Input* or *Output*.
- Press *Start*.

After five seconds the measured sample rate is shown. It will take at least 30 minutes for the displayed values to stabilise, the best solution is to leave the calibration running for a few hours or even better overnight.

You will need to calibrate both TX and RX.

MixW

- In MixW slant correction can be done in very easy way: just "draw" a line along the slanted border and that slant goes away.
- But since there are many programs which can't repair the slant or the slant correction is not very easy, the calibration is highly recommended.
- RX calibration is very simple, and as the first step you may set TX correction value equal to RX correction value.
- Usually RX and TX sample rate corrections are equal, but what to do if they aren't? It is very easy to tune TX sample rate during a QSO with MixW2 on other side. Just ask for the value of the RX slant correction and substract it from your current TX correction value.
- On Windows 2000/XP we can run two copies of MixW using the same sound card. So, assuming both copies have RX calibrated by receiving WWV or any other process, we can use one copy to calibrate another: the second instance of MixW is playing a role of a remote station. Be sure, such process requires more computing power.

Tune your radio to 15000 kHz or other clearly audible WWV frequency and Switch MixW to SSTV mode.

In the Mode window, select "WWV" At the top of the SSTV window, tap "RX".

Soon, a vertical line will begin to appear in the SSTV window. Wait until you get an entire screen full of the vertical line. If your sound card receive is perfectly calibrated, this line will be perfectly vertical. If not, it will **slant** left or right.

Use the **slant** keys to make the line vertical. Use the arrow keys to move the line closer to the screen edge. (It is much easier to correct the **slant** if you compare it to the vertical screen edge).

Once you have the line perfectly vertical, click "STOP" at the top of the SSTV window. Then click "MODE" at the top of the MixW window and then click "MODE SETTINGS".

If you made **slant** corrections in the previous steps, you should see a number in the "RX **slant** correction" window. Click the "GO!" button and the correction will be sent to Sound card Settings as the permanent RX sample rate correction.

If you feel you made an error and wish to start over, click "Configure", then "Sound card Settings". Change the number in the Clock adjustment, ppm: "RX" window to 0. Then start all over.

II. Transmit Calibration

Note: This test should only be done AFTER you have done a valid WWV **slant** test and entered the resulting RX clock adjustment in the MixW sound card settings. You should also do on-air testing of received MFSK images to confirm your RX clock adjustment before proceeding.

Turn off your radio

Under Sound Device Settings, select "full duplex" box and check Sample Rate set to 11025.

On sound card Input volume, change from LINE IN to WAVE. If WAVE control is not present, under Recording Control, select options/properties. In the properties window, place a check in the WAVE/MP3 box. Click OK. The WAVE/MP3 control should now be present and you can proceed with selecting it.

Simultaneously press CNTL, SHIFT and T. A pop up window should appear.

You should see a strong "carrier" in the water fall. **Adjust** the power slider in the pop up window so that the signal sidebands are minimal and you have a nice red "carrier" signal (this is your sound card output "looping back" to MixW input)

Let this test go for a several minutes until the TX/RX OFFSET numbers at the top of the pop up window stabilize within a few PPM. This number is the offset to be applied to your RX clock **adjust** setting to arrive at the TX clock **adjust** setting. The offset may a positive or negative number. For example, if the TX/RX Offset is -200 and your WWV-tested RX clock adjustment is +85, your TX clock **adjust** should be set to 85 - 200 = -135. Or, if the offset is 50, the TX clock **adjust** would be 85 + 50 = 135

Hit ESC to stop the test, and don't forget to reset your Input back to LINE IN. (Leaving Full Duplex checked is OK)

Reboot MixW.

Note: It doesn't seem to matter if what numbers you have set in your TX and RX clock **adjust** when you do this test. The clock **adjust** in PPM (parts per million) is directly related to the Sample Rate according to the following formula: (1 divided by Sample Rate) x 1,000,000 = PPM per Hz Sample Rate. At the default sample rate of 11025, one Hz of sample rate is equal to 90.7 ppm of clock adjustment. Some people change their sample rate to correct for **slant**, but PPM allows much finer adjustment.

END OF PROCEDURE

MMSSTV

Click the Sync tab of the main window and do the following procedure.

1) Push Slant button

2) Click the upper right edge of the synchronization signal (white line)

3) Click the lower right edge of the synchronization signal (same white line)

The synchronization signal is displayed in a relatively fat line, so you must click the same side. Immediately after you click once on the line, a guide cursor is displayed. Adjust the cursor in parallel with the synchronization signal line, and click again. According to this procedure, MMSSTV recalculates the sampling clock of the sound card and adjusts the receiving or just received image. If you do not obtain the acceptable result, repeat the procedure. In case of small slant, it is a good idea to use the up-down button at the bottom of the Sync window. Click on the View menu, select Always show RX viewer, push the up-down button with looking at the slant of the image. When you have obtained the successful adjustment and want to use it as the default frequency, push the Mem button; otherwise MMSSTV applies the adjustment to the current image only.

* If you turn the RX buffer off, you cannot redraw the picture after adjusting the slant.

For a full slant setup with screen shots "click here"

Chopped Images

If the images you are TXing are chopped like these, this is not a slant problem. There are a few things that can cause this. While TXing you are running and using other applications or just doing something on your computer that interrupts CPU processes. You will get this more often if you are running a slow PC. These 2 picks are a problem at the TX end and not a RX end problem.

If you find any errors in any of the above, please let me know.

SSTV Slant Adjustment Help

Are your images slanted?
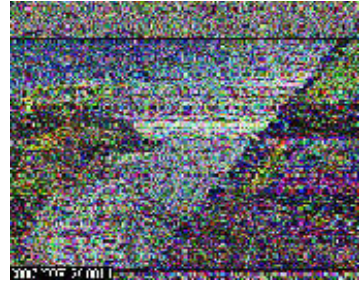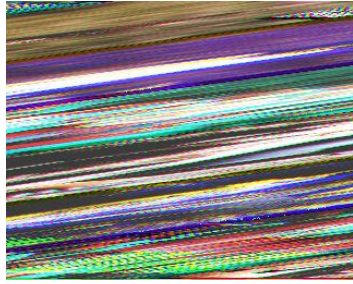
Slant above not to be confused with sync errors below

I will try to explain Sync errors later.

MMSSTV has a very cool and easy way to adjust your slant or sound card crystal frequency. In some cases, the offset numbers can be used in other SSTV applications such as ChromaPix.

First things first.

Turn off any and all auto slant features. The Auto slant features work only for received images anyway and have no effect on transmitted images. It is best never to use "Auto slant" or any feature like it ever.
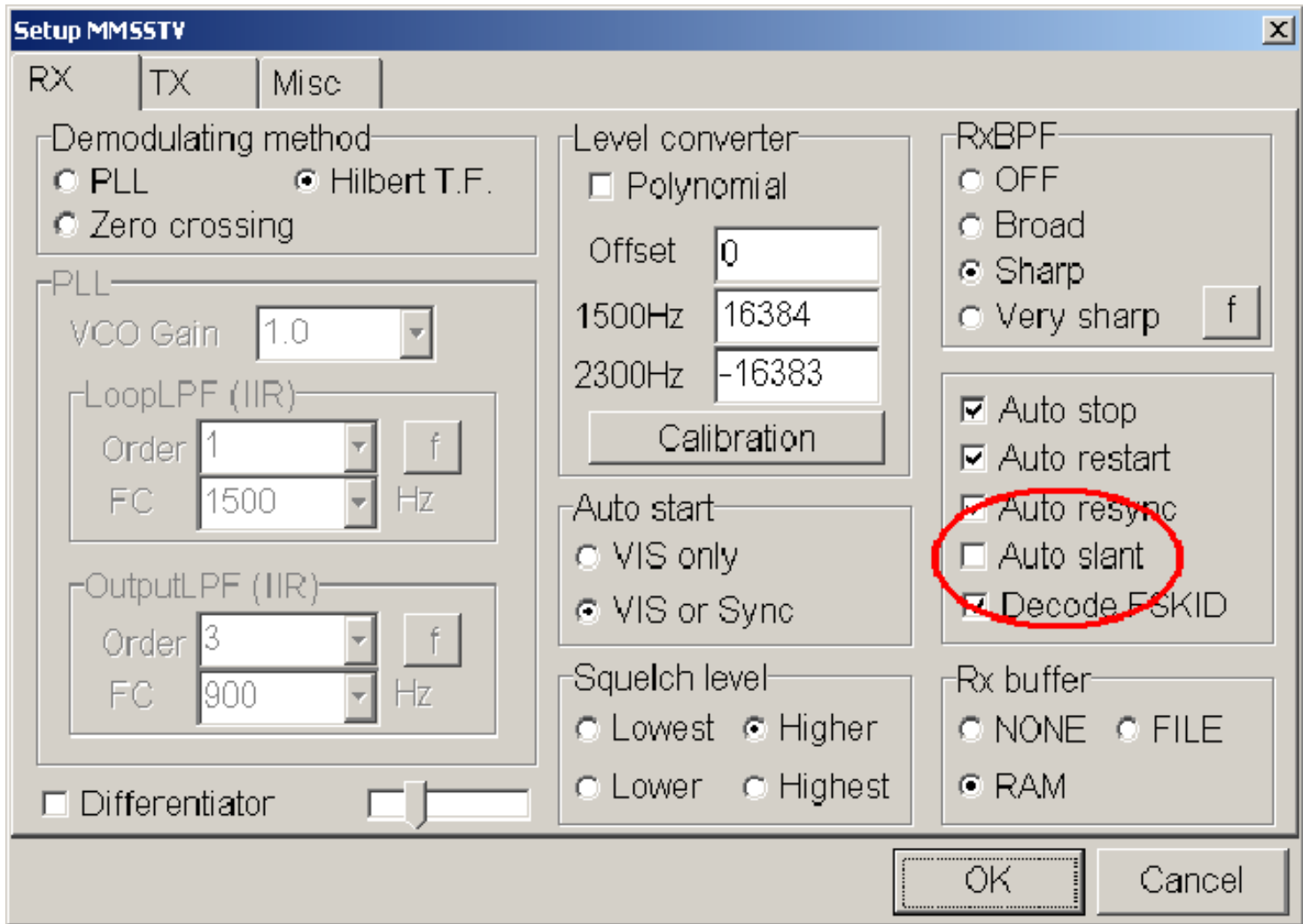
My opinion on Autoslant

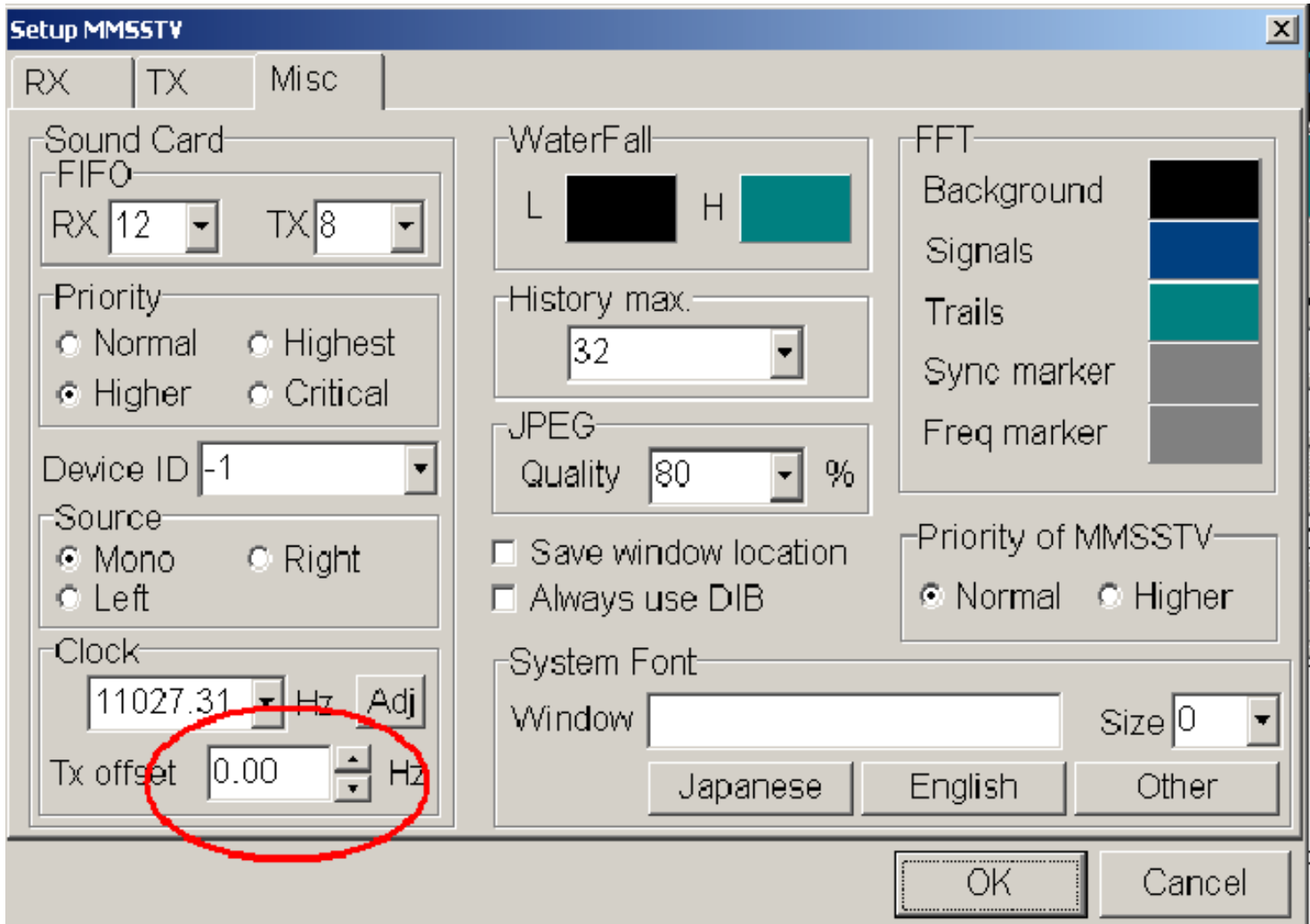# First Adjust slant for received images

1. In the menu bar at the top of the main window , Select "Option" and then "Setup MMSSTV"
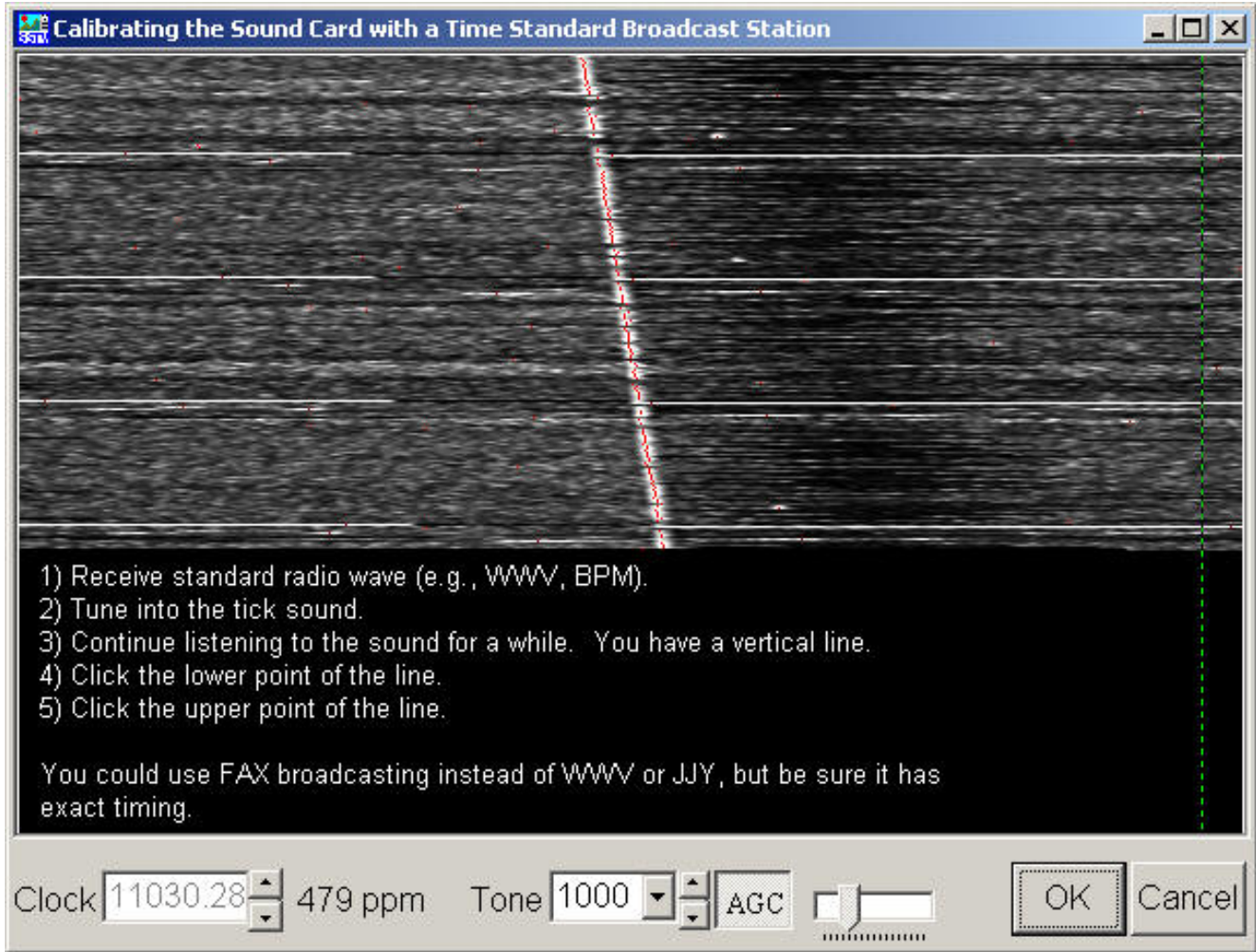

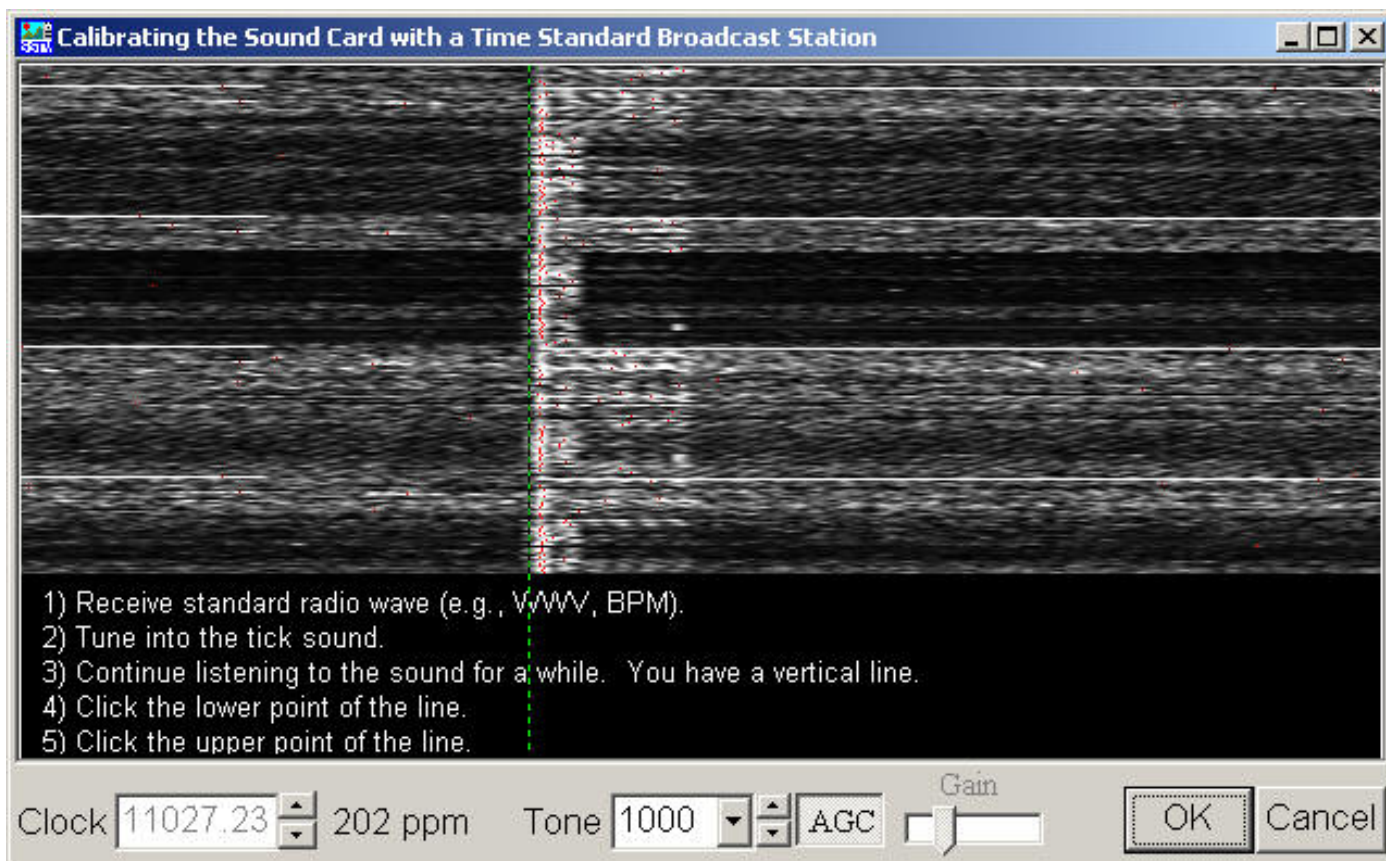2. Select the "RX" tab and remove the check from the "Auto slant" option

3. Select the "Misc" tab and set the "TX offset" to zero (0.00) and click the "OK" button. to save that setting.

4. Most of the following information is available in the help file for MMSSTV.

5. If you want to calibrate your soundcard accurately, listen to AM WWV radio. These stations can be found on 5, 10 or 15 MHz

6. Go to "Option" and then "MMSSTV Setup"

7. Select the "Misc" tab and push "Adj" button near the bottom left

8. Next you can select full screen for best resolution. The screen should be mostly all black to start..

9. Right clicking the screen anywhere near the white line will position green to help with the alignment .

10. See the example screen with the diagonal "slanted" white line.

Calibrating the Sound Card with a Time Standard Broadcast Station

1) Receive standard radio wave (e.g., WWV, BPM).
2) Tune into the tick sound.
3) Continue listening to the sound for a while. You have a vertical line.
4) Click the lower point of the line.
5) Click the upper point of the line.

You could use FAX broadcasting instead of WWV or JJY, but be sure it has exact timing.

Clock 11030.28   479 ppm   Tone 1000   AGC   OK   Cancel

11.

Example of straight line below.

12. You should receive the WWV signal that says "At the tone, ?? hours ?? minutes coordinated universal time" for a little while Full screen will get you the highest resolution. This may take a few minutes.

13. You should start seeing a reasonably straight white line but it may be on an angle.

14. Single click on the very bottom of the line and then again at the very top of the line. The dialog box should close and a new clock number will be set. You may need to repeat this operation a couple time to get the hang of it

15. If you get a line with a lot of slant, you may need to do this procedure a few times. The more vertical the line gets after each adjustment, capturing more of the line will get you the highest accuracy. (points further apart from each other will get the highest accuracy) Full screen dialog box with a full length line from the top of your monitor to the bottom will get you the best results.

16. Right click on the screen to get the green positioned near the white line to check vertical alignment for best results.

17. Once the line is as vertical as you can get it, you have now corrected your sound card crystal frequency. Your receive crystal is now corrected. Note Receive only and in most cases, transmit too. You should not ever need to change this number again as long as you use this computer or sound card.

Adjust slant for transmitting images

1. In most cases after adjusting your receive slant, your transmitted images will be good. In most cases this is true. Most sound cards are using one or the same crystal for data in as for the data out however there are sound cards using separate crystals for data-in then for data-out.

2. To adjust the transmitted slant, you will be changing only the "TX offset" shown below. Do not adjust the receive "Clock". your receive is good now at this point.
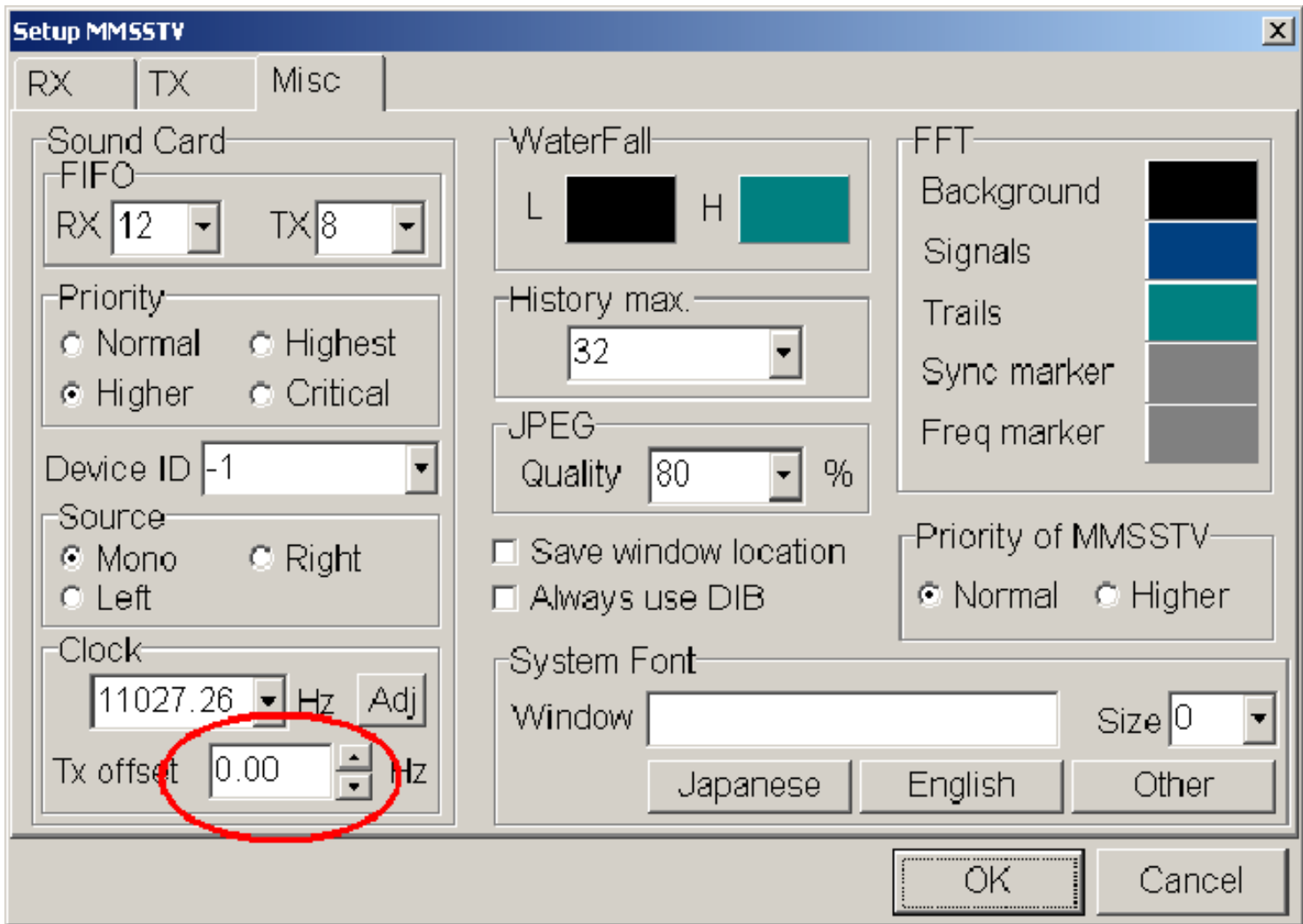
3. You can check your TX offset at some of the various SSTV cams but be carful, some SSTV cams are using "Auto slant" and this will not help. My SSTV cam "Auto slant" is disabled and will help you if it hears you.

4. Sometimes it may be easier to find a SSTV friend on the air and have them help you with the TX offset. Most hams using MMSSTV will be able to give you an exact the number to put in your TX offset after receiving your picture if needed.

0 0 9 7 6