

**NOTE:** This project requires a basic understanding of file structure and folder heirarchy. If you are uncomfortable with the thought of navigating through folders and subfolders, then this is not for you. I do not work for Flex (but it sounds like it would be fun) and do not provide technical support, so if you decide to try this you are on your own! If you know how to navigate through folders and files with Windows explorer, and can create a folder and a subfolder, and know how to unzip files, then I have no doubt that you will enjoy playing around with this. Keep in mind that this project adds folders and files to the Skins directory, but it does NOT alter any files that are installed by PowerSDR. If you attempt to install a custom skin, and it does not show up in the list of available skins, or the skin displays incorrectly, the problem is almost always a result of incorrect placement of your custom folder and its console subfolder. Look again at the first two pictures shown below and pay close attention to the folder heirarchy.

With all that being said, if you somehow manage to mess things up, I take no responsibility for any issues that you cause for yourself!

If you are brave enough to read on, you'll see how easy this actually is. The reality is that PowerSDR is so forgiving that it will start up and display an interface even if your selected skin has an empty Console folder! It will be ugly, but just like those "People of Walmart" photos that get passed around, PowerSDR doesn't really care how you dress it up. What the heck, it's ham radio! You're supposed to experiment and have fun! It's my hope that someone with more artistic skill and creativity than I have will take what is here and make some beautiful skins to share with the entire Flex community. If you come up with something great, I'd love to see it. If you have some ideas to share, feel free to contact me. For a good example of what can be done with the templates from this site and your own creative ideas, take a look at what Hugo - K2DER has put together at:

<http://www.k2der.com/>

I have received many questions about the compatibility of these skins and templates with various versions of PowerSDR. The skin packs and templates have been updated for use with all 2.x.x versions including the new version 2.2.2 beta with the new TNF controls.

**PDF NOTE:** Unfortunately, when a web document is converted to PDF format, the placement of graphics and links is rarely optimal. You may find that some pictures and links are awkwardly placed, but you should still be able to get the idea of how things work. Also keep in mind that the most up-to-date information and files can be found at the main tutorial website located at the link below:

<http://members.cox.net/w1aex.psd/psdr.html>

Good luck!

Rob W1AEX  
w1aex@cox.net

# Creating Your Own PowerSDR Skins

The ability to load a variety of colorful skins in the 2.X versions of PowerSDR was a big step forward in the "looks" department for the Flex GUI. From the architecture of the interface software, it's pretty obvious that

the Flex Corporation has made a very serious effort to lead the pack in the fun department for its owners. The short story is that with simple graphics/photo editing software you can have a field day creating your own look for PowerSDR. If you have a digital camera, you can really get carried away and create some very unique skins for your Flex Radio. Over the past year I have collected front panel shots of radios that I own and have begged my friends for pictures of their rigs to grab colors and metal textures that I could use in various consoles. I now have a much higher respect for photographers and their equipment after attempting to get shots that were true to the actual color and textures of the equipment that I was photographing. Shadows and glare were a real issue at times, but some of them came out pretty nice, and others look like mud according to my wife. Ah well, it's only art!

Before you begin, it's very important to understand that PowerSDR contains some components which are recognized as open source, and other components such as the provided skins, which are expressly listed as copyright protected material at the bottom of the Flex EULA (Reference **SECTION B: FLEXRADIO SYSTEMS TRADEMARK AND COPYRIGHT NOTICES**) located at:

<http://kc.flexradio.com/KnowledgebaseArticle50497.aspx>

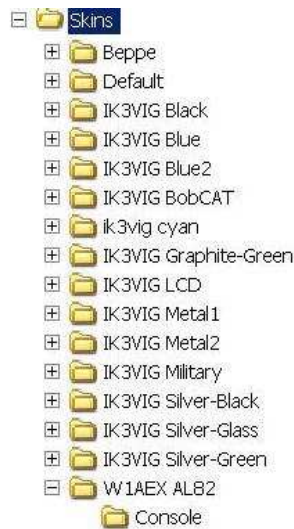
Therefore, it would be very unwise to take components from the copyright protected graphics files in the skins provided by Flex, modify them, call them your own, and then distribute them. To avoid this issue, I used Adobe Photoshop to create all the required console graphics files from scratch. This includes the console panel files, the ON and OFF states of each button, and the background slides for the adjustable components on the front panel of the user interface. This was a fairly tedious task, as there are 378 individual graphic files involved, but what the heck, you can have my custom file templates for nothing! To be honest, there are not that many different shapes required, and PowerSDR is very forgiving and will compress or stretch whatever graphic you provide to fit the space assigned to a particular file. Rest assured that all the buttons, sliders, and console pieces in the template packs will work fine! So, to be perfectly clear, you are free to use or modify anything I have created here and I don't care what you do with it.

If you are working from a Windows user account with a privilege level less than "administrator" you are likely to find that you do not have the necessary access to create folders and files in the "Documents and Settings" area of the file system. It will most likely be necessary to work from an account with administrator status. Also, before you begin following the steps below, make sure that you exit from PowerSDR. When PowerSDR is running, it locks the skin files it is currently displaying and it also will not recognize any new skins folders that you install if they were not present when it was started up. So, it is best practice to exit PowerSDR before you make the changes suggested below.

To get started, you need to know where PowerSDR keeps the files for its skins so that you can create your own custom folder (for each new skin) with a name of your choice, and a "Console" subfolder to place all the files in. The picture below should help you locate the "Skins" folder where all the graphics are stored in a Windows XP installation. Keep in mind that your PowerSDR installation will reside in a "User" folder underneath "Documents and Settings" that will match the Windows login name you utilize when running PowerSDR. So, if you log into Windows as "IronMan" then PowerSDR will reside in a user folder named IronMan. It is my understanding that the file system in Windows Vista is similar to Windows XP, however, I have been informed by W6SDM (Steve) that Windows 7 handles things a bit differently. He has kindly passed along this note for Windows 7 users:

"If you're using Windows 7, the best way to locate your PowerSDR folder is to type "%APPDATA%", without the quotes, into the Start Button search box. This will bring up a list of files that you probably didn't





To install this skin, download the W1AEX\_al82.zip file (.75 mb in size) at:

[http://members.cox.net/w1aex.flex/W1AEX\\_al82.zip](http://members.cox.net/w1aex.flex/W1AEX_al82.zip)

Unzip it into the Console folder you made. The W1AEX\_al82.zip file contains a complete custom skin, which includes a set of 378 PNG graphics files designated as console panels, buttons, and sliders. After installing the files for this custom skin, when you start up PowerSDR, the name you assigned to your custom folder should appear in the Skins list, and when you select it, PowerSDR will switch to the skin shown below:



If you have no interest in creating your own skins, and simply want to install a few more custom skins, you can scroll down to the bottom of the page and browse the skin packs that are available for download there.

Each skin pack contains custom console panels, custom buttons, and custom sliders. All of the packs will work with any of the 2.x versions of PowerSDR, including beta version 2.2.2 which has some extra components for the new "TNF" tunable notch filter upgrade. I hope they enhance your fun while operating your Flex! If you would like to make your own custom skins, then read on to see how simple it is!

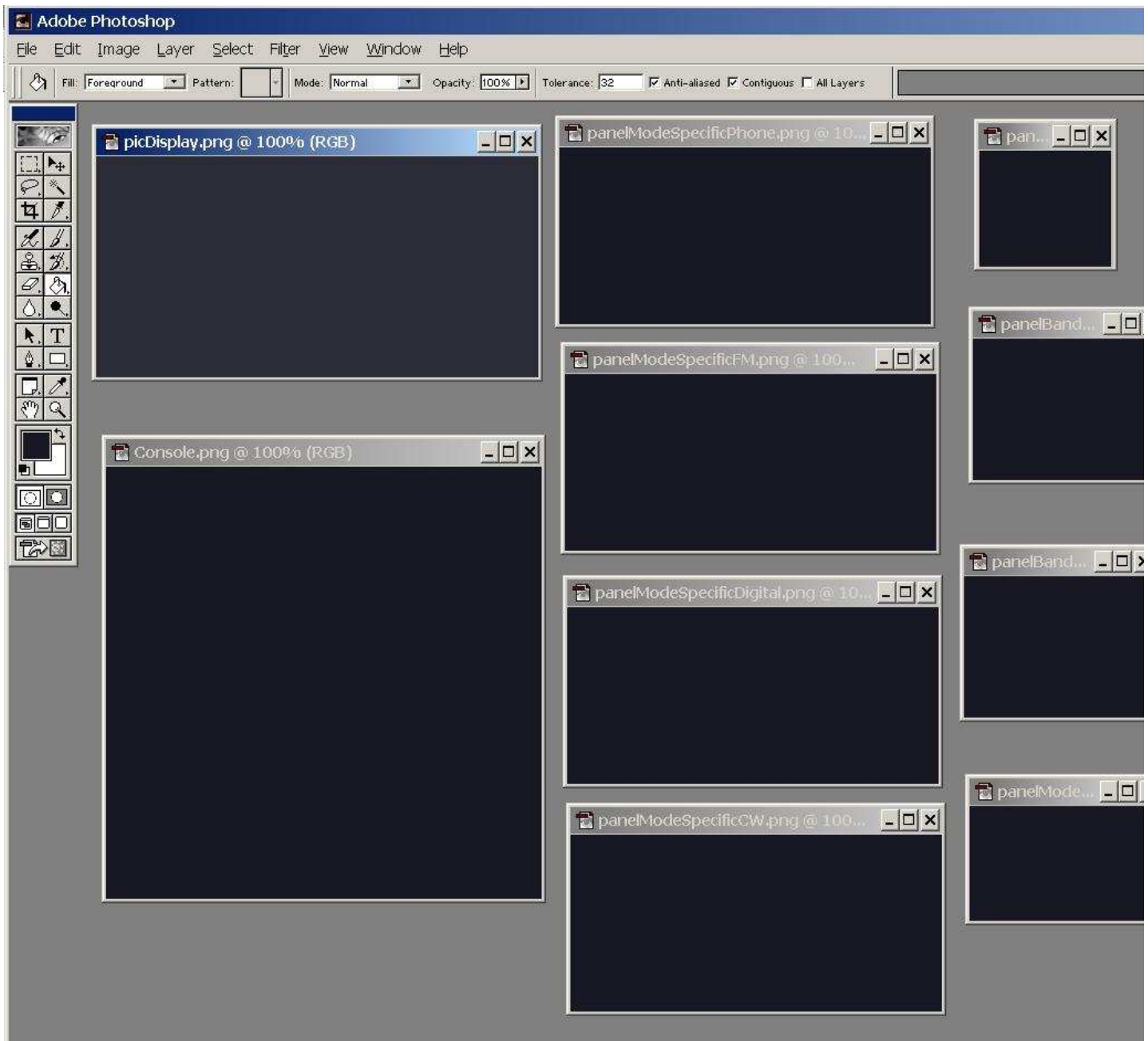
## **Building Your Own PowerSDR Skin Components from Scratch**

### **1. Making the Console Panels**

To create your own graphics for PowerSDR, you will need software that is capable of manipulating PNG files. I use an old version of Adobe Photoshop 6.0 but there are many other programs that can do the basic tasks that are necessary for this project. If you have a digital camera, it's very likely that it came with graphics editing software that might have the ability to work with the PNG format. There are 3 different types of components found within the Console folder of each PowerSDR skin. Those components include 10 Console "panels" that form the background of the GUI, hundreds of "buttons" that toggle functions ON and OFF or adjust levels of various parameters, and 15 "slider" backgrounds for those level adjustment buttons. The easiest of the three components to work with is the collection of 10 Console panels that give PowerSDR its most visible characteristics. The panels actually have the greatest impact on the appearance of a skin, so it makes sense to start with them. To edit these files, download the console templates at:

[http://members.cox.net/w1aex.flex/W1AEX\\_console\\_templates.zip](http://members.cox.net/w1aex.flex/W1AEX_console_templates.zip)

Then unzip it, and open up all 10 of the template files in your graphics program. The console templates pack contains console panels that are used in the W1AEX AL82 skin pack. The picture below shows the color, relative size, and the shape of each panel.

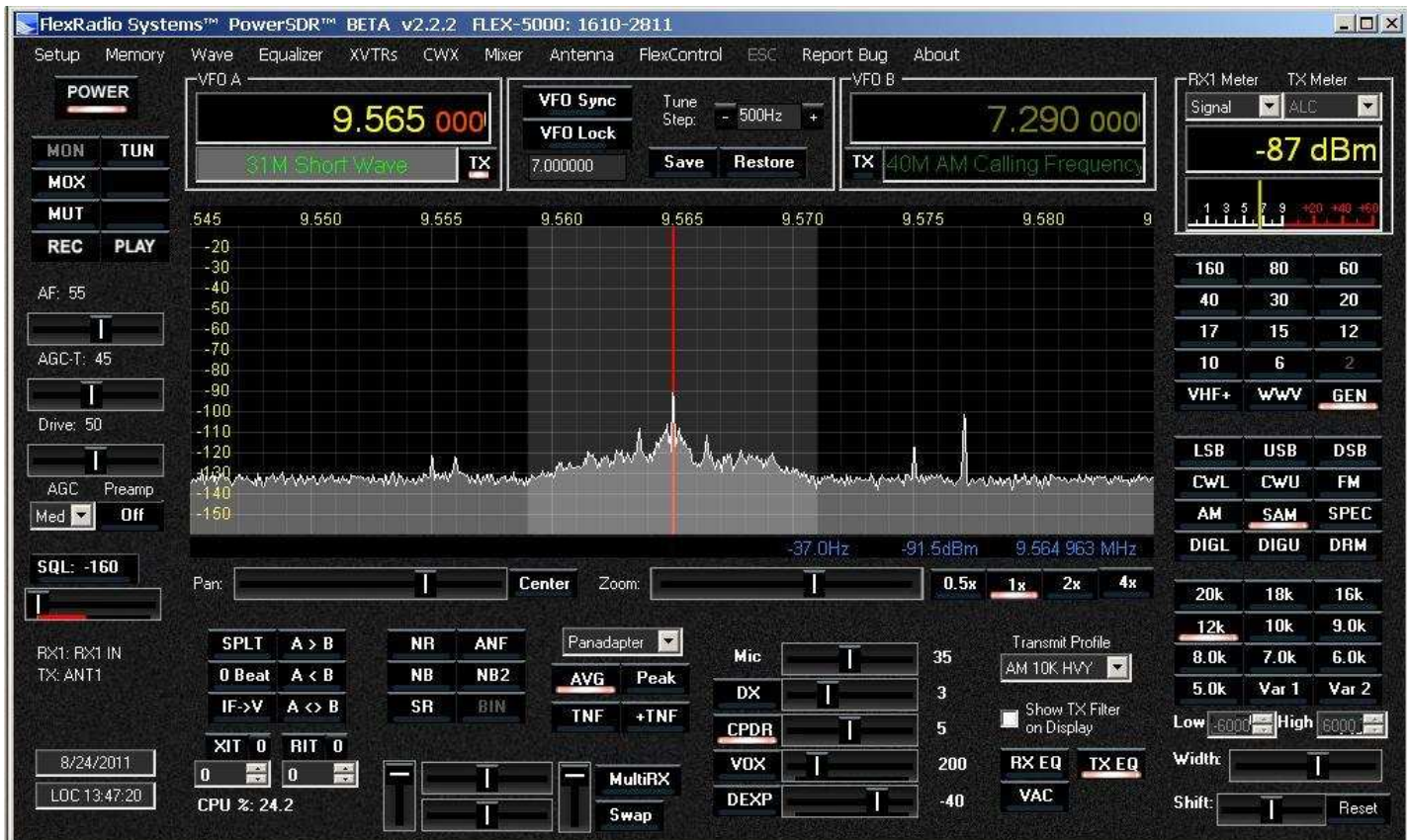


The easiest way to create a new look is to import colors of your choosing into the panels and then copy them into one of the skins you downloaded from here. When you restart PowerSDR and select that skin, you'll end up with something that looks entirely different. If you want to get really creative, as an alternative, you can use your digital camera to grab a color or a texture that you would like, and simply cut and paste those into the panels. The screenshot below shows a black wrinkle version of PowerSDR that was made by taking a photo of the rack that houses one of my vintage transmitters and then pasting the black wrinkle texture into the ten panels that form the console. I did apply some Photoshop filters on these textures to even them out, but it actually looked pretty good with the raw photo textures. When loaded into PowerSDR, the "panelModeSpecific" parts of the console do not expand as much as the main Console.png or the picDisplay.png file. This will cause textured graphics to not appear uniform when they are displayed in PowerSDR, so to compensate, I used a Console.png file that was 1024x600 so that PowerSDR would not need to expand it to fill the minimum screen size and simply made the picDisplay.png file that forms the background of the Panadapter display dark black. If you want to see what a texture skin like this one looks like at your own station, create a new folder named Wrinkle inside the PowerSDR Skins folder, create a

Console sub folder, then download the W1AEX\_black\_wrinkle.zip file (1.3 mb in size) located at:

[http://members.cox.net/w1aex.flex/W1AEX\\_black\\_wrinkle.zip](http://members.cox.net/w1aex.flex/W1AEX_black_wrinkle.zip)

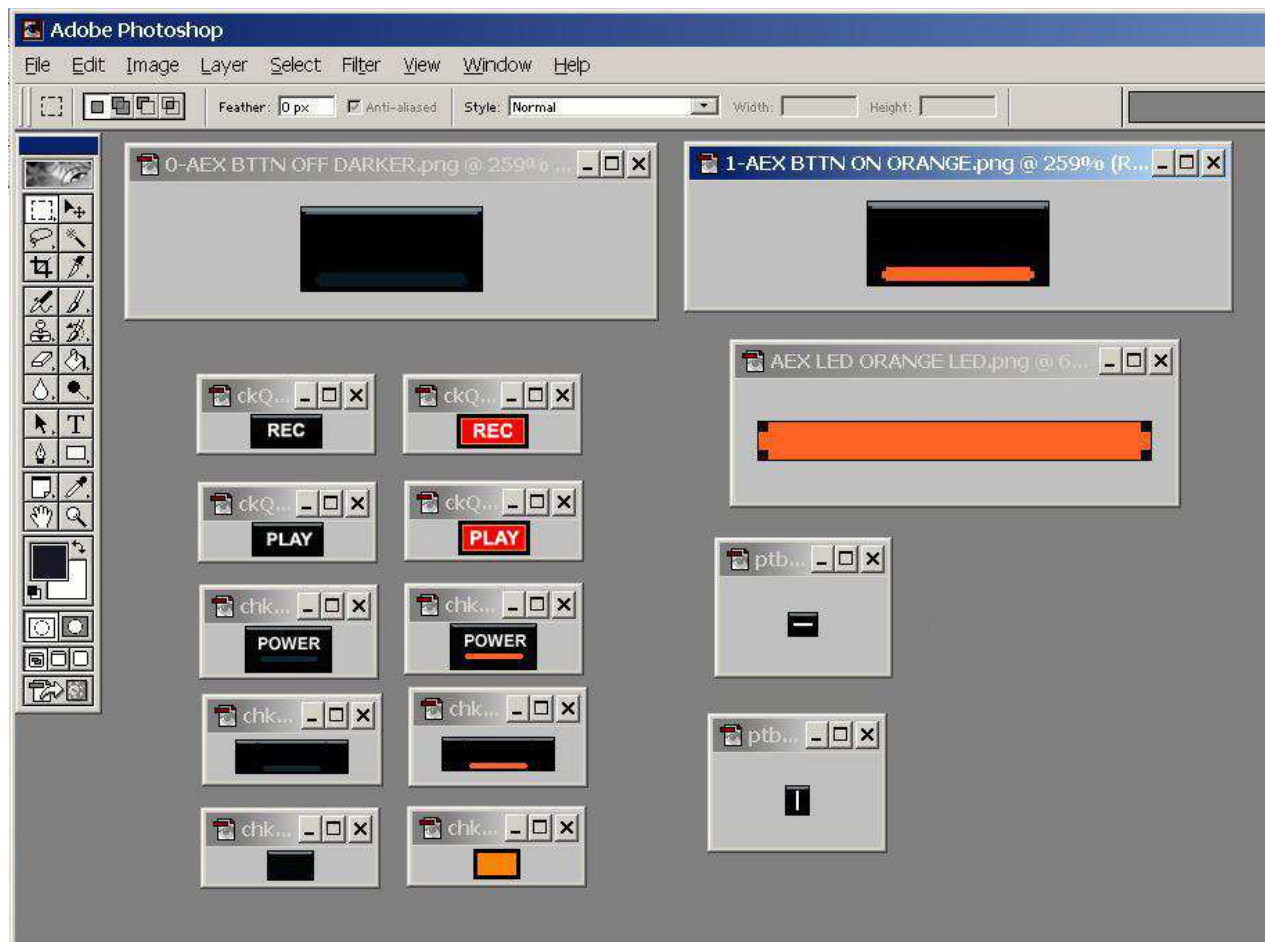
Unzip it into the Console subfolder. When you restart PowerSDR you will see "Wrinkle" as an option in the Skins selection window of PowerSDR and when you select it, your PowerSDR interface will match my old vintage equipment rack like the picture below. The possibilities are endless and limited only by your imagination. Keep in mind that PowerSDR is very forgiving with the panel sizes and will take just about everything you throw in there and make it work, as long as the file name is correct!



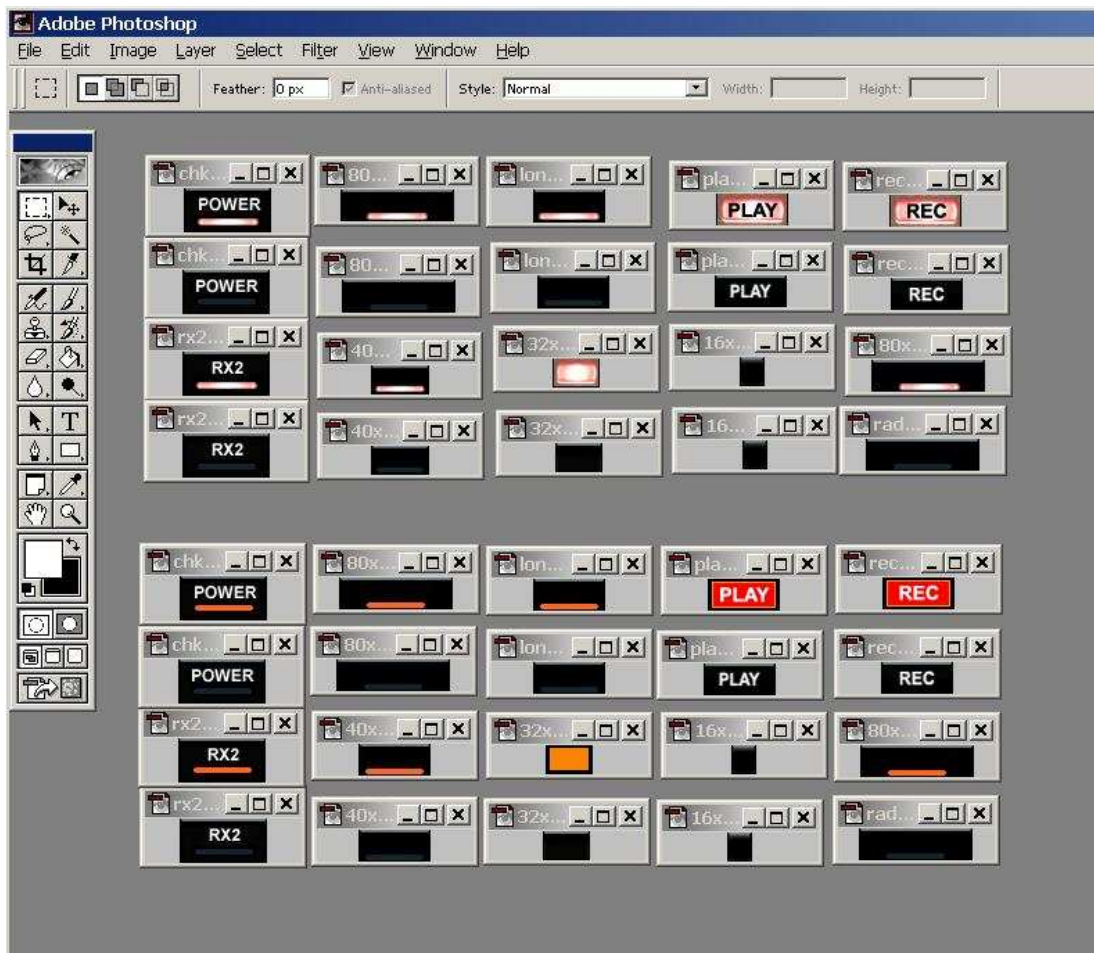
## 2. Making the Control Buttons

Once you have mastered manipulating the Console panel files, you might want to take a shot at designing your own buttons and sliders. Creating your own custom button set is a fairly large task as each button requires an ON and an OFF graphic as well as an RX1 and RX2 version for each function! Fortunately, one size is used for most of the buttons, and PowerSDR simply overlays the text onto whatever background you provide. The picture below shows the different types of shapes you will encounter if you decide to give this a shot. The two buttons at the top that are enlarged are used for almost all of the functions in PowerSDR. The enlarged orange bar on the right is actually the LED that is added as a layer to a plain black button to create the ON state when you press a button. The black notches in the corners soften the shape of the illuminated LED and add a little realism to the appearance of the front panel of PowerSDR. The buttons on the left with lettering on them are "special" in that PowerSDR does not overlay text onto them. I did my best to try to match the font in PowerSDR but from the screenshots on this page you can probably see that they

are just a bit "off" and that I need to keep working on them! When you press the REC button in PowerSDR it brightly lights up like the REC image next to the OFF state button. The elongated buttons are used for the MultiRX function and also in the FM panel for the CTCSS, VAC, and MEMORY buttons. The little square buttons at the lower left are used for the RIT and XIT buttons. I found that it was helpful to have those two buttons announce themselves brightly when they were ON to prevent me from operating with them engaged by mistake. You are welcome to use either of my button sets as forms to create your own set of buttons. The picture below shows parts of the simple set of orange buttons that appear in some of the skins available for download.



The next picture shows the two different sets of buttons that I have created for my skins. The orange button set at the bottom was created by hand in Photoshop. The bright button set at the top was created by taking a photograph of the bright "Charge" light on my office desk phone and then using that to create the lighting effect for each button when it is switched on. I really like the effect it gives on the the retro skins such as the Black Wrinkle, National, and Collins skins. You can switch to either button pack with any skin simply by unzipping the desired button pack into any existing skin and allowing it overwrite the existing buttons. I finally got around to writing up a batch file that allows me to make a small number of "base" files and then executing the batch file creates the whole set of 318 button graphic files. That makes life much simpler!



**Note:** These button packs are compatible with all 2.x.x versions including the new 2.2.2 beta.

Download at [http://members.cox.net/w1aex.flex/W1AEX\\_bright\\_buttons\\_v222.zip](http://members.cox.net/w1aex.flex/W1AEX_bright_buttons_v222.zip)

Download at [http://members.cox.net/w1aex.flex/W1AEX\\_orange\\_buttons\\_v222.zip](http://members.cox.net/w1aex.flex/W1AEX_orange_buttons_v222.zip)

### **3. Making the Variable Control Sliders**

The last component to play around with is the graphic set that forms the sliders for the variable adjustments in the user interface of PowerSDR. Each slider has a "slide back" which is the slot that the virtual control moves in, and a "slide head" which is the little button that is moved to set the value of the slide control. I started out by making the simple flat slider set below. I have found that I prefer darker colored consoles that make PowerSDR's white over-layer text stand out clearly. That's the text that PowerSDR writes on the console panels to display your Mic gain, Drive level, and other such information that is variable. The simple, flat-looking dark slider below seemed to blend in quite well with my early attempts at making custom skins. You can download a set of these by clicking on the link above the picture.

Download at [http://members.cox.net/w1aex.flex/W1AEX\\_dark\\_sliders.zip](http://members.cox.net/w1aex.flex/W1AEX_dark_sliders.zip)



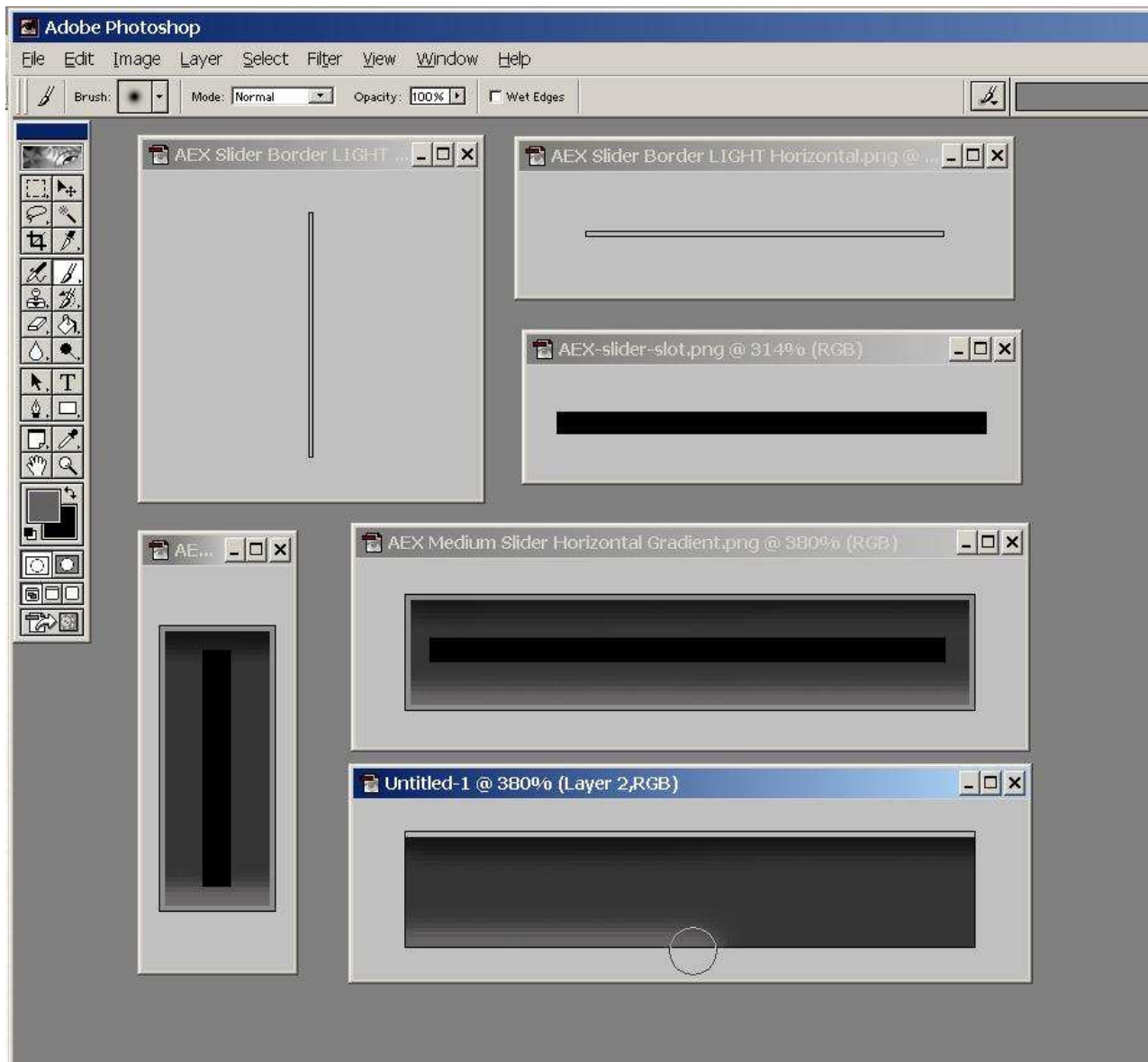
If you decide to experiment with lighter colored console panels, you will most likely find that the dark

sliders stand out too much. To avoid this distracting contrast, I created a light set of sliders to use with console panels that are lighter in color. Again, my first attempt at these was not too exciting and was made using simple, flat graphics as seen in the picture below. Feel free to grab this set by clicking the link above the graphic if you would like to mess around with them.

Download at [http://members.cox.net/w1aex.flex/W1AEX\\_light\\_sliders.zip](http://members.cox.net/w1aex.flex/W1AEX_light_sliders.zip)



It wasn't long before I experimented with the "Airbrush Tool" in Photoshop and found that it wasn't very difficult to make sliders that had a three-dimensional and recessed look. After playing around with this for a while, I settled on making a dark, medium, and light set of sliders to allow blending with a wider variety of console colors. If you scroll down to the three "mesh" skin packs at the bottom of the page, you can see pictures of what each slider set looks like when installed with consoles where they are most appropriate. The picture below shows the various graphic pieces that are created and assembled in layers to create the sliders. If you would like to use them, feel free to download the three gradient slider packs at the links below the picture. To install a slider pack into an existing skin, simply unzip it into the Console directory for that skin and let the slider graphics files overwrite the ones you are replacing. When you restart PowerSDR they will appear when that skin is selected.



Download at [http://members.cox.net/wlaex.flex/W1AEX\\_sliders\\_gradient\\_light.zip](http://members.cox.net/wlaex.flex/W1AEX_sliders_gradient_light.zip)



Download at [http://members.cox.net/wlaex.flex/W1AEX\\_sliders\\_gradient\\_medium.zip](http://members.cox.net/wlaex.flex/W1AEX_sliders_gradient_medium.zip)



Download at [http://members.cox.net/wlaex.flex/W1AEX\\_sliders\\_gradient\\_dark.zip](http://members.cox.net/wlaex.flex/W1AEX_sliders_gradient_dark.zip)



That's pretty much all you need to know to give your PowerSDR interface a custom look. If I come up with anything that comes out nice I'll stick additional file packs and screenshots in the section below. Feel free to share anything you make with my graphics packs, but remember that the original graphics files in

PowerSDR should not be distributed without permission from Flex or the individuals who created them.  
Have fun! Rob - W1AEX

## PowerSDR Skins for Download

**NOTE: The skin packs below have been updated for use with all 2.x.x versions including the new version 2.2.2 beta. Because the skin packs are updated and changed frequently, there are no links for downloading them in this PDF file. The pictures below are shown simply as examples of skins I have made available for others. To download skins look here:**

<http://members.cox.net/w1aex.psd/psdr.html>

73,

**Rob W1AEX**

Follow the installation instructions in the first part of the tutorial to install any of the skin packs from below. Each pack contains 378 custom graphic files including all the console panels, buttons, and sliders. Feel free to modify them as you wish. After installing a skin, you can easily change to lighter or darker slider backs by downloading the three Gradient Slider Packs from the section above and unzipping them so they overwrite the sliders that are in the skin packs below. You can do the same thing with the two Button Packs as well. Mixing, matching, and modifying these skins to suit yourself is half the fun! Some of the skins with logos in the lower left corner of the console (National and Collins) will only display the logo correctly when the skin is displayed at close to its minimum size. When PowerSDR is expanded in size on your desktop, the console panel stretches and this causes the logo to distort and move under the text that is overlaid onto the console. If you find it annoying, simply edit the Console.png file by selecting the logo and then copy and paste it to a position that allows it to display correctly when PowerSDR is sized the way you like to run it. Some trial and error will be necessary, but you'll find the right spot eventually. As an alternative, simply copy and then paste a section of the console right over the logo to eliminate it entirely. Another alternative is to copy and paste the logo into the PicDisplay.png file, which forms the background of the panadapter. The upper left and upper right areas of the panadapter offer an unobstructed area you can work with. As long as you're having fun, you are free to modify, share, or do whatever you wish with any of the skins from here.

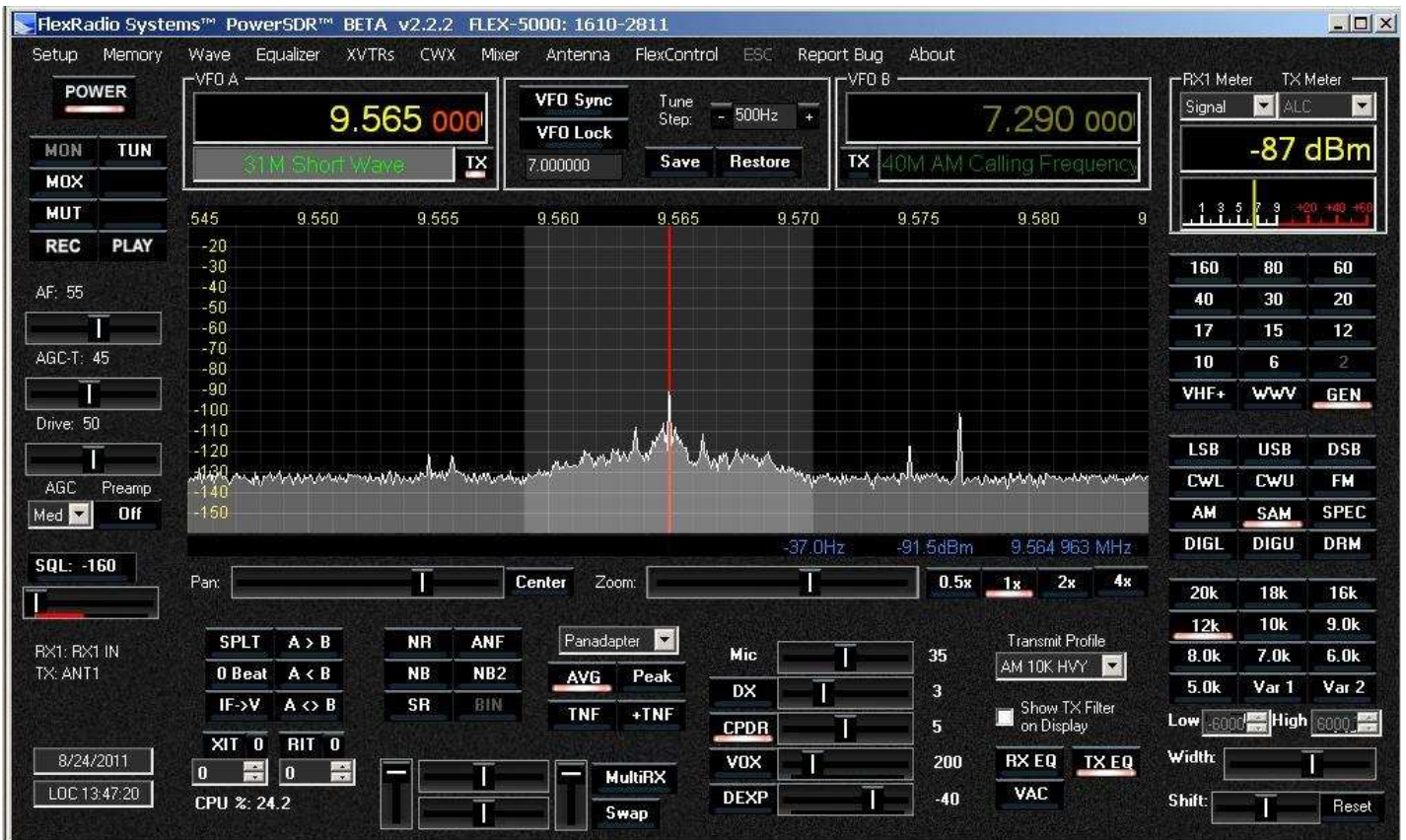
73, Rob W1AEX

**The Retro Collins Flex. The result of a collaborative effort with Mike - W8BAC.**

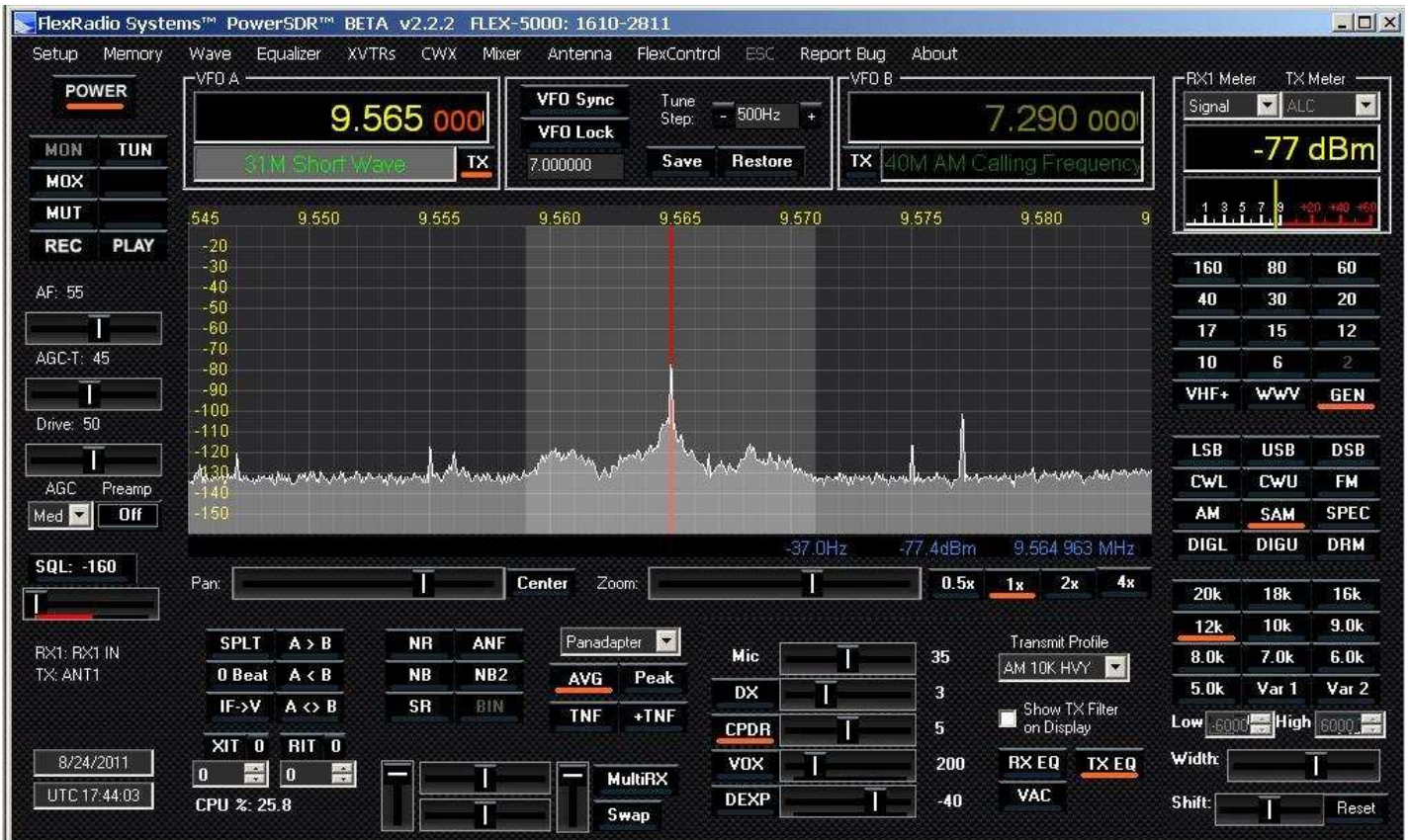


You can view this skin in action on YouTube at <http://www.youtube.com/watch?v=EzWN7vIxZ54>

### W1AEX Black Wrinkle Skin



### W1AEX Mesh Dark

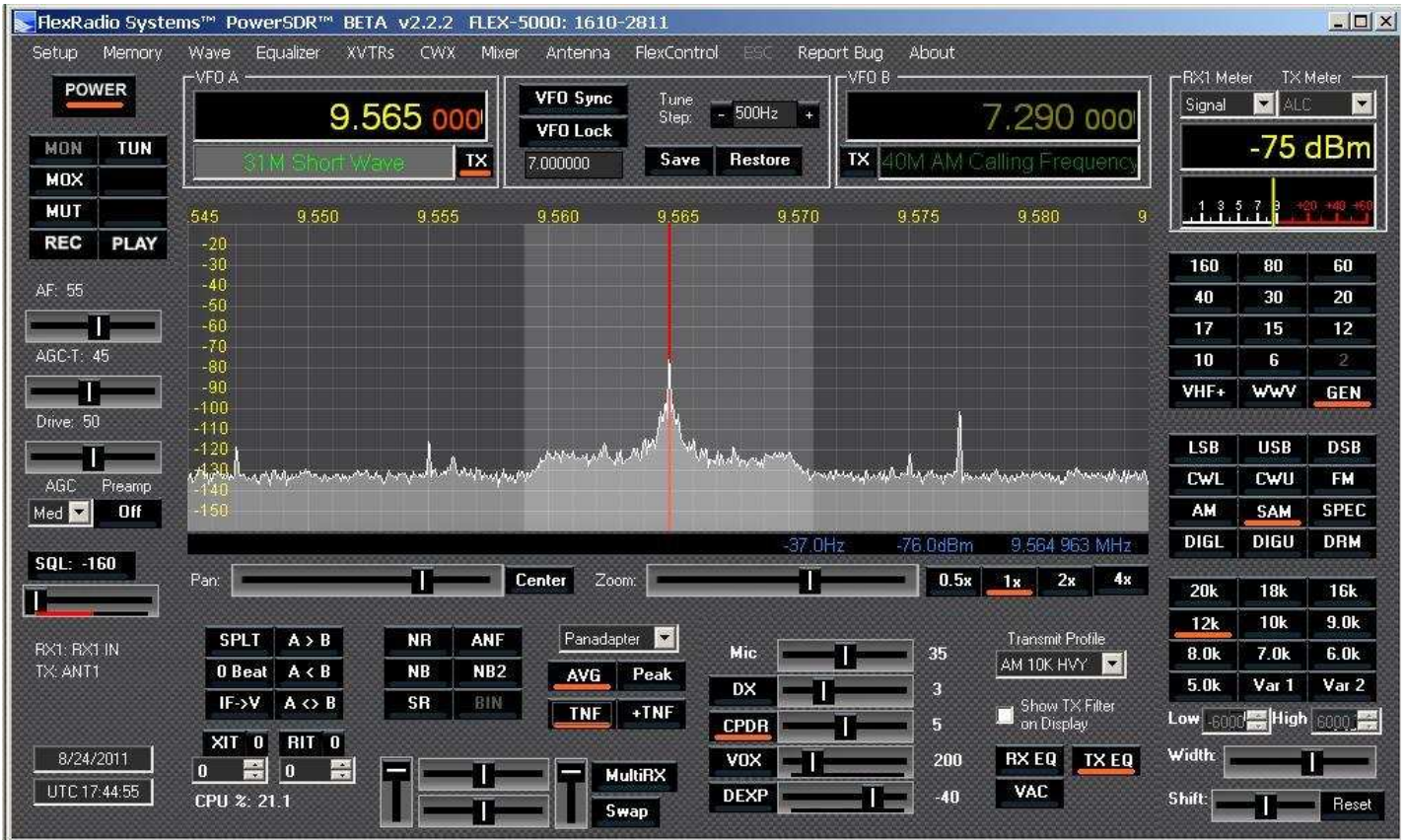


### W1AEX Mesh Medium

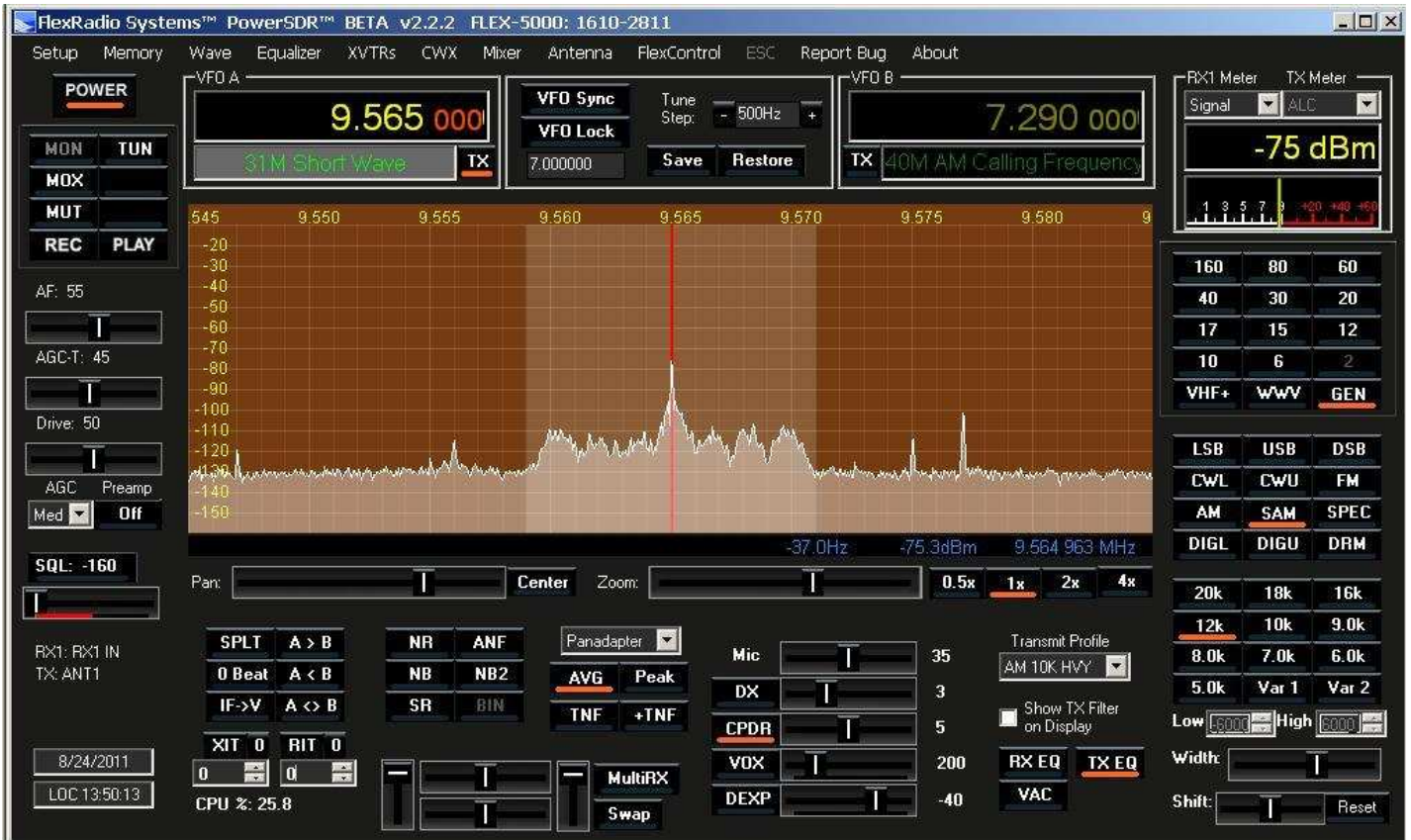
The screenshot displays the FlexRadio Systems PowerSDR software interface. At the top, the title bar reads "FlexRadio Systems™ PowerSDR™ BETA v2.2.2 FLEX-5000: 1610-2811". The main window is divided into several sections:

- Top Panel:** Contains two VFOs. VFO A is set to 9.565 000 MHz with a "31M Short Wave" TX mode. VFO B is set to 7.290 000 MHz with a "40M AM Calling Frequency" TX mode. A "Tune Step" of -500Hz is shown.
- Center Panel:** A spectrum analyzer showing a signal at 9.564 963 MHz with a bandwidth of -37.0Hz and a level of -73.6dBm. The frequency scale ranges from 9.545 to 9.580 MHz.
- Left Panel:** Includes a "POWER" section with buttons for MON, TUN, MOX, MUT, REC, and PLAY. Below are controls for AF (65), AGC-T (60), Drive (50), and AGC Preamp (Med). A "SQL: -160" control is also present.
- Right Panel:** Features a "RX1 Meter" and "TX Meter" showing a signal level of -73 dBm. Below are various filter and mode buttons: VHF+, WWV, GEN, LSB, USB, DSB, CWL, CWU, FM, AM, SAM, SPEC, DIGL, DIGU, DRM. A frequency selection grid shows options like 160, 80, 60, 40, 30, 20, 17, 15, 12, 10, 6, 2.
- Bottom Panel:** Contains a "Pan" and "Zoom" control (set to 1x). A "Transmit Profile" dropdown is set to "AM 10K HVY". Other controls include "SPLT", "NR", "ANF", "AVG", "Peak", "TNF", "+TNF", "Mic" (35), "DX" (3), "CPDR" (5), "VOX" (200), "DEXP" (-40), "RX EQ", "TX EQ", "VAC", "MultiRX", and "Swap".
- Status Bar:** Shows the date "8/24/2011", time "UTC 17:42:30", and "CPU %: 23.4".

### W1AEX Mesh Light



### W1AEX TS-590S Skin



### W1AEX Brushed Metal Skin inspired by my old Dentron DTR-3KA

FlexRadio Systems™ PowerSDR™ BETA v2.2.2 FLEX-5000: 1610-2811

Setup Memory Wave Equalizer XVTRs CWX Mixer Antenna FlexControl ESC Report Bug About

**POWER**

MON TUN  
MOX  
MUT  
REC PLAY

AF: 55  
AGC-T: 45  
Drive: 50  
AGC Preamp  
Med Off

SQL: -160

RX1: RX1 IN  
TX: ANT1

8/24/2011  
LOC 13:46:07

CPU %: 21.9

VFO A: 9.565 000  
31M Short Wave TX

VFO Sync VFO Lock 7.000000 Save Restore  
Tune Step: - 500Hz +

VFO B: 7.290 000  
TX 40M AM Calling Frequency

RX1 Meter TX Meter  
Signal ALC  
-71 dBm

160 80 60  
40 30 20  
17 15 12  
10 6 2  
VHF+ WWV GEN

LSB USB DSB  
CWL CWU FM  
AM SAM SPEC  
DIGL DIGU DRM

20k 18k 16k  
12k 10k 9.0k  
8.0k 7.0k 6.0k  
5.0k Var 1 Var 2  
Low High  
Width: Shift: Reset

545 9.550 9.555 9.560 9.565 9.570 9.575 9.580 9

-20 -30 -40 -50 -60 -70 -80 -90 -100 -110 -120 -130 -140 -150

-37.0Hz -72.2dBm 9.564 963 MHz

Pan: Center Zoom: 0.5x 1x 2x 4x

SPLIT A > B NR ANF Panadapter  
0 Beat A < B NB NB2 AVG Peak  
IF->V A <> B SR BIN TNF +TNF  
XIT 0 RIT 0  
0 0 MultiRX  
Swap

Mic 35  
DX 3  
CPDR 5  
VOX 200  
DEXP -40

Transmit Profile  
AM 10K HVY  
Show TX Filter on Display  
RX EQ TX EQ  
VAC

### W1AEX Tactical

FlexRadio Systems™ PowerSDR™ BETA v2.2.2 FLEX-5000: 1610-2811

Setup Memory Wave Equalizer XVTRs CWX Mixer Antenna FlexControl ESC Report Bug About

**POWER**

MON TUN  
MOX  
MUT  
REC PLAY

AF: 65  
AGC-T: 60  
Drive: 50  
AGC Preamp  
Med On

SQL: -160

RX1: RX1 IN  
TX: ANT1

8/24/2011  
UTC 17:41:17

CPU %: 25.8

VFO A: 9.565 000  
31M Short Wave TX

VFO Sync VFO Lock 7.000000 Save Restore  
Tune Step: - 500Hz +

VFO B: 7.290 000  
TX 40M AM Calling Frequency

RX1 Meter TX Meter  
Signal ALC  
-79 dBm

160 80 60  
40 30 20  
17 15 12  
10 6 2  
VHF+ WWV GEN

LSB USB DSB  
CWL CWU FM  
AM SAM SPEC  
DIGL DIGU DRM

20k 18k 16k  
12k 10k 9.0k  
8.0k 7.0k 6.0k  
5.0k Var 1 Var 2  
Low High  
Width: Shift: Reset

545 9.550 9.555 9.560 9.565 9.570 9.575 9.580 9

-20 -30 -40 -50 -60 -70 -80 -90 -100 -110 -120 -130 -140 -150

-37.0Hz -81.6dBm 9.564 963 MHz

Pan: Center Zoom: 0.5x 1x 2x 4x

SPLIT A > B NR ANF Panadapter  
0 Beat A < B NB NB2 AVG Peak  
IF->V A <> B SR BIN TNF +TNF  
XIT 0 RIT 0  
0 0 MultiRX  
Swap

Mic 35  
DX 3  
CPDR 5  
VOX 200  
DEXP -40

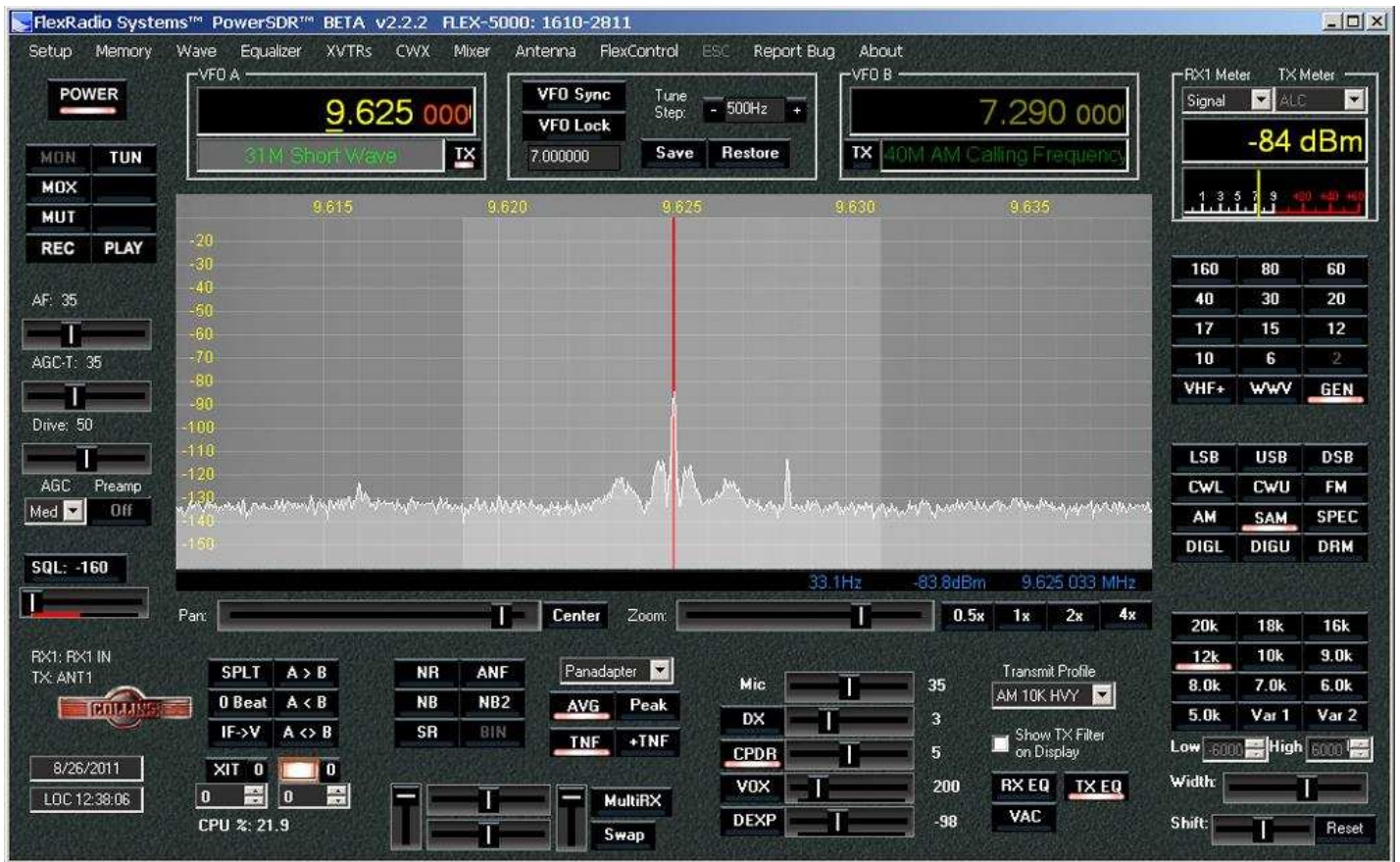
Transmit Profile  
AM 10K HVY  
Show TX Filter on Display  
RX EQ TX EQ  
VAC

## W1AEX NC-155 Based upon K3SQP's National NC-155

The screenshot displays the FlexRadio Systems PowerSDR software interface. The main window shows two VFOs: VFO A is tuned to 9.565 000 MHz (31M Short Wave) and VFO B is tuned to 7.290 000 MHz (40M AM Calling Frequency). The signal strength is -69 dBm. The interface includes various controls for power, AGC, drive, and filters. The National logo is visible in the bottom left corner. The CPU usage is 25.0%.

You can view this skin in action on YouTube at <http://www.youtube.com/watch?v=C6Penl7RFWk>

## W1AEX Collins Winged Emblem Skin



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