TS-590S FAMILY: Hints and Tips Archive

From time to time the TS-590S Resources Page (http://homepage.ntlworld.com/wadei/ts-590s.htm) carries an addition to the "Hint and Tips" section. This document is an archive of those hints.

If you would like to add a Hint/Tip to the Resources Page, please **email the details to Ian Wade, G3NRW** (g3nrw-radio@ntlworld.com).

Hint	Date	Title	Page
#40	13 August 2014	SDR Panoramic Display on TS-590S Radios	37
#41	27 August 2014	Fix for USB Rig Control for Fldigi	37
#42	31 August 2014	Talkpower vs Bandwidth	38
#43	24 November 2014	TS-590S Intermittent Receive	38
#44			
#45			
#46			
#47			
#48			
#49			
#50			
#51			

Hint #1: 20 June 2012

Eliminating contact bounce on a straight key

As we all know the 590 is a great rig for CW. I have been using mine with the excellent inbuilt keyer for the last year. I do like to keep my straight key fist in practice so I tried plugging in my beautiful Kent KT1 hand key.

The result was very disappointing. The Kent key is very solid. The arm is brass and the base is heavy steel and there is a very slight but inevitable bounce on the contacts each time they close. This has not been a problem on other rigs but the 590 sure didn't like it. The CW sounded terrible with the start of each dot/dash sounding blurred and chirpy. (There is however no problem with my other straight key, a Junkers, on the 590).

The Kent key problem was however easily solved by putting a 0.22 µF capacitor across the contacts. It now sounds very good indeed with lovely clean characters and a delightful solid feel.

It is so good when the problems are this easily solved!

Regards

Peter, G4PNF

P.S. A friend of mine pointed out that the constant discharge of the capacitor every time the contacts close might over time cause erosion of the key contacts. He suggested I add a 1K resistor in series with the capacitor. I have now done this and it still sounds good!

Hint #2: 28 June 2012

Setting up the Speech Processor

- When PROC is ON, the normal MIC GAIN setting (prior to turning PROC ON is not active, so it will not matter what setting it has.

- The CAR (CARRIER) setting has no effect in SSB (with PROC ON or OFF). It only works in AM, CW, and FSK mode.

Adjusting PROC setting correctly:

- Turn PROC ON, PROC is displayed to the far right in the display.

- Press and hold the PROC button, PRO.I (Proc Input level) is displayed.

- Push PTT and speak with normal voice and adjust for no more than 10dB on the COMP meter. You may end up around 40-60%.

- Push (short push) on the MIC (MIC GAIN) button, PRO.O (Proc Output level) is displayed.

- Press PTT and adjust for around 1/2-scale on the ALC meter. You may end up around 30-50%.

Best 73, Roar Dehli, LA4AMA

Hint #3: 4 July 2012

Transmitting Automatically with the VGS-1 Speech Module

I found a nice tip. Credits go to DC1YB.

http://herwig.mobimail.de/ts590s.htm

"If you are using the speech module VGS-1 and want to transmit automatically for stored messages but prefer not to use the VOX for the microphone, simply set the VOX gain to zero and switch the VOX on."

No more need to press ptt and everything still works as before.

Best 73

Hannu, OH1HAQ

Hint #4: 12 July 2012

Breakout Box for the ACC2 Connector

Wiring up a 13-pin ACC2 plug is a fiddly business. especially if you want to experiment with different configurations.

To make things easier, Villas Boas, PY5VB, devised this handy breakout box.

Hint #5: 18 July 2012

Turning the TS-590S "ON" and "OFF"

Question: How do you turn the TS-590S on and off?

Answer: You just toggle the power on/off button on the front panel, right?

Wrong. The power on/off button on the front panel is _not_ the power on/off button. Think of it instead as the "Operational/Standby" button.

When you press the button and the display lights up, the radio is in the fully "Operational" state, ready for normal use.

When you press the button again and the display goes off, the radio is in the "Standby" state. In this state most of the radio "goes to sleep", with the exception of:

- the virtual COM port (connected to the USB cable)
- the real COM port (connected to the serial COM cable)
- the audio codec

This means that in the Standby state:

- The UART in the radio is still active, ready to receive "wake-up" CAT commands, either via the virtual COM port or the real COM port.
- The audio codec in the radio is powered up. By itself, this is not particularly useful, but if the USB cable is connected between the PC and the radio, the codec driver in the PC will connect to the audio codec in the radio.

Question: If the power on/off button on the front panel doesn't turn the radio on and off, just how _do_ you turn the radio completely off?

Answer: The only way to turn the radio completely off is to turn off the 13.8v DC supply input.

--
73
Ian, G3NRW

Hint #6: 24 July 2012

Virtual Com Port Drivers

Ten percent of the people fail to get the word and I may have been in the 10% group regarding updates to Silicon Labs USB to UART Bridge Virtual COM Port (VCP) Drivers. The current versions for all platforms are listed for free download at:

http://www.silabs.com/products/mcu/pages/usbtouartbridgevcpdrivers.aspx

Since I was not sure if mine was up to date, I downloaded and installed UART Bridge VCP Driver version 3.0 for Macintosh OS X, dated March 27, 2012. It is working fine with the iMac OS X 10.7.4, Kenwood TS-590S and fldigi-3.21.47.

73 Dick AA5VU

Hint #7: 1 August 2012

A Little Soft Compression can do A Lot Of Good

I want to share something I've learned using the Kenwood TS-590S. Here's some background on my configuration. I have a condenser mike connected to my Behringer mixer that is connected to my Kenwood TS-590S. The Kenwood TS-590S is the exciter to my Tokyo Hy-power 1.5.

Every once in a while my THP will "kick out" during a QSO with the Overdrive light coming on during transmit. So basically I learned to cut back on the drive power and/or mike gain on the Behringer and the mike gain on the Kenwood. I've had to keep the drive power to 60 watts or less on the Kenwood and the mike gain so low people have a hard time hearing my audio. I have the ALC correctly adjusted on the THP so I know that is OK. It got to the point where I just ran "barefoot" and I stopped using the THP because it kept kicking out to protect itself.

Then I thought let's try using the speech processor. Typically I hate using processors because they make you sound like a CBer. I set the processor values low and selected the SOFT setting in the menu. Believe it or not this made a huge difference. I can now use the THP reliably and have the drive power and mike values anywhere I want and the THP doesn't "kick out" anymore.

I've asked people how I sound and they say I sound very natural so the audio is OK too. Also on my wattmeter I've noticed my output power is more consistent with fewer wild swings on the needle on the power meter.

If you are having similar problems with your amp or whatever it may be worth trying to use a little processor compression.

David, K9RUF

Hint #8: 8 August 2012

N1MM Logging Software Uses VFO-A

With the N1MM logging software, if you want things to go as one should expect, you have to have your working frequency on VFO-A, and if you're working split your transmit frequency on VFO-B. As is, it will write the right information in the ADIF log when you export it.

If you try to use the Quick Memories or the other memories, N1MM software will still use the VFO-A as the active frequency. In contests that's not a big deal since the N1MM bandmap is what you should use. However when just chasing DX I like to use the Quick Memories as they allow to store split frequencies. I can then watch for a pile-up to clear a little bit while listening to the bands.

In order to have the right frequencies written in the log, you have to write the memory to the VFO with the "M>V" button prior to logging the QSO...

73

Yan, XV4Y

Hint #9: 15 August 2012

The Most Basic Pieces Of Test Equipment

Over the past year or so I have received many personal emails from people who were having difficulties in setting up the TS-590S. These included issues associated with:

- Low SSB TX power
- Poor audio quality/frequency response
- Poor digital signal quality/poor IMD levels
- RF interference/breakthrough

In some cases it became clear that the people complaining about these perceived "faults" with the radio had absolutely no test equipment of any kind. No means of monitoring their signals, no means even of measuring the DC input voltage to the radio.

Let's look at the basic test equipment needs:

1. A DC voltmeter, capable of measuring the input voltage to the radio when transmitting at full power (for example, on CW or FM). Forget the specification for the radio – you actually need a minimum voltage of 13.8v. Anything less and the power will drop off sharply.
2. A pair of headphones, plugged into the PHONES jack on the TS-590S front panel. You can then use the MONitor function to check your voice (or data) audio levels, audio profiles, compression etc.
3. A separate receiver + headphones, for monitoring your transmitted on-air signal.
4. A dummy load. When setting up the radio, you need to transmit into a resistive 50-ohm dummy load. This will ensure the SWR is 1:1. If the SWR is significantly different from 1:1, the output power will drop off sharply and the signal may be distorted.

The most important of these four items is the dummy load. If you are having issues with low TX power, poor audio, poor digital signals or RF interference, the dummy load is essential. It lets you isolate the radio from the antenna – essential because antenna mismatch can have a huge effect on how the radio performs. And with a dummy load you can check your signal in the separate receiver without radiating it to the world.

The golden rules are simple:

1. **Set everything up correctly on dummy load first**. After all, that's how Kenwood do it. Make all your adjustments, monitor your signal in the separate receiver. Then you can be sure the radio is working properly (and it almost certainly will be).
2. **Now connect the antenna**. If the radio now seems to exhibit one or more of the aforementioned faults, you will know that it is nothing to do with the radio itself – it is something to do with the antenna (mismatch and/or tuner and/or stray RF fields).

_____

Many things can go wrong when the antenna is connected:

1. The built-in tuner will introduce a small insertion loss that reduces the output power, even when tuned to 1:1 SWR.
2. The built-in tuner is incapable of achieving a low SWR, which can lead to unexpectedly low output power.
3. Stray RF in the shack #1. The RF can lead to difficulties in tuning the antenna system.
4. Stray RF in the shack #2. The RF can find its way into audio circuits (perhaps in the PC, or in the USB cable connecting the PC to the radio). This can be particularly troublesome when using preamplified microphones.

Possible solutions include rearranging the installation, changing the radio ground connection, using another antenna and/or feeder, adding an effective balun at the antenna feed point, or adding ferrite beads/toroids to various RF and audio cables.

_____

So, get it right on dummy load first, **then** look for the "fault". This two-stage setup process makes it **much** easier to diagnose what's wrong.

73
Ian, G3NRW, with additional notes by José, EA2JX.

Hint #10: 18 August 2012

Audio Tailoring Really Works

I just had a very nice 80m QSO with Graeme, G4NVH. He too runs a TS-590S, and inevitably we got talking about audio quality. He said he had spent quite a bit of time experimenting with the built-in TS-590S audio tailoring facility, and it really paid off. I made a screen shot of his audio on my SDR-IQ:
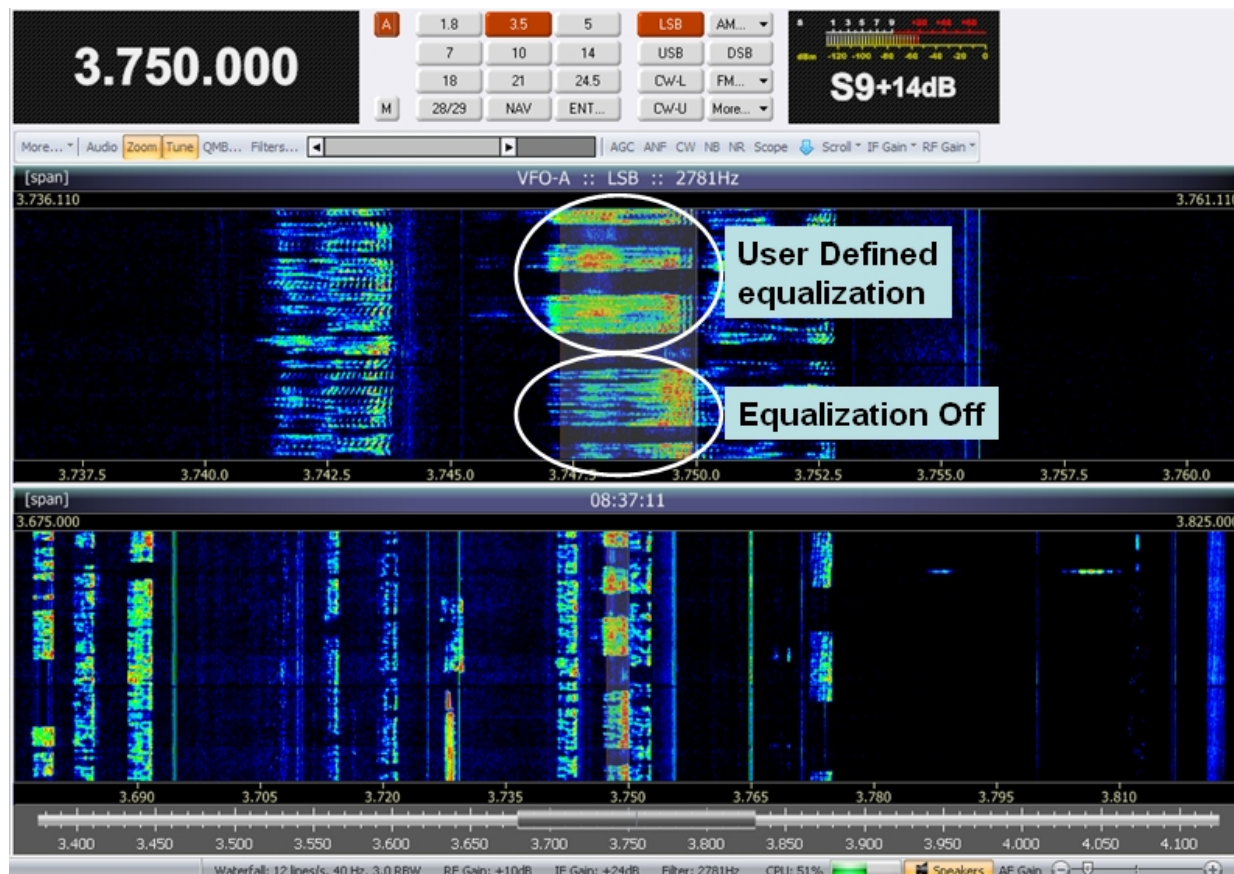
On the display, the suppressed carrier is on 3.750 MHz, and because it is an LSB signal, the audio spectrum increases in frequency to the left.

The lower highlighted area shows the audio with equalization turned off. Most of the energy is concentrated between about 50-700 Hz (the bright orange bits), with virtually no audio above about 2000 Hz, And it sounded awful -- someone else in the QSO likened it to talking through a woolly winter scarf, and he was right!

The upper highlighted area shows the audio with User Defined equalization enabled. What a difference! The audio energy is now spread right across the spectrum, with hotspots from about 200-700 Hz, and again from about 1500-2000Hz. The signal is now excellent communications quality, very bright and punchy.

Some people have complained about poor audio quality in the TS-590S. What they overlooked were the extremely flexible 18-stage TX audio equalizers built in to the radio -- there are actually **two** of them that you can independently adjust for different situations. (There are also two independent 18-stage RX audio equalizers as well). Using the Kenwood ARCP-590 program you can configure up to 5 user-defined profiles in each of the equalizers to suit just about any mic, and as Graeme has shown you can achieve excellent results.

73, Ian, G3NRW

P.S. from G4NVH: "Here are my current TX EQ Settings. Remember that a) this is for the Heil Pro-Micro headset and b) My voice. Menu 25 - 200, Menu 26 - 3000 & no processing."
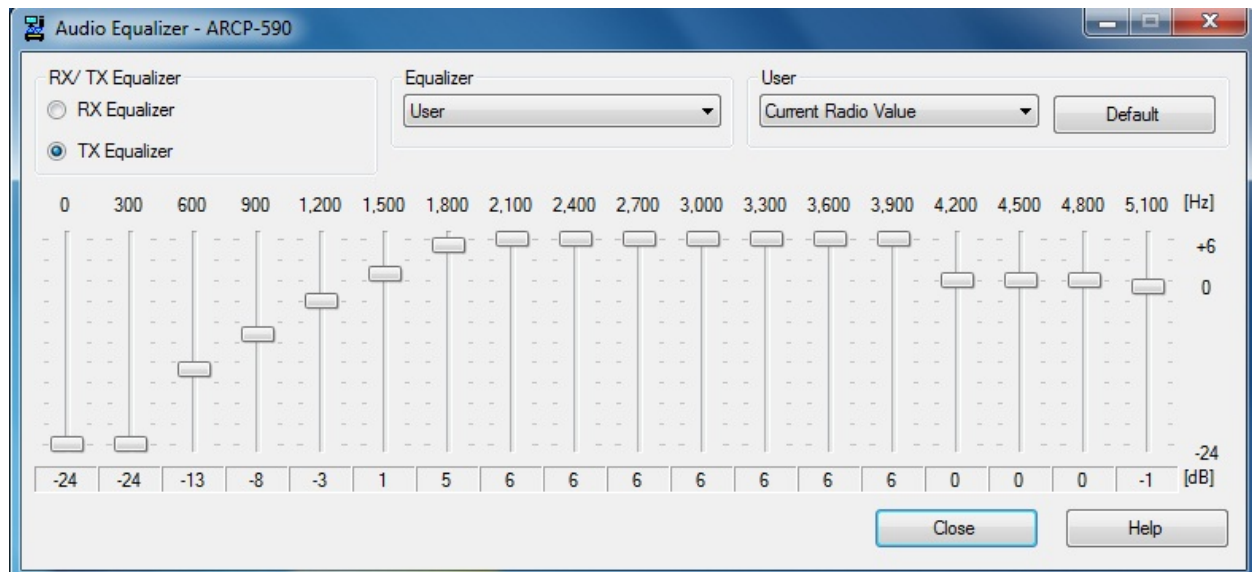
Hint #11: 27 August 2012

ARCP-590 Frequency Readout Display Cut-Off

This is an excerpt from KG9OM's information (http://www.k4qky.com/kenwood-ts-590s/setup.html):

_____

"ARCP-590 itself functions well …. except for the bottom 25 pct of the freq readout being cut-off."

_____

I've only had my 590 for about 2 weeks, and was disappointed when I …. experienced the same problem. Does *everyone* experience the bottom of the freq readout problem? I am running Windows 7 OS.

I got to thinking about [screen] resolution, and stumbled onto the solution. In the Display setting for the Windows Control Panel, I had the option of text/character size set to 125% (Medium). The default is 100%. The result was that my screen resolution was effectively reduced because all of the icons and displays were increased in size to 125% of "normal". That made it easier for my tired old eyes to read the screen, but obviously some of the pixels from the frequency display when using the ARCP-590 software "fell into the bit bucket". The ARCP-590 software was the only program that exhibited that problem. As soon as I changed the text/character size to 100% from the Display setting for WCP, the frequency display for the ARCP-590 program appeared correctly.

Very 73, Steve W8SC

Hint #12: 4 September 2012

Receive Audio Profiles

When you receive a report, what setting is that station using when he tells you that you have too much bass or too much top? I have been looking at the various built-in RX equaliser settings available on the TS-590S:
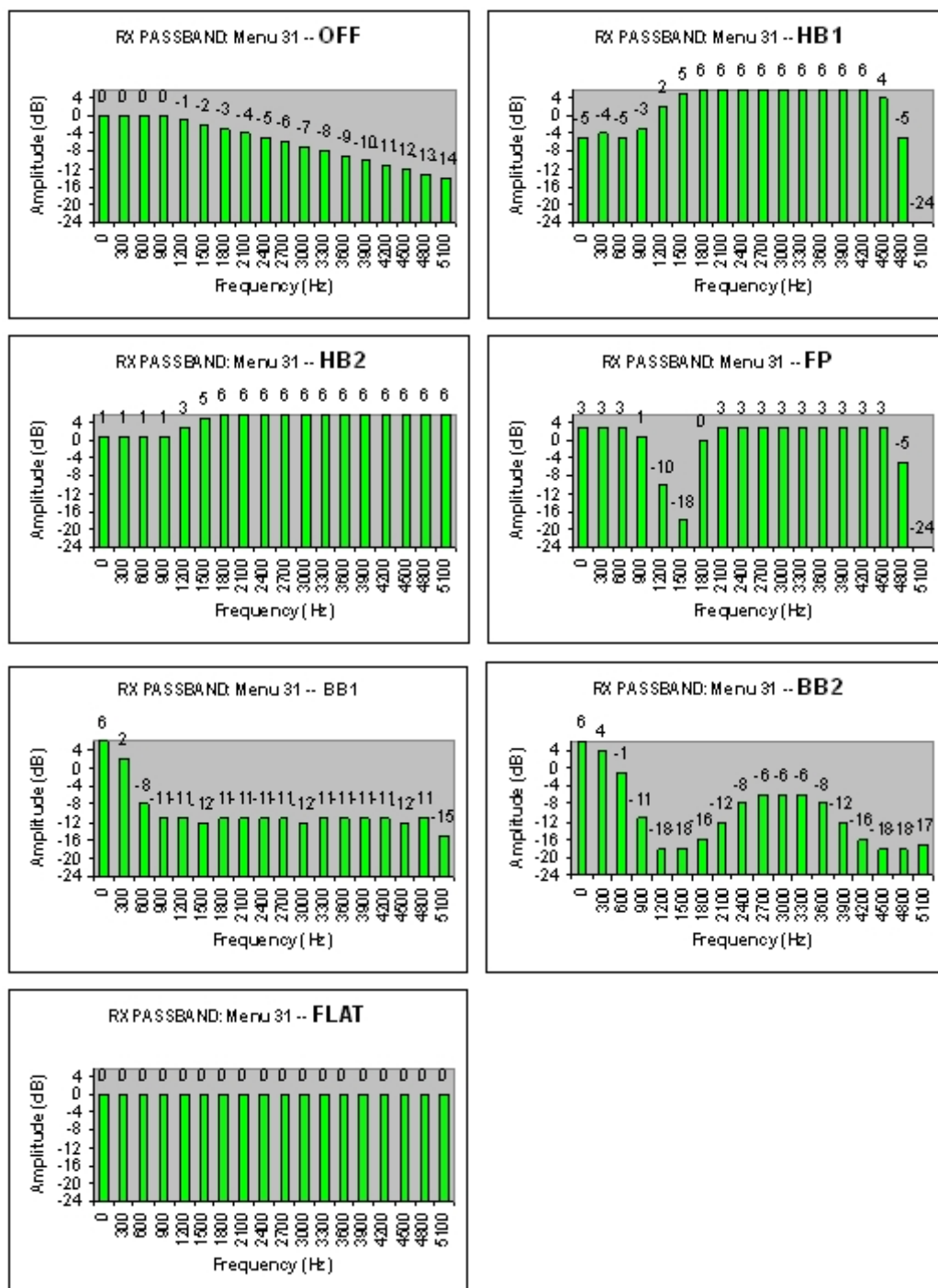
Having gone through each one while listening to one SSB signal, I found there was a huge difference across the range. This has me made question the quality of reports given out. After looking at the profiles I decided that for me I would use the FLAT profile, as that gives an even response over the frequencies I am interested in.

73, Mike, G3OVL

Hint #13: 11 September 2012

Fm Audio Tx Profiles

Len Hecker, K3LRH, reported:

The FM transmit audio on my '590 sounds terrible....very scratchy....both on the TX monitor and also on a separate receiver...wide/narrow makes no difference, except for level.

Roar Dehli, LA4AMA, replied:

Check Menu 47 (FM MIC GAIN). It has 3 settings (1,2,3). You should start on setting 1, then select setting 2 if it is too weak.

If too much treble is added in outboard (or internal) audio equalizing, the audio will crack. Try lowering treble, use TX EQ BB1 or BB2.

Len replied:

I had tried menu 47 with no luck.....*but* when I went to BB1 or BB2, as you suggested, *that* was the solution! Thank you!

Hint #14: 25 September 2012

Adjusting the Output Power Meter Reading

(Note from G3NRW: Do not attempt to follow this procedure unless you have the right test equipment and you know how to use it!)

My TS-590S is two weeks old and I'm still learning what all the buttons do. So far I've found the receiver to be outstanding, but I noticed that the key-down CW power level as shown on the 590's power meter was 25 Watts higher than what I measured using a Bird into a dummy load.

I re-checked output power using a Daiwa wattmeter and got the same results. The difference between output power measurements diminished as the power level was lowered, but in all cases the 590's power meter read higher than the Bird. A difference in 5 Watts I could live with, but a difference of 25 Watts was too much.

So what to do? I could send the radio back, but that would take weeks. Since I believed the problem was nothing more than misalignment, I decided to re-align the transmitter section per the Service Manual. This was not a hasty decision. Are my measurements accurate? Could both wattmeters be wrong? I convinced myself that both wattmeters were right and the 590's power meter was wrong.

I'm no stranger to working on radios. I was a Motorola two-way radio technician for several years, and I've successfully repaired my TS-940S on several occasions. So after taking a deep breath, off came the bottom cover to reveal the first test point.

The ALC voltage as measured at TP1 should have been 2.7V. Using several different voltmeters (just to be sure the measurement was accurate), I measured only 1.9 Volts. After setting the correct ALC voltage, I then went through the output power alignment procedure using the Bird as the final say in output power.

All went very well. The Service Manual is excellent. Alignment consisted of first entering the radio's maintenance mode using an alignment jig plugged into the 13-pin accessory socket. Wiring for the jig is detailed at:

http://ad4c.us/Kenwood%20HF%20radio%20manuals/TS-570ServiceJigWiring.pdf

The next step was to select menu numbers that corresponded to output power levels of 100, 50, 25, 10, and 5 Watts. The radio's output power was then adjusted using the front panel up and down buttons at each power level until the Bird measured the same level.

At each power level the 590's power meter was calibrated to read the same power level as shown on the Bird. ALC was next, setting the ALC meter reading to be 15 dots @ 100W on each band. Every reading before adjustment was 3 to 4 dots higher than it should have been.

Success! The 590's power meter now reads the same as both of my wattmeters.

. . . John Brush, WA3CAS

Hint #15: 5 October 2012

Replacing the F901 Fuse

Early TS-590S transceivers, with serial numbers in the B09xxxxx and B0Axxxxx series, were fitted with a fuse (designated F901) rated at 375mA. Several users of these transceivers reported sudden loss of receive functions without any warning, and it turned out that F901 had blown. Kenwood then changed the fuse in units with serial numbers B0Bxxxxx onwards, upgrading the rating to 500mA, and no failures have been reported since then.

Fuse F901 is a very small SMD part, measuring just 1.6 x 0.8 mm. Replacing it can be a tricky operation if you're not used to dealing with such small parts. Russ Vassar (KA1RUW) and Jim Kelly (ND6P) provide these very useful hints:

Russ: I suggest you solder the replacement fuse on top of the open fuse without removing the open fuse. Saves lots of trouble and minimizes chance of solder shorts. I wear two pair of store-bought reading glasses, +2.25 and +2.75, on top of each other when doing this kind of work. With a strong light on the work bench, it works just fine.

- Solder a single strand, about 6 inches long, cut from a multi-strand wire onto the top of the new F901 at one end. I found a strand from 14GA work well.

- Melt a glob of solder on one end of the open fuse.

- Using the single strand as a holder or wand, position the new fuse on top of the open fuse and solder the free end to the open fuse.

- Solder the end with the wire to the open fuse and remove the single strand at the same time.

From my perspective, this is the easiest way of fixing an open F901 and it has the added benefit of not having stray balls/globs of solder running around loose inside the rig from removing the open fuse.

Jim: After getting the wire attached to one end of the SMD, I soldered the other end of the wire to a ground point on the circuit board, leaving a loop of wire to allow manipulation of the SMD's position. After a bit of manipulating, I was able to position the SMD right where I wanted it, soldered the free SMD end to the pad, then soldered the other SMD end while removing the wire. End result was of good quality.

Hint #16: 15 October 2012

TS-590S Noise Reduction Suggestions

Some suggestions on TS590 NR modes. I have rev 1.06. Some success in rig settings to make NR1 and NR2 useful in SSB:

1. Get rid of internal speaker. I use 2 external in parallel, one to my left and 1 to my right. They are big speakers and have good bass reproduction, each has a 8 inch low range and a 3 inch high range, low range needed for NR2 to work best. If your speaker rattles or distorts in NR2 in SSB it is too small !!

2. IF FIL setting 100-2600

3. NR1: 8, NR2: 12

4. Rcv Eq, menu 31 Hb2

5. NB1: 10 NB2: 10

I routinely use NR1 for SSB. In severe noise I sometimes find NR2 effective for SSB.

Don, WB2OHN

Hint #17: 23 October 2012

Removing the Power Connector

Q: Is there a special technique for removing the power connector without breaking it?

A: Press on the top of the connector, about 1/4 inch (6mm) back from the radio, and pull the connector out.

de Jim K4YTE

Hint #18: 4 November 2012

Command-Line or Shortcut Access to Windows Audio Mixers

Users of ham sound card applications are constantly fiddling with setting the Record (Radio RX) and Play (Radio TX) levels of Windows sound cards. After a considerable amount of experimentation and internet research, I have discovered that one can make access to the controls for added sound cards a *lot* simpler.

There are two similarly named Microsoft applets that display the volume controls for soundcard playback and recording, depending on the Windows family:

- "**sndvol32**" for Windows 98 and Windows XP
- "**sndvol**" for Windows Vista and Windows 7

They are normally located in the **\WINDOWS\system32** folder, and normally called up by clicking or double-clicking the speaker icon in the system tray. By default, they appear with the **Playback** Mixer Device for the first or **primary** sound device. A single-click produces just the master volume control. A double-click displays the entire multi-channel mixer.

Accessing the Record Mixer Device (or either the Playback or Record mixers for added audio devices) requires a clumsy multiple mouse-click process. You have to launch the **Playback** side of the default device as usual. Then pull down "**Options > Properties**", then choose the desired device from a pulldown menu and finally click the radio buttons to select either "**Playback**" or "**Recording**", and then finally click "**OK**" to get to any alternate mixer.

There is another way. It is possible to directly display either mode for any sound device from the Windows command line, or from a desktop shortcut by using arguments ("switches") to the basic "sndvol32/sndvol" command. In the command line examples that follow, the "sndvol32" name is used, for Windows 98 and Windows XP. If you are using Windows Vista or Windows 7, substitute "sndvol" instead.

Command line format:

```
sndvol32 [-Daudio_device_number] [-Record | -Play] [-Normal | -Small | -Tray]
```

The switch delimiters can be either "**/**" or "**-**". Only the first letter of each option is required.

The "**-D**" parameter is only needed if you have more than one audio device installed. The first device is "**-D0**" (number "zero", not letter "Oh"). The first *added* audio device is "**-D1**", etc. "sndvol32" alone with no arguments calls up the play mixer for the first device; that is, exactly the same effect as double-clicking the speaker icon in the tray.

Example :

```
sndvol32 -D1 -R -S
```

This would call up the *second* sound device's Record mixer in the small mode; that is, only the master control.

NOTE: The device number may *not* be the same for Play and Record for a given device if you have input-only devices like a webcam with a mic but not a speaker present, or output-only devices such as digital speakers or Bluetooth earpieces present. You may have to experiment with different command strings typed at the Windows command prompt (a.k.a. "DOS Box) to determine which "**-D** number" makes the desired device mixer appear in Playback and/or Record.

Further, the device numbers are assigned "first come, first served", based on the order that you plug in USB devices. For consistency, you must always plug them into the same port in the same order (or just

leave them on the same ports permanently. To keep device numbers the same on record and playback, always insert any record-only or play-only devices last.

Once you determine the correct command lines for the record and play sides of the desired device, you can place them into Windows shortcuts on the desktop for instant double-click access. Right-click the desktop, choose "**New, Shortcut**". In the resulting dialog, enter the command line exactly as you typed it in the command prompt window, click "**Next**", give it a label such as "SND2 Rec", "SND3 PB", "Radio TX" or "Radio RX", and you're done! Quick direct access to the second card's volume controls.

Stephen H Smith, WA8LMF

(Stephen also has a very informative website with many detailed ham-related topics at http://wa8lmf.net)

Hint #19: 18 November 2012

Ham Radio Deluxe and TS-590S TX Control

There is a known issue with the way HRD and external programs interact for keying. Whenever I use HRD as an intermediary to control my TS-590S when using other programs, either through the TCP/IP interface or the virtual COM port, when the external programs sends a TX command, HRD passes a "TX0" to the '590 instead of "TX1" – in the TX-590S CAT Command Set, "TX0" is Mic PTT, and "TX1" is PTT for the ACC2 or USB input.

Here's an example:

JT65-HF, when using the HRD PTT option, connects to HRD via the TCP/IP interface, requests a list of buttons, and sends a command to HRD to push the "TX" button. This keys up the mic, not the data audio. If, instead, the "TX Data" button were pressed, it would work fine. The same happens with PC-ALE, which sends a "TX" command through the virtual COM port.

That said, I don't think it should be up to every piece of external software to know that some radios need different commands than others. That's why I use HRD, so that other software doesn't have to care about my rig and its quirks. If there is a way to convince HRD that any TX command should be interpreted as "TX Data", *please let me know*. I couldn't find such an option. If it doesn't exist, I would ask the developers to consider one of two options: either include a option to make all "TX" commands send a "TX1" instead of "TX0" based on user preference, or allow users to change the CAT Command associated with the "TX" button.** A third option might be to only use "TX1" from HRD, but I assume someone out there wants to use a Mic interface or use HRD to control the Mic PTT, so I don't think this is a viable solution.

In general, the only viable solution, without a fix from HRD, is to use VOX for TX keying. If you are very technically savvy, you can hand-edit the HamRadioDeluxe.exe executable to replace all references to TX0 with TX1, but this is not for the faint of heart!

Tnx es 73 de NF8I,

James

** - I have found how to add my own CAT commands and macros, but not how to change the CAT commands assigned to the default buttons.

Hint #20: 25 November 2012

Considering a second-hand TS-590S? Buyer beware!

The TS-590S is a very fine radio, and few of them appear on the second-hand market. If you are considering buying a second-hand "bargain", try to get an assurance from the seller that nobody has changed any settings in the Service Menu. There is no way to tell if a Service Menu item has been altered, and no way to tell what the previous settings were unless careful notes were made.

So if you buy a second-hand TS-590S where a "CB Doctor" has "optimised" the factory set values, then all hope is lost. You will need to return the radio to Kenwood to be re-calibrated.

73, Dave, M0SBZ

Hint #21: 3 December 2012

N1MM macro to switch audio inputs on the fly

Hi everyone. I would like to report success in last weekend's ARRL Sweepstakes using N1MM's macro commands to rapidly switch between USB audio and ACC2 audio.

Problem: For the SSB contest, I wanted to use both live audio from a Yamaha CM-500 headset and pre-recorded .wav files in rapid succession during each contest QSO. The format is:

```
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

<live>I say his call, give him his QSO number<end live> <.wav>play .wav file<end.wav>

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
```

The headset microphone and a footswitch PTT are wired through the ACC2 port, while the .wav file is played through USB. Menu 63 allows the radio to accept audio either through ACC2 or from USB, not both. So now what do I do?

Solution: An obvious solution is to use an external audio mixer to mix the .wav from my laptop with my headset audio and feed them both through ACC2. Or, feed the headset into my laptop and have the laptop feed the .wav and the headset audio through the USB port. Both of these solutions raised issues with the footswitch -- I want the footswitch and live audio to function together independent of the computer. Before changing things, I remembered reading that N1MM can send custom CAT commands. Why not see if the rig can be commanded to rapidly flip Menu 63 between ACC2 and USB inputs? If it worked then I wouldn't have to change any of my wiring.

N1MM allows the user to use the Fn keys on the PC to send macros to send commands to N1MM and/or the radio. Here is the macro I came up with for the F2 key:

```
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

F2 EXCH,{CAT1ASC EX06300001<3B>}{CATDELAY 1}wav\K6OK\K6OK SS Exch.wav{END}
{CAT1ASC EX06300000<3B>}

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
```

Code Description

`F2 EXCH` assigns a macro to the F2 key. In the N1MM interface a button is shown with the "EXCH" label. You can fire the macro either by hitting the F2 key on the keyboard or clicking the F2 button on the screen.

`CAT1ASC` is an N1MM macro command which means 'send a CAT command to Radio No. 1 using ASCII text.'

`EX06300001` is Kenwood's CAT command format, which means 'set Menu 63 to value number 1, which equals accept audio from the USB port.' See Kenwood's PC Control Command Reference for a complete listing of all CAT commands.

`<3B>` The TS-590 wants all CAT commands to end with a ';'. The semicolon is not an ASCII character, so you must send the hex equivalent. In ASCII 3B equals a semicolon.

`CATDELAY 1` tells N1MM to pause for 10 milliseconds before sending the next command. I inserted this to give the TS-590 a chance to get the inputs switched before feeding it the .wav file.

`wav\K6OK\K6OK SS Exch.wav` tells N1MM to go into its wav folder and play the audio file. Windows plays the .wav and it is sent out through the USB port.

`{END}` tells N1MM there are no more .wav files to be played but get ready to accept more rig commands.

`CAT1ASC EX06300000<3B>` sends a command to the TS-590 to set Menu 63 back to ACC2.

You can see the TS-590 by default is left in ACC2 mode. At any time I can stomp on my footswitch, which uses Data PTT to go into transmit mode, and I speak through my headset. This is important because after playing the exchange the other station might ask me to repeat part of it.

A typical QSO goes like this

```
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

K1XYZ: "CQ Sweepstakes"

Me: hit footswitch, say "K6OK", release footswitch.

K1XYZ: "K6OK you're number 123, Alpha K1XYZ 95 Victor Tango."

Me: hit footswitch, "Thanks. Number 101"

Me: hit F2. N1MM executes the macro, the TS-590 is flipped from ACC2 to USB, my pre-
recorded .wav says "Uniform K6OK 09 Sierra Victor", and is flipped from USB back to
ACC2.

K1XYZ: "Your number again please?"

Me: hit footswitch, "101, 101."

K1XYZ: "QSL. Thanks. QRZ."

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
```

Results

I made 283 QSOs during the contest using the macro. The TS-590 executed the Menu 63 switching instantly and smoothly. I did not detect any USB latency (my baud rate is set to 57600) or any delays at all. From my results I conclude the TS-590 is a very good candidate for all kinds of PC integration and automation.

73 Jim K6OK

Hint #22: 23 December 2012

A good way to remove surface mount devices

I ran across a good way to remove surface mount devices recently. I had to remove and replace a surface mount IC which ended up to be an easy task. This might be of interest for those that need to replace the F901 fuse in the TS-590S. A video can be viewed that shows the easy removal of a CPU with this method.

The product is called ChipQuik, (http://www.chipquik.com). It is available as a kit, consisting of a tube of flux and a special alloy that looks like a small diameter supply of solder and alcohol pads for cleanup. The flux is applied to the device pins and the alloy is then melted onto the pins. The result is a very low melting point of the combination of the original solder and the special alloy. All one has to do is knock the device off of its pad location and clean up the traces. The flux is then used to remount the new device which helps in the reflow of the existing solder or new solder can be applied if needed.

Richard, K8CYK

Hint #23: 16 January 2013

Connecting the TS-590S to a PC running Windows 8

A plea from Danny Loyd KE5WDI/AAR6KC:

My old computer which worked with my radio just great went DOA on Christmas Day. USB and Sound quit working and then a few other things stopped. To make a long story short, I ordered and received a new ACER Aspire V5 which has Windows 8 installed. It have tried everything I can think of including take computer to Geeks at Best Buy. I have downloaded all the necessary drivers to my computer, but when I plug in the radio it says "Device Plugged into USB is not recognized". I am about to call Silicon Support and see if they can help. Their website says the drivers are Windows 8 compatible. If anyone knows what I am doing wrong, please let me know.

A reply from Russ, KA1RUW:

Before paying freight both ways plus a diagnostic fee, I suggest trying a few things to try and get the rig connected to a PC via USB. Try this on both PCs.

To start with a clean slate:

- Download and install USBDeview from:

  http://www.nirsoft.net/utils/usb_devices_view.html

  USBDeview will display all available info at the USB port level.

- Read the page about the program's capabilities and then use it to watch the USB port(s) come/go as you plug/unplug the USB cable with the TS-590S attached and with power applied to it.

- You need 12VDC available at the rig's PWR connector but the rig doesn't need to be turned on because the TS-590S interface chip is always working when the rig has power connected.

- Just for chuckies, make a note of how USBDeview identifies the rig's USB port. Even if it's not working right, something should still show up on USBDeview considering that WIN_8 knows something was plugged in but just doesn't know what it is.

- Disconnect the rig's USB cable at the PC and purge the PC of all Silicon Labs drivers both installed and stored.

- I can't tell you how to do this in WIN_8 but in WIN_XP and WIN_7 I can uninstall the Silicon Labs Bridge and VCP drivers using the Add/Remove Programs utility.

- Then using Search/Find, find all occurrences of "CP210x" files and delete them. This seems to be important for some systems/problems.

- Use USBDeview to verify that the rig is not connected and that no USB port is associated with the TS-590S. You can keep USBDeview running throughout this entire procedure or anytime you're messing around with USB ports/cables.

- Note that USBDeview keeps a history of ports that devices were moved from and you may get confused. Use CTRL+F8 to toggle that info ON/OFF.

- With the rig's USB cable still disconnected from the PC, download and run the Silicon Labs driver installation program using the procedure on:

  http://www.kenwood.com/i/products/info/amateur/vcp_e.html

- Continue to follow the instructions and the Silicon Labs driver should install correctly.

In some cases it is very important that the troublesome USB device is not connected to the PC, that all occurrences of the driver are deleted from the PC and that the Windoze Device Manager doesn't think that the troublesome USB device is still associated with any USB port before downloading and installing the correct driver.

Different versions of Windoze seem to provide different levels of constipation. Most of us don't have a lot of trouble with this but some systems do.

USBDeview, Device Manager and Add Remove Programs are valuable tools. Other handy utilities are:

- http://www.nirsoft.net/utils/driverview.html
  DriverView displays all available info about all installed drivers. Works on my WIN_7-64 and XP-32 systems. No mention about WIN_8.

- http://www.nirsoft.net/utils/device_manager_view.html
  DeviceManagerView provides a different format for looking at devices installed in the system.

Good luck and hopefully it's just a procedural/install problem and not a smoked IC.

73 Russ, ka1ruw

Hint #24: 28 January 2013

Using a SignaLink with the TS-590S

As others have said you don't need a SignaLink with the 590. But if you have one you may as well use it. I personally find adjusting the audio levels to be so much easier and quicker using the knobs on the SignaLink than using the slider controls in Windows.

I'll assume you're using the 13-pin connector accessory cable connected between the SignaLink and the 590's rear ACC2 jack.

Here are the 590 menu settings I use:
~~~~~~
Menu 63 (Audio Input Line Select): ACC2
Menu 66 (Audio Level of ACC2 Input): 1
Menu 67 (Audio Level of ACC2 Output): 1
~~~~~~

Here's the tricky part (at least for me). The receive audio was way too high requiring the RX knob to be set too low for my taste. The receive audio level control is buried in Windows. You'll find it under Control Panel > Sound > Manage audio devices > Recording > USB Audio CODEC > Properties > Levels. I set the Microphone slider control to 50%. That results in a SignaLink RX knob setting of 10 o'clock.

If necessary you can set the xmt audio level under Control Panel > Sound > Manage audio devices > Playback > USB Audio CODEC > Properties > Levels. But I found the default of 100% to be OK.

The settings for Windows and the 590 are set-it-and-forget-it. From now on all TX and RX audio levels are set from the SignaLink for any soundcard program you use.

Would I sell my SignaLink? NEVER!

. . . John (WA3CAS)

Hint #25: 5 February 2013

Useful Fldigi Macros

Here are a couple of macros that I find very useful when operating digital modes using Fldigi software with a CAT-controlled TS-590S. Occasionally when working a weak signal, a very strong in-band signal will pop up, causing the receiver AGC to reduce the gain, dropping the weak signal into the weeds.

Fldigi has macro functions that can be used to eliminate this problem by:

1) moving the weak signal you're working into the center of the IF passband, and

2) selecting a very narrow IF bandwidth centered around that signal.

Combining these functions into one macro allows you, with a single mouse click, to select only the signal you want and eliminate the rest.

The macros are:

Macro #1 (I named it "QSY 80") = <QSYTO><FILWID:80>

The "QSYTO" macro function retunes the TS-590S so that the selected signal is centered at an operator-selected waterfall frequency that Fldigi calls a "sweetspot". For my setup, I set the "sweetspot" to be 1200 Hz, the same as the "IF Shift" setting on my TS-590S (that is, the center of the IF bandpass). In Fldigi, the "sweetspot" is set by going to menu Configure/Misc/Sweetspot.

The "FILWID:80" macro function sets the TS-590S IF bandwidth to 80 Hz (works well for PSK31). This macro function can be used to select any of the TS-590S valid IF bandwidths. Macros for wider bandwidths may be desirable for working other wider bandwidth modes (for example, RTTY, Olivia, etc.).

Macro #2 (I named it "QSY Undo") = <QSYFM><FILWID:2500>

The "QSYFM" macro function retunes the TS-590S to its original frequency that is, before the application of Macro #1.

The "FILWID:2500" macro function resets the TS-590S IF bandwidth back to 2500 Hz (that is, "full band").

I use these macros all the time, and hopefully they will benefit other group members. Ham Radio Deluxe has similar (although different) macro functions that can be used to accomplish the same things.

Bob Billingsley, KC9UR

Hint #26: 12 February 2013

Extension of the Programmable Function Keys

Following the schematic on page 43 of the Kenwood TS-590S In-Depth Manual (below), I built a small interface unit for the TS-590S MIC connector and in this way extended the Programmable Function (PF) keys.

Hints and Tips "Extension of PF function"

Though only two **PF** keys are available on the transceiver, it is possible to increase the number of the **PF** keys by using a switch to switch a voltage derived from the microphone connector.

If you have a microphone equipped with the **PF** keys such as MC-47 (although it was discontinued and no longer available), you can assign the PF function to the **PF** key and the **UP** and **DOWN** keys. Likewise, by adding an external circuit as shown below, the PF function also can be assigned.
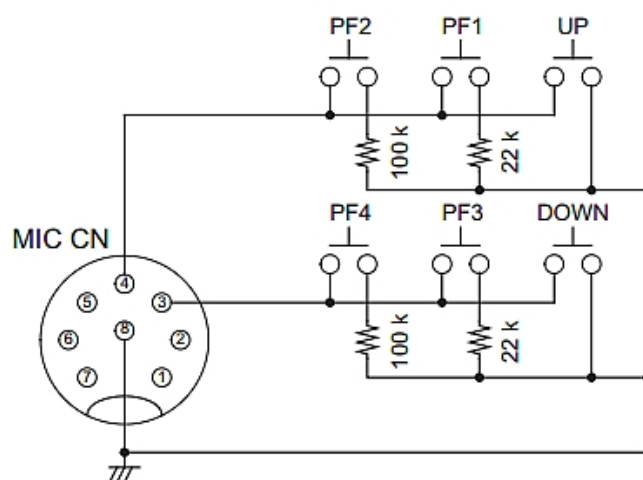
Figure 5-6   Example of Circuit

Caution:

♦ The figure shows the microphone connector viewed from the front panel, but it is inverted (upside down).

♦ The circuit only shows the connection of DC signals. Be fully aware of loop interference of radio frequency signals and other possible issues that may arise.

♦ We will not accept any request for fixing problems arising from connecting devices other than Kenwood's genuine optional products regardless of the content of this document.

Extract from page 43 of the In-Depth Manual
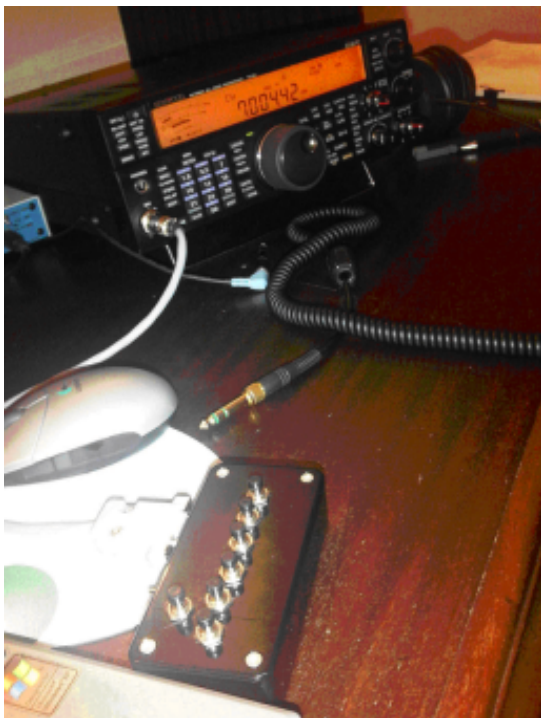
The interface unit provides six push-buttons that can be configured in the TS-590S Menu.

I use PF1, PF2, PF3 and PF4, which are configured with CH1, CH2, CH3 and CH4. This way I have four CW messages that are available very near to my hand.

The UP and DWN buttons are configured with CW T. and SCAN, the main idea being to "search and pounce" without the need to go to the radio front panel with my hand.

I did put another push-button for PTT. In the latest firmware version (1.07) it lets you stop the temporary repeat message.

Also you can use the MENU A/B and have another set of PF keys assigned.

In the last few year I've been a Morse guy, but I have made provision in my interface for connecting an external mic and a switch if I need phantom power to it. (I can later apply the Rob Connelly, W1AEZ advice for connecting an Electret condenser microphone in this box).

All you need are four resistors, some push-buttons, a small MIC "straight through" interface cable and a plastic box.

The TS-590S Instruction Manual contains full details of the possible PF1 – PF4 key settings, on pages 54 and 55.

73

Pedro CT7AEZ

[An addendum from George, SV1ELF]

Today I saw the circuit for programmable function keys by Pedro CT7AEZ on the TS-590S Resources Page, and I remembered that I have something like this that I made myself from a keypad for my FT-1000MP MARK-V. So I implemented Pedro's circuit with this keypad and it works fine.

The keypad has simple pushbutton contacts, with a small internal resistance of about 20-30 ohms in every button. I then added the 100k and 22k resistors for the PF1-PF4 buttons.

For details of the keypad, see:

http://www.vellemanusa.com/products/view/?id=349955

Hint #27: 12 March 2013

Measuring and Mitigating Power Overshoot

I have made some power measurements and adjustments on my TS-590S, using a 50 Ohm dummy load (100w), a Bird 43 power meter with a 50dB RF Sample Port (and added a 10dB attenuator in line as well) to feed the oscilloscope. The oscilloscope is a UNI-Trend UTD2102C, 100MHz, 500MS/s.

TS-590S S/N: B0B000xx, manufactured in November 2010. Firmware 1.07.
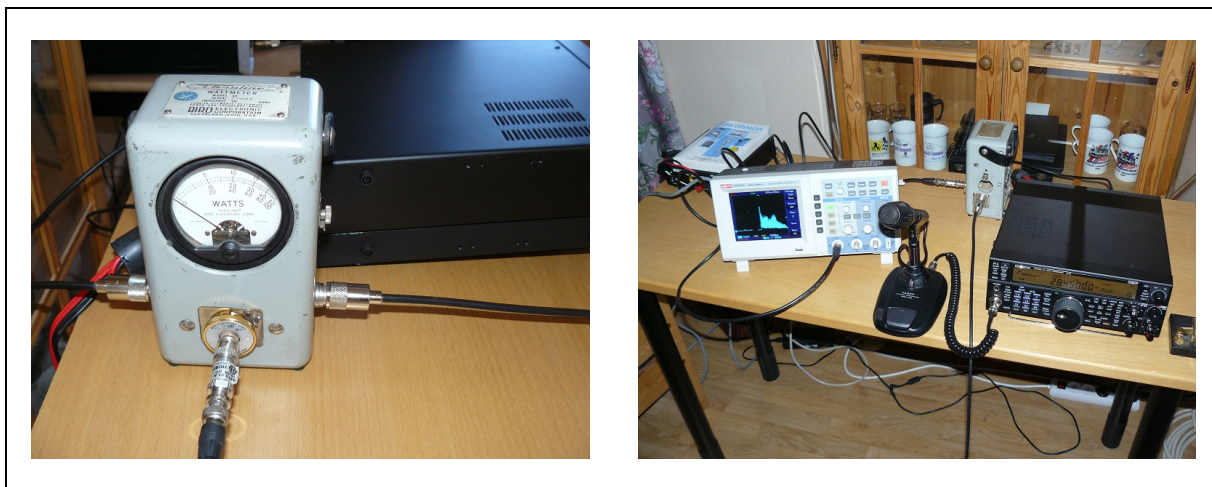
The carrier must be set for 50% and RF power to 100w before entering Service Menu.

The settings:

```
Insert service Jig in ACC2, Hold MIC+NR and turn Power ON.
```

MENU	ITEM	DESCRIPTION	ORG.	ADJ.	
23	ALC REF	ALC Reference	128	115	2.35V on TP1
24	POC 100W	POC/Power Meter	189	187	
25	P.MTR 100W	POC/Power Meter	191	191	
26	50M 100W	POC/Power Meter	178	190	
27	50P.M100W	POC/Power Meter	184	184	
28	POC 50W	POC/Power Meter	128	125	
29	P.MTR 50W	POC/Power Meter	129	129	
30	POC 25W	POC/Power Meter	89	87	
31	P.MTR 25W	POC/Power Meter	84	84	
32	POC 10W	POC/Power Meter	58	55	
33	P.MTR 10W	POC/Power Meter	47	47	
34	POC 5W	POC/Power Meter	45	40	
35	P.MTR 5W	POC/Power Meter	29	29	
36	TGC 14M	TX Gain	94	108	Set for 100w +/-3w
37	ALC.START	ALC Meter	83	82	
38	ALC.MAX	ALC Meter	121	119	
39	TGC LW *DRV	TGC	75		
40	TGC 1.8M	TGC	95	107	
41	TGC 3.5M	TGC	112	122	
42	TGC 5M	TGC	114	124	
43	TGC 7M	TGC	97	112	
44	TGC 10M	TGC	109	120	
45	TGC 18M	TGC	98	113	Adjusted for 15 dots on ALC-meter
46	TGC 21M	TGC	116	127	
47	TGC 24M	TGC	113	125	
48	TGC 28M	TGC	112	125	
49	TGC 50M	TGC	98	108	
50	PGC 50W	PGC	140	146	
51	PGC 25W	PGC	164	170	
52	PGC 10W	PGC	179	184	
53	PGC 5W	PGC	186	191	
60	WRITE EEPROM		Push ^ (M.IN) once		

```
Turn off power
```

Following the TS-590S Service Manual for the adjustment procedure, I found that my rig had the TGC 14M (TX Gain 14 MHz) set at a rather low value, and the power was 104w (a bit high), so I increased the value until RF power was 100w. Readjusted ALC start and ALC max, just transmit and push ^M.IN once. If you have a CW key inserted in the rear jack, it will not transmit and value will be wrong.

Recalibrated TGC for all bands 1.8 - 50 MHz, also PGC (power gain control) for 50w, 25w, 10w and 5w. These are all adjusted for 15 dots on ALC-meter.
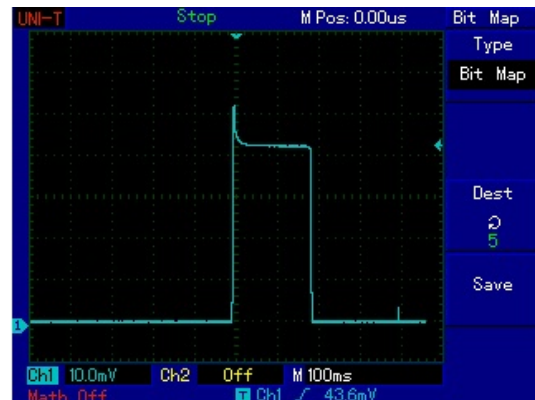
Before and after check with oscilloscope regarding ALC overshoot actually revealed no huge improvements, but a small improvement was observed. The values that improved ALC overshoot problem was when I changed TGC 14M (higher value) and lowered ALC REF (115).

For CW the CARRIER LEVEL has a huge impact regarding ALC overshoot, and lowering it to the point where the ALC meter just shows a single dot removes the ALC overshoot almost completely. If you turn CARRIER LEVEL down even further, the ALC is not active and the CW pulse will be almost square with no overshoot, but you will lose a few watts:
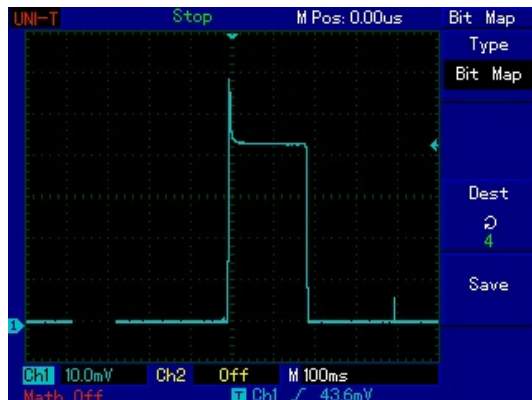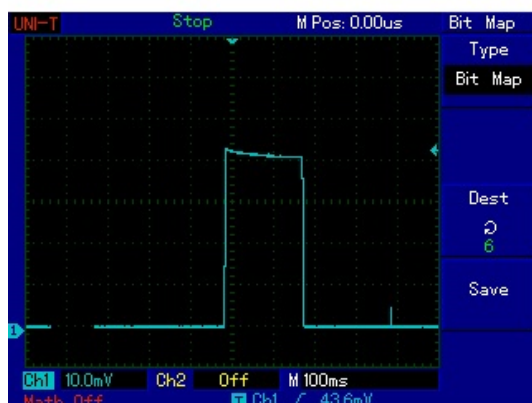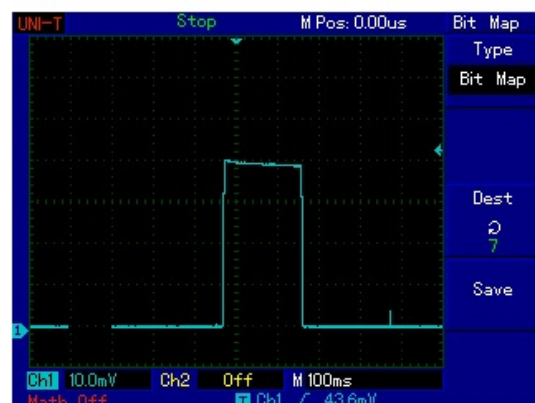
50% carrier level   TS-590 CW   25% carrier level
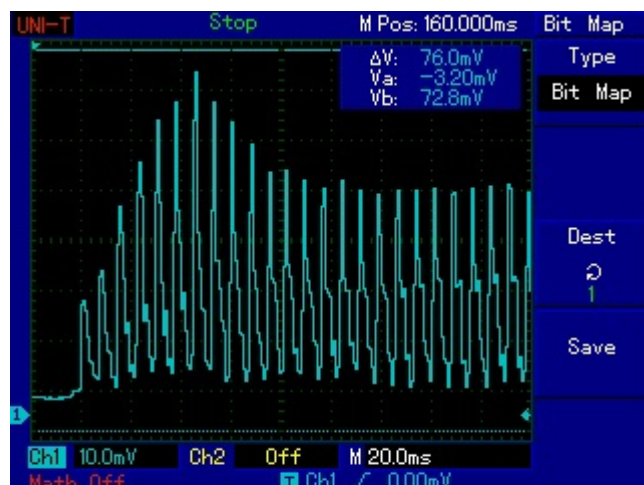
Carrier Level wit only one dot on ALC-meter   Carrier Level turned down even furter (14%)

For SSB the power overshoot is much more severe, and set for 30w to drive an amplifier, my TS-590S overshoots to 50w or even more.

The power overshoot in SSB lasts much longer than in CW, seemingly around 50ms.

So there is something else controlling this than the ALC attack time I believe. The ALC loop contains several capacitors and resistors in series and parallel, so this is not easy to determine.
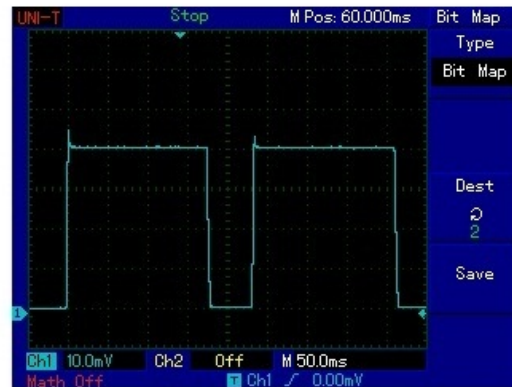
Shouting "AAAAAAAA" in the microphone in SSB mode. Close in look at first 200ms. Radio set for 10w, output is around 20w om peak.
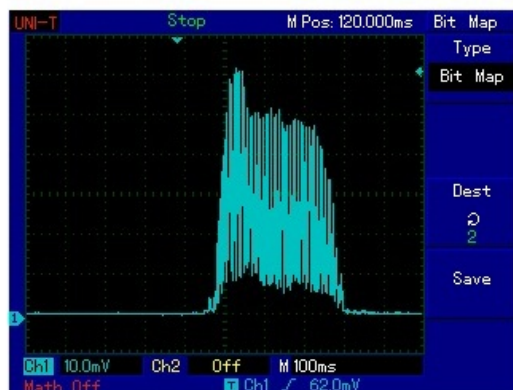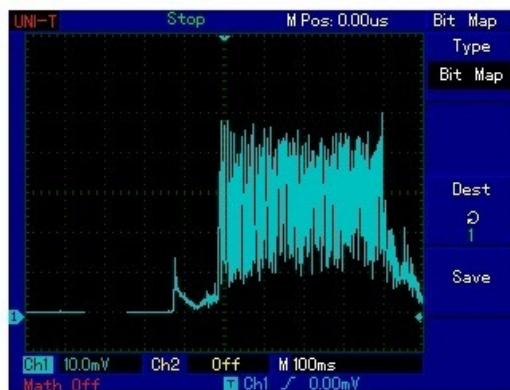
Compared it with a IC-7000:
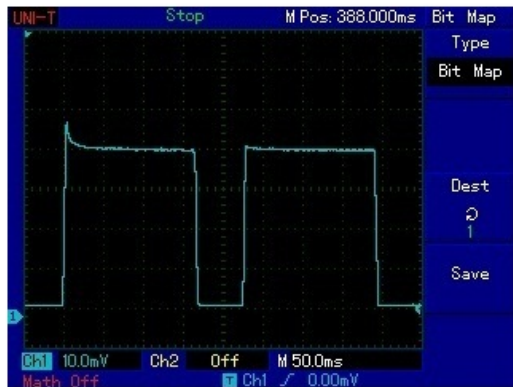
TS-590 CW   CW transmit   IC-7000 CW

TS-590 SSB Voice   IC-7000 SSB voice

Radios set for 10w RF power

(Shouting "AAAAAAA" in the microphone)

The TS-590 overshoots in SSB, and the overshoot seems to last for about 50ms.

According to Leif, SM5BSZ, the easiest fix is to apply external negative voltage on the rig's ALC input on rear panel. As long as the DC power applied is not noisy, it will not contribute to any sideband noise. You need an adjustable DC source (9V battery) with a potentiometer adjustment to set the value to a level where the RF power output goes down. Leif recommended to set for 2dB below full power, and use an external power amp to increase power output if needed.

I will try to build a small box with a 9V battery and a simple potentiometer circuit, with an ON/OFF switch:

ALC adjustment to achieve QRP power levels
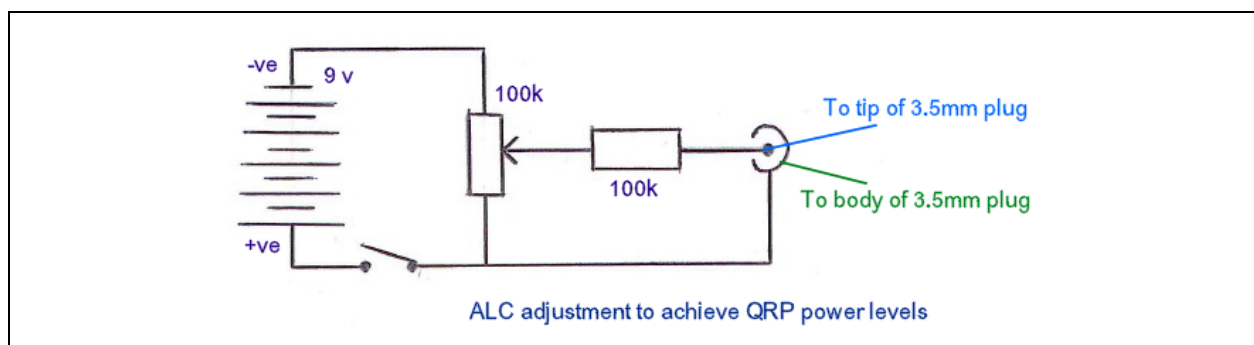
Roar Dehli, LA4AMA.

#####################################

Comment from Rob Connelly, W1AEX.

Very interesting findings. The idea of running an external ALC source into the back panel of the 590S came up this morning in a conversation I had on 15 meters. I used the same external ALC setup with my FT-897D which is fairly notorious for its problem with overshoot and it tamed it beautifully. I also used the same setup when using my Pro III on AM to remove audio artifacts caused by the internal ALC. My simple setup (before mounting it in a box) took less than 5 minutes to put together:

The over-aggressive action of the ALC in the 590S is annoying and no doubt responsible for most of the complaints about low average SSB output. It behaves like an audio compressor/limiter that is poorly adjusted with hang and decay times that are insanely long. It's so poorly implemented that it makes me wonder what Kenwood was thinking...

Hint #28: 21 February 2013

WWV Accuracy

For those that are interested in a way to use your PC and get the calibration of the TS-590S very close then follow the directions below:

1. Download the Audio Spectrum Analyzer 1.26 at this site:

     http://hotamateurprograms.com/downloads.htm.

2. Enable the program and start it.

3. Select the proper input for the analyzer from the "Data Source" choices.

4. Tune in WWV on the highest frequency you can receive.

5. Use the AM mode and watch the Peak Frequency display. WWV uses two tones, a 500Hz and a 600Hz tone, as well as the 1200 Hz tone that is used to indicate the start of a minute. Ignore the 1200 Hz for now and monitor the 500 or 600Hz tone.

   The analyzer should indicate the tones within .1 Hz. BTW my sample rate is 8000, transform size 4096 and the vertical display is LOG_10.

6. With the frequency display of the TS-590S exactly on the frequency of WWV, switch to USB and note the Peak Frequency reading. Switch to LSB and do the same. If they are exactly the same as the AM tone then you are just about right on frequency. Any difference will show up immediately.

7. Adjust your trimmer to match the tone being sent by WWV on the SSB modes with no difference between the AM and SSB modes.

8. Done.

There are other downloads available at this site and they are very useful not to mention free. The author is Grant Connell, WD6CNF. There is no place to make a PayPal or other contributions to his work. You'll have to send it directly to Grant if you're that impressed with the program.

Gary Sawyer, KO6WB

Hint #29: 9 April 2013

Easy way to reduce output power to less than 5 watts

BudR, WB6RDO, asked:

Is there an easy way to adjust the lowest power out to less than the 5 watts? I don't want to make any mods or affect the full power out of 100 watts.

Gary Sawyer, KO6WB, replied:

Yes, get a 100K or 1M ohm linear potentiometer, a 9V battery and a battery clip. On the two ends of the potentiometer connect the battery clip. This way the battery will have a 100K or 1M load on it which isn't much.

Now take the terminal on the positive side of the potentiometer and connect it to the chassis of the TS-590S. Take the center wiper arm terminal of the potentiometer and connect it to the REMOTE connector on the back of the TS-590S on pin 6 (ALC). Connect the 9V battery to the clip.

Now adjust the potentiometer while you are emitting a CW carrier set to the 5 watt level and turn the adjustment until you obtain the desired output from the TS-590S.

That's it. You're now able to control the power output of the TS-590S to whatever setting from 0 to 100 watts.

Hint #30: 2 May 2013

CW Operation

When operating CW, turn your carrier control down to the point where there is NO ALC showing at all when you key. This will completely control the ALC issue that is a "feature" of this rig, and will be very clean.

Give VOX a try. Set the delay long if you don't want break-in. Or, just lock it down (PTT) if you want to be fully in control. Just remember to release it when you are done. With the somewhat relay-less operation these days, you don't really hear PTT like you used to.

A foot switch or any outboard switch will do the trick to perform manual switching. I also make sure my VOX gain is at zero at all times so that shack noise has no chance of tripping it.

Gary, AG0N

Hint #31: 23 June 2013

TS-590S USB – Morse Key Adapter
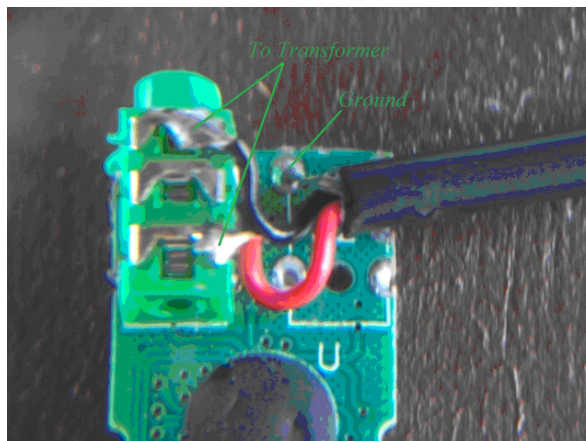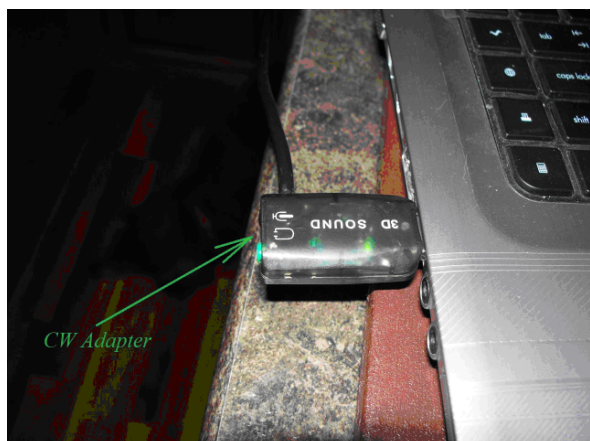
The microphone connector is removed from one of the cheap USB audio cards sold on the internet (eBay) and a 2-conductor shielded cable is connected across the earphone connector as shown. The red and black wires are connected to a small audio transformer.

In my installation, the radio would lock up until I connected the USB adapter ground to the circuit. Your installation may not need it but it was necessary at my QTH. If you are careful with soldering the wires to the earphone connector, you can monitor the audio tones sent to the circuit through the earphone jack.

Once the USB sound card was modified and working I mixed up a glob of J-B Weld Quick epoxy, put some on both sides of the circuit board and basically glued the covers back on. At around $1.50 for each USB audio card, if you have a problem with one, you can just cut the wire and make another.
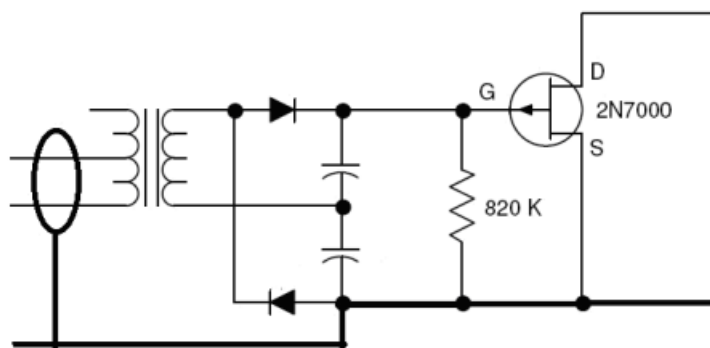
Radio Shack has 2 small audio transformers, either one works OK. The diodes are 1N270s. The capacitors are very small 0.1mfd that I had in the junk bin; the value isn't critical just use what you have. I used a 2N2222A transistor with a 1K resistor in series with the base lead but the 2N7000 is a better choice. I used what I had available on the road.

The drain (or collector) output goes directly to a 1/8-inch stereo plug tip connection with the ring connector unused. The sink (emitter) ground connection goes to the stereo plug ground connection. This is an important detail on the TS-590S as a ground connection to the ring would change the key selection inside the radio.

Other radios may react differently. The whole adapter (except for the USB audio card) fits into the smallest Radio Shack project box.

Credits for the schematic artwork belong to W5ZIT who posted a tone controlled interface to the Fldigi Files folder. I simply copied that schematic into Paint and edited it for this file.

In digital operation I select the TS-590S (USB audio codec) and for CW I select the USB-Morse Key Adapter in the PC sound configuration. The first time I use one of the macros in Fldigi after selecting the Morse Codec the radio takes a few seconds to figure out what it wants to do. Be patient, it'll work instantly for following transmissions. I haven't figured out why it hesitates at first but it's something I can live with and you might not see this with your setup.

Ken Hunter, KB7H

Ken Hunter, KB7H
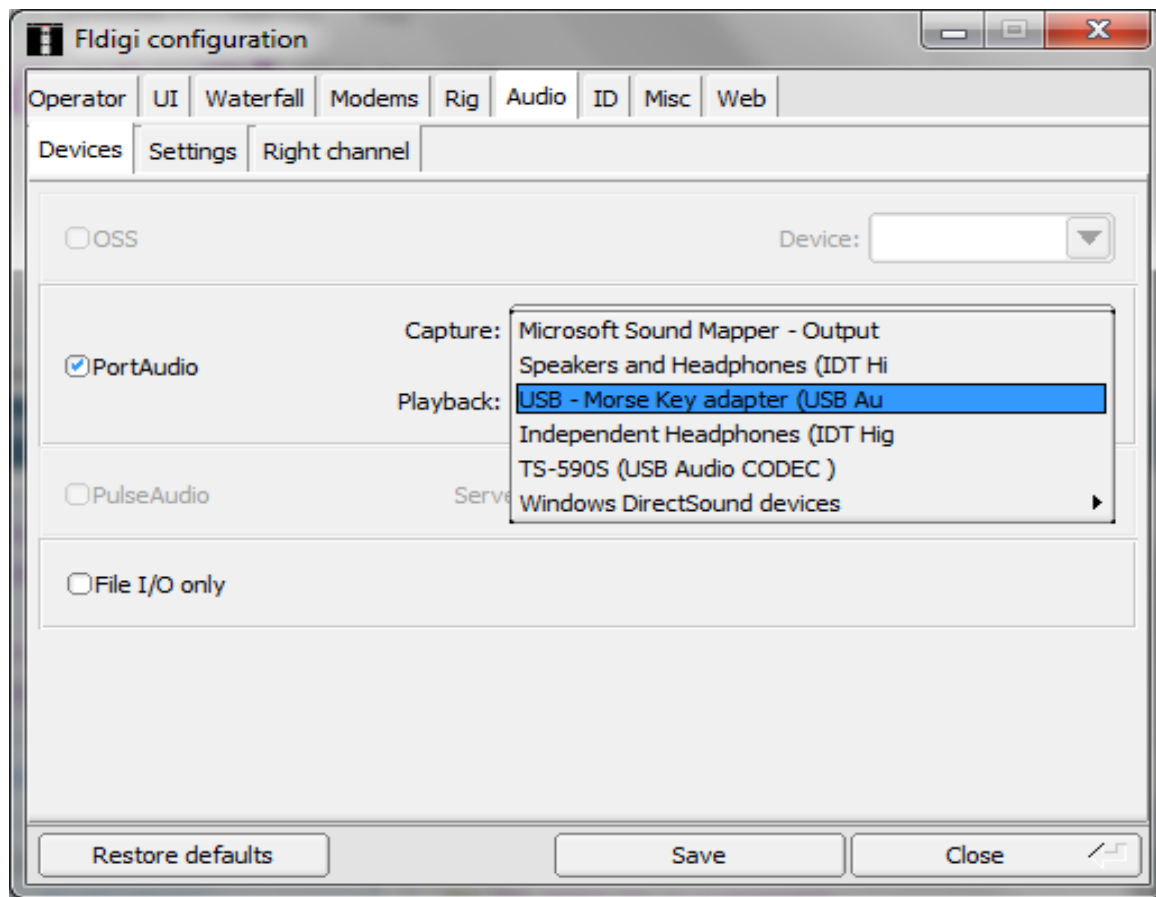
Hint #32: 4 July 2013

Noise Reduction

OK, 590 Mavens, have you tried this ???

I was playing with my various DSP filters, both on board and external to the rig, and suddenly tried something I had never tried before...

> I increased the NR LEVEL from the usual 1 or 2
> all the way up to 10!   Yes, way up to 10, beyond
> the point where it gets pretty dicey and distorted.

On the way up, I heard the usual incremental decrease in hiss and static type noise, and also the usual incremental increase in digital artifact, and as I ran through levels 7 and 8, it got pretty choppy and that lousy gurgling sound got pretty bad, but then ...

> Suddenly as I increased the level to 9 and
> finally to 10, THE &#@#! GURGLING STOPPED
> AND ALL I COULD HEAR WERE VOICES - QUIET,
> AND SUBDUED, BUT NOTHING BUT VOICES!!
> AND THEY WERE CLEAR AND HIGHLY INTELLIGIBLE!!

Yeah... it was amazing. Clear, intelligible and entirely readable.

Note: along with using NR, I really work the RF-GAIN control such that I reduce RF-GAIN until I can hear voices, but no background noise. I learned to do this on TenTec gear, but the controls work the same way on the TS-590S. Some radios are sort of set up thinking you will keep RF-GAIN all the way up... some guys think they get more signal that way – but you also get more noise that way!

So, I ROUTINELY reduce RF-GAIN to where the noise drops out and the signal remains.   You DO have to increase the AF-GAIN at that point, to make up for the lower signal level, but you end up WITH BETTER A SIGNAL-TO-NOISE RATIO. And THAT, friends, is where the receiver really shines!

But tonight, I ran the NR all the way up, and the RF-GAIN down as usual, and WOW... AND I MEAN WOW... ALL I GOT WERE LITTLE VOICES FROM OUTER SPACE AND NO, AND I MEAN NO NO NO NOISE AT ALL.

Now, between NR Level 4 or 5 and Level 8 or so, it gets pretty dicey, but after that, at the maximum, IT JUST GOT QUIET AND THE VOICES WERE CLEAR, BUT QUIET AND SUBDUED A BIT, SO YOU DO HAVE TO INCREASE AF-GAIN.

I had never run it this high before, because I figured it would just get worse the higher it got. Wrong.

You guys gotta try it and tell me what YOU think. Please.

Happy trails, 590 Mavens!!!

James H Richards, K8JHR

Hint #33: 18 July 2013

Measuring the case temperature on the TS-590S

Now that we are in summer, at last, I heard the cooling fans start during a rather long SSB transmission. Ahem, must keep my overs shorter! Curious to know the case temperature at which the fans should operate, I studied all the manuals but couldn't find a figure anywhere. The cooling of the case and PA is shown in Structural Features section 7.1 pages 47-49 of the In-Depth Manual and a graph shows the temperature of the Final FETs vs Time, but there is no reference or figure about the fans start up temperature.

I didn't want to delve inside my TS-590S but found by hand touch that the hottest part of the exterior case was the casting at the back. So, with the aid of a digital thermometer probe fixed by BluTack to the back panel just below the power plug of the transceiver, I discovered that the case temperature was 42°C. After a few minutes on receive the temperature dropped to 40°C and the fans switched off. The ambient temperature in the shack was 28°C – summer here in the UK!

Peter Lonsdale, G3PVX

Hint #34: 25 July 2013

Installing the TCXO in the TS-590S

It is very possible to install the TCXO in the radio in the reverse position. The pins line up, etc. but it won't work if you get it backward. I found out the hard way!!

After much frustration of unsoldering the 6 pins, I was able to reverse my very basic error of ___not___ looking closely at the drawing in the Instruction Manual.
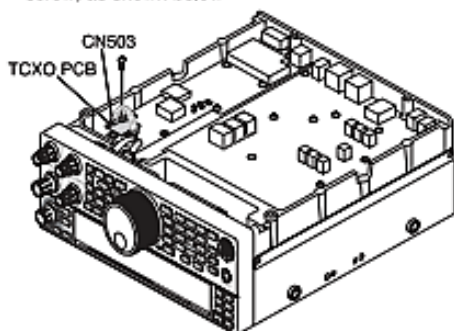
Here is a page (thanks to Dave N9CVA) with an added NOTE about the correct position.

73, Jack KB5TXS

14 INSTALLING OPTIONS

SO-3 TCXO

The SO-3 option improves the transceiver frequency stability to ±0.5 ppm.

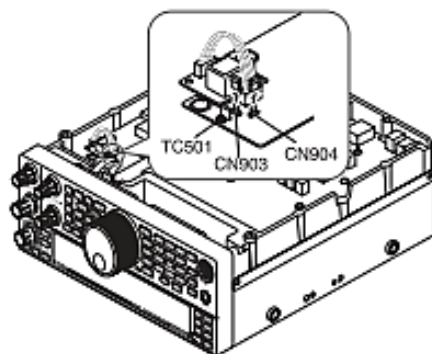1 Remove the CN503 connector and TCXO PCB screw, as shown below.

2 Remove the TCXO PCB.

3 Insert the SO-3 TCXO.

NOTE 1

4 Solder all pins on the reverse side of the PCB.
5 Re-insert the TCXO PCB in the transceiver.
6 Connect the CN503 and tighten the screw.
7 Move the C903 and C904 jumper as shown below.

Note:
♦ To avoid misplacing the jumper, keep it attached to 1 pin of C903 or C904.
♦ When removing the SO-3 TCXO, replace the jumper to its original position.

8 Replace the bottom case (10 screws).

REFERENCE FREQUENCY CALIBRATION

Note: The transceiver is adjusted at the factory prior to shipping. Do not perform this adjustment unless it is necessary.

1 Set the following on the transceiver:
   · Mode: CW
   · AF control: Center
   · Menu No. 34 (CW RX pitch): 800 Hz
   · SHIFT control: 800 Hz
   · RIT function: OFF
   · Break-in function (VOX): OFF

2 Remove the bottom case (10 screws) from the transceiver.

3 Tune in a standard frequency station such as WWV or WWVH at, for example, 10.000.00 MHz or 15.000.00 MHz.
   · Adjust the Tuning control so that the display reads the exact frequency of the station.
   · You should hear a beat tone of approximately 800 Hz.
   · For 800 Hz:
     $f_{at} = (f_{display}/15.600 \times \Delta f_{reference}) + 800$ Hz
     where $\Delta f_{reference}$ is the shift from the 15.6 MHz reference frequency.

4 Close your CW key. You will hear a transmit sidetone of approximately 800 Hz.
   · This sidetone produces a double beat tone when it combines with the received signal.
   · Adjust the AF control to hear the double beat clearly.
   · For 800 Hz:
     $f_{sidetone} = 800$ Hz ±50 ppm (= 800 ±0.04 Hz)
     where $\Delta f_{reference}$ is the shift from the 15.6 MHz reference frequency.

5 TS-590S transceiver without SO-3:
   Adjust the trimmer (TC501) to minimize the frequency difference between the received 800 Hz tone and the 800 Hz sidetone.

   TS-590S transceiver with SO-3:
   Adjust the trimmer inside the SO-3 using the supplied plastic adjustment tool. Minimize the frequency difference between the received 800 Hz tone and the 800 Hz sidetone.

NOTE 1. Be certain to orient the SO-3 as shown in step 3..

Hint #35: 30 July 2013

Taming the Wild COMport in Windows

N2NOV says: Thanks to W1HKJ for pointing out this webpage
(https://fedorahosted.org/fldigi/wiki/Documentation/HOWTO/Windows_USBSerial)

In Windows XP (Windows Vista and 7, too) you get a new and different COM port each time you plug a USB-Serial cable into a new and different USB receptacle on a hub or the computer. Each time you plug the cable into a new USB receptacle, you must go and manually change the port assignment if you want the same device to always appear at the same COM port number.

To change a port number, use Device Manager and expand the Ports (COM & LPT) section (Start > Run > devmgmt.msc):

Double-click on the device (or right-click and select Properties)

Select the Port Settings tab and then click the Advanced button

Select a port number which does not correspond to an existing hardware (built-in) port in the COM Port Number drop-down list and click OK.

Ignore "(in use)" in the drop-down list if you have previously assigned the device to the same port number.

When you later re-connect the same USB<>Serial adapter, to the same USB port on the PC, it will re-appear again at the COM port you just assigned it to; that is, it's a "Sticky" setting. But, if you have a different adapter (even the same make and model) or connect the same one to a different USB port, you'll have to do all this again.

You can play tricks with this, to make one adapter show up always as the same COM port, or different COM ports, when plugged into different USB ports on the PC.

However, note that if you insert a hub between the PC and adapter, it gets very messy very fast, with way too many combinations for sanity.

Hint #36: 28 August 2013

Microphone Habits

Many hams have poor microphone habits, and this may account for many claims of low "talk power" - a locution I despise because it sounds so... well... much like what one might say on 11 meters.

But seriously folks, many hams do not get the most from their rig because they do not set up or use the microphone correctly.

WHAT GOES UP...

Microphone technique is a HUGE factor in audio output.   "GIGO" applies full blast in microphone applications. A communications microphone should be close talking, and should receive a uniform input.

I was involved in microphone and related hardware testing and review for the speech recognition software business. Exactly the same considerations applied there as in ham radio. Each uses a fairly narrow audio frequency bandwidth and the microphone techniques are the same – especially when you consider signal-to-noise is the only real test of success.

Almost ANY decent microphone costing more than $15 should work fine for both applications - provided one utilizes good technique.

I usually recommend one play with the microphone on his sound card using a simple recording application to listen to how he sounds using the microphone. It will work the same with the radio.

LOCATION... LOCATION... LOCATION...

The placement of the microphone with respect to the mouth can make a significant difference in the sound of a mike and radio combination. Move the mike 1" closer or 1" further away from the mouth and it will sound different. This is specially true of dynamic mikes.

Sitting way back from the microphone means it is set to pick up your speech much closer to the volume of ambient environmental noise. Sitting back from the large diaphragm studio condenser microphones used by some operators can be much worse than using a cheap $10 computer headset with a close talking mic element. That type of studio microphone is designed to be very sensitive, and can pick up the sound

of a gnat sneezing on the far studio wall. Our shacks often have hard walls, like a reverberation chamber, which makes the operator sound like he is transmitting from a shower stall.

This is not to say a studio style condenser microphone cannot produce a nice signal... but it does mean it must be used properly, and carefully, or it will pick up a lot of ambient noise along with the operator's speech.

Again, testing it on your computer sound card can really help you find the sweet spot for each microphone. Getting a good sound, without picking up ambient noise is a huge factor to consider.

Again, using the microphone up close can improve the signal-to-noise ratio. You do not want to be too close or too loud, and over drive it, but you want a nice strong, full, clear, and CONSISTENT input.

I am convinced many claims of low or weak SSB power output are the result of bad microphone habits, especially inconsistent, and weak, microphone input volume.

Many operators adjust their microphone input volume using good habits, sitting up close, and speaking in a consistent, moderate volume. But, later, while operating, they tend to sit back, or turn their heads, look around, and speak softly with different speech volume levels – all of which alters the input volume to the radio. All of these factors will decrease the effective input speech energy and it will show up as low SSB power output.   Remember... GIGO!

PROXIMITY EFFECT

If you speak really close to the microphone, it pick up more BASS; and if you speak farther away, it produces less bass and gets THIN. Each microphone has more or less of this extra rich BASS effect, depending on how far away you speak from the mic capsule. If you speak too close and speak too loudly, it will cause distortion. If you speak too far away and too softly, then it will be weak and tend to include ambient noise from the environment.

Test your microphone by making recordings on your computer, and play them back with the headphones you like on your radio. This will help you find the sweet spot, the correct distance from your mouth to the microphone cartridge.

SIGNAL - TO - NOISE IS EVERYTHING

Many microphones claim to be "noise canceling" but that is an overused, abused term. The real deal is signal-to-noise. Again, playing with your sound card can help you figure out how the mic works in YOUR shack – and room acoustics can matter A LOT.

A few microphones have "active" noise cancellation, typically employing two microphone capsules which are situated 180 degrees out of phase with each other. Ambient noise from the room hits both capsules with more or less with equal force, and are canceled because the resulting electrical signals are out of phase with each other. Your mouth faces one of the capsules, and is, therefore, closer to it. Therefore, the speech energy hits one of the capsules with substantially greater force than the other, and the signal is not canceled by an equal and opposite out-of-phase signal from the other capsule. The room noise is attenuated almost completely, while your speech is not. These are rarely found in other than specially designed headsets, such as in air force jets and occasionally in specially designed headsets used for speech recognition, and also occasionally in automobile SR applications.

Otherwise, most noise cancellation occurs from the employment of "close talking" microphones. By speaking up close, your speech energy is way stronger compared to the sound energy from ambient environmental noise. If you set your rig for the correct volume of speech energy, room sound energy seems to fade away and may not exceed the threshold for noise.

INCONSISTENCY IS A HOBGOBLIN

Using a swing or boom arm can help place the microphone where you can easily reach it – BUT THE MOST IMPORTANT RULE IS TO BE CONSISTENT in placement so you get predictable, uniform sound energy and tonality.

Finding the sweet spot/distance is one thing – maintaining it during the entire QSO is another. Turning away or moving about in your chair, is like turning the mic input volume up and down all the time. I prefer a headset microphone because the mic element remains in exactly the same position relative to the mouth at all times. One can get inconsistent results when using a desk stand or microphone boom or swing arm if he turns his head or moves about as he talks. This is easy to do - and if you test the microphone with your sound card, you can quickly and easily determine how this can have a severely deleterious affect on speech intelligibility.

UNWANTED MAN-MADE NOISE

Sloppy microphone use causes more than variation in speech input energy. Breathing into the microphone is a self-inflicted wound which can be avoided with minimal care. Many experienced hams are guilty of this sin. Nothing bothers me more in ham radio than an experienced ham breathing into his microphone, especially because it can be so easily avoided. Breathing into the microphone, or over driving it to distortion is tantamount to causing your own QRM!

"Plosives" are another self-inflicted wound, easily avoided with minimal care. Speaking directly into the microphone at close range often causes excessive high sound pressure on the microphone capsule. You have witnessed this many times at public speaking events, where the speaker causes loud thumping or chuffing sounds - like "popping his Ps."

One should speak just a few degrees OFF AXIS and not directly down the barrel of the microphone – and yet not speak too far off axis – a 30-45 degree angle would generally be real good. Some operators employ a pop or wind filter – such as a foam windscreen, although if you are not speaking directly into the mic cartridge or capsule, you should not need a wind screen – better to do it properly and avoid the problem, than to rely upon a foam cover to fix it.

Avoid popping your "p"-s and whistling your "s"-es. Avoiding popping and punching consonants, and minimizing "sibilance" (which is unusually squeaky and hiss-y vocal sound) can greatly improve speech intelligibility. Speaking just a bit off-axis avoids undesirable "plosives" and breathing noise which destroys readability and reduces intelligibility.

Another self inflicted wound, and self inflicted QRM, is over processed audio input. I am not against using some audio processing accessories, BUT ONLY IN MODERATION. OVER-processing the sound with graphic equalizers, compressors, noise gates, audio filters, DSPs, preamps, and other studio equipment, can actually decrease resulting intelligibility, if not used properly and with moderation. After all, hams are "supposed" to be using "communications grade" audio, using a mere 2800 Hz audio and RF bandwidth.

Recording studio tools and accessories CAN SOMETIMES be helpful, IF used in moderation – but my take is that you cannot do better than FLAT audio input and output. Audiophiles spend thousands of dollars on simple amplifiers and other sound equipment that produce a FLAT frequency spectrum. Again... GIGO. If we want to sound natural, and realistic, then set the EQ to FLAT – which means no part of the frequency spectrum is increased or decreased over what naturally occurs.   What goes in... comes out – uncolored, unaltered. By changing the sound with EQ and other accessories, it will, by definition, no longer be natural. If you want to sound like yourself, then do you best to avoid coloring or altering the tonality and volume of your speech sound.

A ham-related pet peeve is the obsession some operators have over how good they sound on the air – as if how you sound is more important than what you have to say. Communicating should involve more than asking "how does that sound...?"

One experienced ham who is also an expert on building recording and broadcast studios, said this:

I've seen operators sitting back 12" to 18" from a mike. They turn up the gain to get the desired output and along comes up the background noise. If I should be asked for an audio report from a station that uses this technique, be assured that the report is not very favorable. On the other hand, should one have a great acoustic environment where the decay of the room is controlled along with the low frequency response of the room controlled along with the noise in the room, then this approach may work.

However, even broadcasters working in a good acoustic environment don't do this, they typically work 3" to 4" from the mike, some closer depending on the mike and proximity effect desired.

EQUIPMENT SUPPORT

It is usually best to use a firm, solid support and sometimes a good shock-mount can reduce unwanted vibration from traveling down the microphone handle. Besides, a swing arm and shock mount are really cool looking, highly visible accessories in the well-equipped shack.

MICROPHONES AND THE MYTH OF LOW TALK POWER

In my view, many hams are concerned they are not getting full power out on SSB transmissions. This may be caused by several factors, including inconsistent and low speech input volume, as described above.

But this is ALSO caused by the fact it is difficult to measure PEP on SSB transmissions. A CW tone is pretty much a simple sine wave, simple to produce and simple to measure, mostly because the sound energy is all focused on a single frequency. All the energy ends up in a vary narrow frequency range, and is sort of condensed, making it easy to measure.

In contrast, speech energy is complicated and varied, and the speech energy is spread over a broad frequency spectrum, hardly focused and not condensed on a single tone. It is diffused... analogous to using a diffuser on a light source. Without it, the light can be focused, and it seems to be brighter and go farther when focused. But when diffused, it covers a wide area, but is less bright on any one spot.

Similarly, the SSB signal is a speech – and the energy is diffused, making it less strong on any one frequency, but covering a broad frequency spectrum. The energy is still there, but it does not push the signal meter as high.

So, many hams think their rig is producing low output. NOT SO, DICK TRACY! It is just far more diffused and spread out over many frequencies, and the meter has a more difficult time showing how the power is distributed. But it does not mean we are not getting full power out, compared to CW.

Comparing different radios presents problems of inconsistency and different settings on one radio can produce better meter readings than another – regardless of whether or not that increases resulting speech intelligibility. Using the speech processor should alter measured speech energy. Different transmit equalizer settings will produce differences in measured speech energy. Activating the internal tuner may affect power output meter readings. Differences in microphone input volume settings can alter output meter readings. Using different microphones will produce different output meter readings because not all microphones produce the same frequency response curve and do not all produce the same open signal voltage (that is, output signal strength).

Different radios have different inherent frequency response curves – not all op amps are created equal – and this can result in different output meter readings.

In other words, your rig may be putting out 100 watts... but not the exact same 100 watts as may be produced by another rig... which can easily explain differences in measured power output when comparing the radios on the same meter.

GOOD, CONSISTENT, MICROPHONE HABITS CAN MINIMIZE VARIATIONS IN SPEECH INPUT ENERGY AND ASSURE YOU ARE GETTING THE STRONGEST, MOST CONSISTENT, AND INTELLIGIBLE SIGNAL FROM YOUR RADIO.

Proper adjustment of the radio parameters and good mike technique will make for a good sounding station. Optimum radio settings, along with strong and consistent microphone input, will assure you are getting the best, cleanest, and strongest signal output.

JUST MY TAKE...

James Richards, K8JHR

[22 August 2014: An update from James]

I was reading the user manual for a Brand X rig the other day, and it made an interesting point about SSB "talk power" which I had not previously considered: It said transmit bandwidth affects resulting talk power.

And then I had one of those sudden, "Ah ha! - I get it" moments, and realized maybe, it just could be, maybe, almost, kinda, sorta, possible at least some complaints of low talk power could caused by using rather wide transmit bandwidth, in effect, spreading the signal energy wider than others guys.

This seems logical. We rarely hear complaints about low CW power, and I suspect that is because all the energy is focused on a single frequency tone. Nope, we encounter the "problem" (if there is one) on SSB where the transmit energy is spread out, perhaps as wide as 3000 Hz RF and AF bandwidth, depending on how each rig is set up. Now, we all know it is more difficult to measure peak power on sideband than it is on CW... so... yeah, it suddenly dawned on me, we could narrow the transmit bandwidth, and focus the signal, to get more effective power out. Eureka!   Shazam!

The Brand X radio user guide recommends using a 2400 Hz RF bandwidth, and this makes sense, as that is "good enough" to get relatively decent audio, without scrunching or skimping the sound, but not really all "that wide," after all – that is, good enough for good communications audio, but not exactly recording studio grade audio.

So, maybe guys can achieve greater SSB power out by just narrowing down the transmit bandwidth, focusing the signal energy into a more knifelike edge. I won't be as rich, natural and pleasant as, say, using a 3000 Hz transmit bandwidth, but it won't be all skinny and scrunched like the 1800 Hz some contestants use, either.

I routinely use 2400 Hz RF transmit bandwidth as NCS of the 590 Owner's Net and no one ever complains of my audio quality. My jokes may not go over... but at least they tell me I sound good telling them!

And so I tried to test this with my feeble arsenal of meters and test gear, and it seems to really work – (at least on my gear, in my station) – transmit output was marginally, but noticeably, stronger as I narrowed transmit bandwidth from a wide 3000 Hz to a very narrow 2000 Hz bandwidth, just as a quickie experiment.

So, just a passing thought - just MY take... Your mileage may differ.

// K8JHR //

Hint #37: 14 November 2013

A Simulated Audio Peak Filter

You can put together a simulated Audio Peak FIlter using the ARCP-590 software. Set up a Receive Equalizer under the "U" designation (A User-defined equalizer won't be erased when you exit ARCP-590.

Suppress all audio bands except (for example) 600 Hz. Raise that band to the top of the scale. If your hearing does better with something in between bands, say 750 Hz, peak 600 and 900 Hz and suppress the remaining bands. The improvement is almost as good as going to 500 Hz filter width in CW.

Carl K0TNT

Graham, VK6RO, responded:

Try this on the TS-590S CW mode:

1. Press NR and select level 2.

2. Narrow bandwidth to 300 Hz/400 Hz etc.

3. Press RIT and slowly tune the CW signal to peak the audio to whatever you like.

Magic!

Hint #38: 8 March 2014

Using the Rolls REQ131 Mono 31-Band Graphic Equalizer for additional audio control

In Hint #28 James Richards wrote of implementing the noise reduction settings NR1 at 10 and NR2 at 20. He is correct in saying this does indeed place the DSP channels at maximum.

In this position the DSP leaves little room for intelligence error on the operator's side of the receiver. However, by adding a Rolls REQ131 31-band graphic equalizer behind the AF chain (output) of the TS-590S and driving a separate AF amplifier, most of the lost intelligence can be enhanced.

Opening up the TS-590S to 100LOW and 2800HIGH (SHIFT) the receiver hears great, but the icing on the cake is the Rolls. This 31-band equalizer offers 19 bands inside 63Hz to 3100Hz that can be adjusted to fit the user's ear. The REQ131 has a roll-off filter with adjustable controls for HPF and LPF. You can roll-off those "boomers" that insist on running 5KHz wide.

Not all ears are alike. I happen to have almost no hearing in one and 90% in the other, so the implementation of a good EQ makes more sense. BTW: The internal RX EQ is set FLAT.

And one more thing. If someone is tuning up 1000 Hz away, you hear the beat tone. Well, reach over and pull down the 1K slider and the tune-up QRM is gone. Anyone with a computer in line can adjust the AF chain (after the radio) using Christian Zeitnitz, Soundcard Scope software (Version 1.4.1). This scope application works great and offers filters and recording capabilities to any receiver.

Terry Churchfield, W3GAS

Hint #39: 8 August 2014

Working SPLIT and making changes to the TX frequency

As a new owner of the TS-590S I have been playing a lot. One issue that really was difficult for me: working split and making changes to my transmit frequency. With the position of the TF-SET it required two hands. I simply assigned PF B to be the TF-SET and that is great. I can now check my transmit frequency and make a slight change with my only my left hand!!

Neat.

Gary Stone, N5PHT

Hint #40: 13 August 2014

SDR Panoramic Display on TS-590S Radios

Here is a cheaper alternative to adding a panoramic display to a TS-590S radio.

If you want to see the HF SDR in action here's a link that will show 2 videos I did of the HF SDRS I make – one is HF Upconverting and the other is a Direct Sampling model. I actually prefer the HF Upconverting type of receiver because the performance is better and works with a variety of applications including HDSDR. The Direct Sampling receiver can only work in SDR# (SDR Sharp).

Here is the link to those videos and my website:
http://www.kn0ck.com/HF_SDR/

When you open the website page the videos will automatically run and both of them will be sending audio – it's best to turn the volume control of the lower video (Direct Sampling) to mute that one and listen to the HF Upconverting video. Conversely, you can also mute the HF Upconverting video and listen to the Direct Sampling video when you've watched the HF Upconverting video.

Marty Wittrock, KN0CK

Hint #41: 27 August 2014

Fix for USB Rig Control for Fldigi

A few weeks ago I was trying to help a new TS-590S user with fldigi rig control settings. His RigCAT configuration and TS-590S settings were correct but each time he started fldigi he had no rig control. We messed around with all sorts of things and finally got it working.

This morning I worked the W1AW/1 (ME) on 18 MHz but when checked the log it showed the QSO logged 21 MHz. I did a double-check of fldigi and it was stuck on 21 MHz. I knew something was wrong when the fldigi rig frequency was no longer labeled as RigCAT - TS-590S. I did the normal RigCAT Initialize, save config, restarted fldigi and still had no rig control. I then remembered reading something posted on the TS-590S reflector about resetting the USB port to the sound card chipset in the TS-590S.

Cycling the TS-590S ON and OFF does not reset the chipset. To reset the chipset you have to first turn OFF the TS-590, then turn OFF the Power Supply, and wait a few seconds before turning on the Power Supply. I may have over-killed but I cycled the Power Supply ON and OFF first, then turned the TS-590S OFF and then cycled the Power Supply with delay between the OFF and ON. Bingo on the first fldigi restart…. I had rig control again.

Keep this tip in mind the next time you lose fldigi Rig Control. The USB port to the sound card chipset on the TS-590S seemed to be the problem child. A simple reset fixed it.

73 Dick AA5VU

Hint #42: 31 August 2014

Talkpower vs Bandwidth

The advice on talkpower vs bandwidth is missing one component. It applies to all rigs, not just the ts590.

If you overdrive the transmitter, your signal gets wider & your 100w is spread across all the nasties you produce, as well as the wanted output, giving you slightly less power where you want it.

If you fiddle with rig settings and appear to get an extra 20w output on your power meter, ask yourself where that extra 20w is located.

Unless you have the test equipment to check the spectral output, and the knowledge to use it, your extra 20w (plus maybe some of your existing watts) may not be on the frequency you want it to be.

The old adage of "if you cant measure it, don't fiddle with it" is as true today as it ever was.

David G3ZPF

Hint #43: 24 November 2014

TS-590S Intermittent Receive

Since the beginning, my brand new TS-590S had an intermittent problem. The reception was fading and sometimes disappeared completely. Sometimes, the TX went away and at the same time, the HI/SHIFT setting didn't work above 3000 Hz. I noticed that a slight shock on the case brought the rig back to life, but not always. Being new and under warranty, I sent the rig back for repair.

Back from repair, the form joined to the rig said "Control Unit interruption" ... I could use the transceiver normally for about a week before the receiver showed the same problem!

The receiver was still fading and a little slap on the case fixed this. I more precisely located the problem on the right bottom part of the case. Pressing the case, even slightly, induced all degrees of deafness! The transmitter was perfectly normal during all these phases.

I finally opened the TS-590S by removing the lower side cover (see picture below) and pulled on every cable I found. The slightest move on the green marked coaxial cable and more precisely on the connector CN601 on the Control Unit board induced a receiver problem. Inspecting the tip of the connector with a magnifying glass, I saw that it was not really crimped...

I soldered the tip and everything came back to life... I took the time to check all other TMP connectors, and none of them was really "normal". I ended in soldering all connectors and I hope this will solve any future problem.

Now, everything is normal and I have come to the conclusion that I had two different problems from the beginning...

I hope this helps.

Update: meanwhile, I read that another ZS1 ham had the same problem. So I suspect a bad batch of cables to be the source of problems.

Patrick Egloff, TK5EP
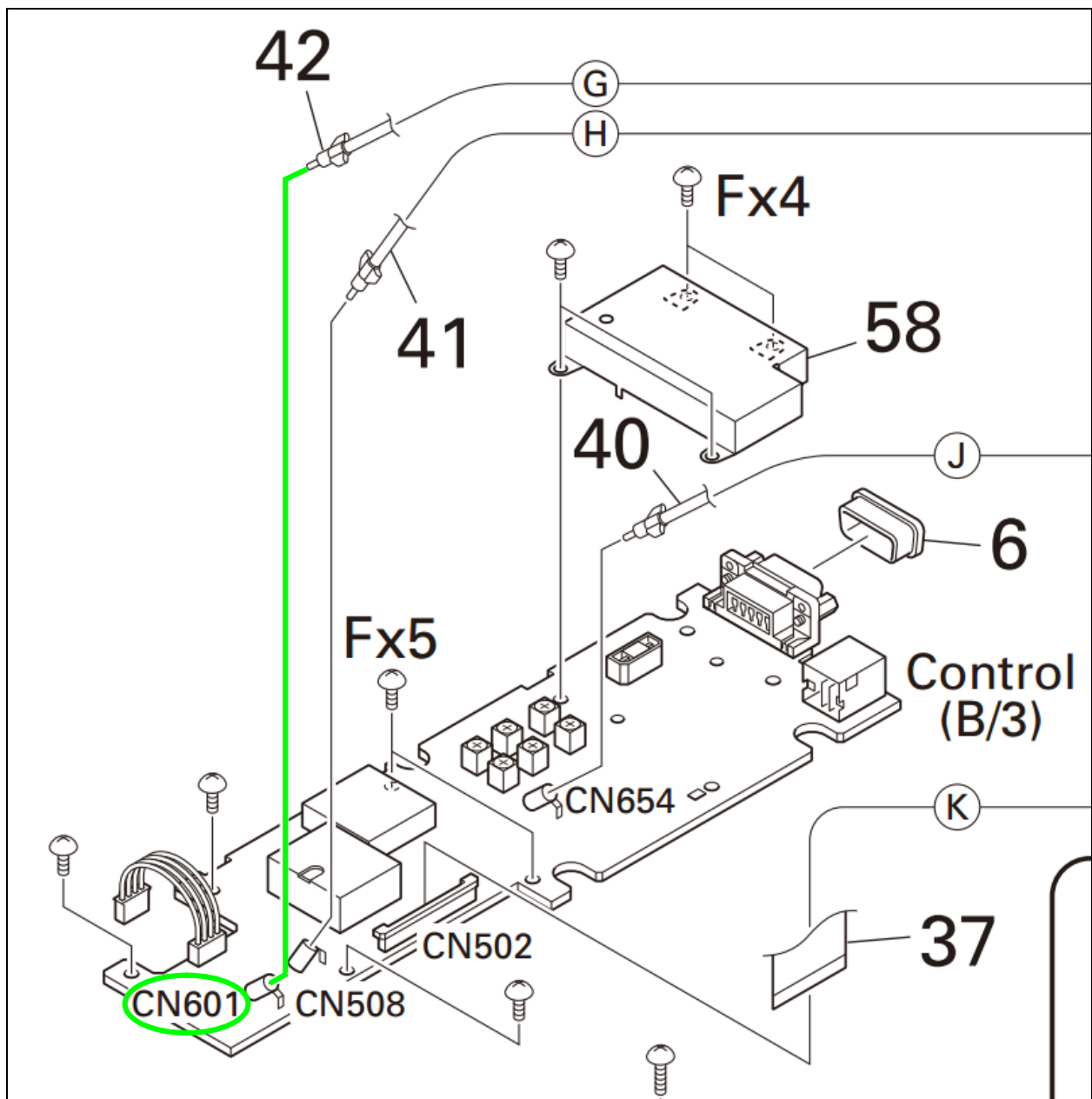
(Source: TS-590S Service Manual, page 64)