PowerSDR™ v2.6.4 Release Notes

April 15, 2013

IMPORTANT: Please read this document in its entirety before installing the new release of PowerSDR 2.x.

PowerSDR v2.6.4 is an official release version intended for use with the FLEX-1500™, FLEX-3000™ and FLEX-5000™ software defined radio transceivers.

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PowerSDR 2.x Software Installation/Upgrade Recommendations and Guidelines

Please read all of the following guidelines and follow the recommendations to ensure a trouble free upgrade of your software defined radio to PowerSDR v2.6.4.

The instructions below are applicable for users that already have *a previous version of PowerSDR v2.x* installed on their PC. **If you have the older PowerSDR v1.x currently installed, please see the Prerequisites for FLEX-x000 Users Upgrading from PowerSDR 1.x to PowerSDR 2.x in the section below.**

1. Minimum required CPU for PowerSDR v2.6.4 and greater is an Intel Pentium IV and an AMD Athlon 64 / Operon and greater. Lesser processors do not have the necessary SSE2 capability needed for the DSP engine.

2. The minimum version of Windows supported by PowerSDR v2.6.4 and above is Windows XP Service Pack 3 (SP3). If your Windows XP PC has not been upgraded to SP3, you must do so before installing PowerSDR v2.x. See Minimum Windows and .NET Requirements below for obtaining Win XP SP3.

3. It is **not necessary or recommended** to uninstall any previous versions of PowerSDR 2.x before installing PowerSDR v2.6.4. In fact, it is not recommended that you uninstall previous versions of PowerSDR unless you uninstall **all** previous versions so that files and drivers installed as dependencies with previous versions are all properly removed before installing PowerSDR v2.6.4

4. It is **not necessary or recommended** to manually remove the Firewire driver before installing PowerSDR v2.6.4. Doing so after PowerSDR v2.6.4 is installed will make your FLEX-5000 / FLEX-3000 inoperable. Do not install any standalone versions of the Firewire driver either.

5. The PowerSDR v2.x installer requires administrator level rights to install the kernel mode device drivers for the various SDR radios. The Installer should automatically elevate to this level of rights when run regardless of the current user rights, but if you are in doubt that your login has full administrator rights or you are getting errors indicating files cannot be found, you need to right click on the PowerSDR v2.x Integrated Installer icon and select the "Run As…" option and run the Installer with the administrator account, and not your login account ID.

6. The PowerSDR v2.x Installer no longer prompts the user for radio options. All drivers are now pre-loaded to eliminate the need to re-install a version of PowerSDR in order to load a needed device driver.

7. Firmware updates, if needed, are applied automatically when running the new version of PowerSDR for the first time. Do **not** stop the firmware installation until it has fully completed or your radio may not operate properly thereafter.

8. See additional operation notes regarding your specific model radio later in this document.

9. If you are installing a FlexControl with PowerSDR v2.6.4 **for the first time**, please read the *FlexControl Installation Errata Sheet* shipped with the FlexControl regarding use with Virtual Serial Port software prior to installation. You may need to remove any existing virtual com port pairs you have defined before installing PowerSDR and the FlexControl drivers. This is not necessary if you have an existing operational FlexControl connected to your PC.

Minimum Windows and .NET Requirements

PowerSDR 2.x is a Windows 32-bit .NET application designed to operate on Windows XP SP3, Vista, Windows 7 and Windows 8. The .NET 3.5 SP1 Framework is required. PowerSDR v2.x will run on 32 or 64-bit operating systems.

As of July 13, 2010 , Windows XP SP2 (service pack 2) is no longer supported or actively updated by Microsoft, therefore if your PC is running Windows XP SP2, you must install Service Pack 3 (SP3) before installing PowerSDR v2.6.4.   The PowerSDR 2.x Integrated Installer will check for this dependency and inform you if your PC does not meet the minimum XP Service Pack requirements.

For more information regarding upgrading your PC to Windows XP SP3, refer to Learn how to install Windows XP Service Pack 3 (SP3) (http://windows.microsoft.com/en-US/windows/help/learn-how-to-install-windows-xp-service-pack-3-sp3) on the Microsoft web site.

If you need to install the .NET 3.5 SP1 Framework, the PowerSDR 2.x Integrated Installer will either install .NET 3.5 SP1 from the installation CD or try and download the necessary software from the Internet. Alternately, you can download it directly from Microsoft using this web link before running the PowerSDR Integrated Installer: http://www.microsoft.com/en-us/download/details.aspx?id=25150

Obtaining Technical Support

If you encounter issues installing or operating PowerSDR v2.6.4 with FlexRadio's software defined radios, please contact FlexRadio Systems technical support by opening a HelpDesk support ticket on-line at http://helpdesk.flexradio.com or by phone at +1 (512) 535-4713 extension #2. Please leave a voice mail message if you don't get an answer as all of our engineers are probably busy on existing calls.

Hours of Operation. Our Technical Support engineers are available Monday – Friday from 8:00am-5:30pm Central Time. If you call after business hours, on a holiday or weekend, please leave a detailed message and we will return your call in the order it was received during regular business hours.

You may always submit a HelpDesk support ticket at any time.

If you need assistance opening a HelpDesk ticket, please refer to the following web page for detailed instructions. http://support.flexradio.com/

New Features and Improvements for PowerSDR v2.6.4

NOTE: A detailed changelog.txt file can be found in the Documentation folder under the FlexRadio Systems Windows Start menu for PowerSDR v2.6.4

New Features

1. **Updated Firewire driver.** This release of PowerSDR contains an updated Firewire driver version 4.1.1.17085. It contains multiple bug fixes and some performance improvements over the previous 4.0.0 driver. The updated 4.1.1 Firewire driver is **not** backwards compatible with previous versions of PowerSDR that used the 4.x version of the Firewire driver, which is PowerSDR 2.4.4 and greater.

   However there is a manual workaround that will allow the new 4.1.1 Firewire driver to work with previous versions of PowerSDR that used the 4.0.0 Firewire driver. Please see the *FLEX Firewire Driver 4.1.1* reference in the Known Issues or Recommendations with New Features Included in this Release section below for more details.

2. **New UK 60m Band Segments.** Earlier in 2013, the 60m channelized band for the UK was refactored into eleven (11) individual band *segments* of various bandwidths where all emission modes are allowed. This version of PowerSDR fully supports the new 60m band segments for FLEX Series SDRs that have *already* been modified by an authorized UK FlexRadio Systems distributor/representative for operating on the UK 60m band. For operators in the UK that have not had their radios modified by a FlexRadio Systems distributor, you must present your NOV to your distributor and request that your radio be modified (TURFed) for UK_Plus operation or contact the FlexRadio EU Representative (klaus@flexradio.com).

3. **New 60m Band Segment Allocation for Sweden.** PowerSDR v2.6.4 has been enhanced to provide regulatory compliance for operators who operate in Sweden in addition to allowing transmit on the four (4) 60m band segments. In order for Swedish operators to use the new frequency allocation, your radio will need a TURF update to designate it as a Swedish radio. Please contact the FlexRadio EU Representative (klaus@flexradio.com) for details on updating your radio hardware.

4. **Transmit Frequency Changes for France, Italy and Russia.** For radios that have been modified (TURFed) for operation in France, Italy and Russia, minor changes have been made several band allocations. For France, the 6m band has been expanded. For Italy, the 160 and 6m bands have been expanded. For Russia, the 10m and 11m bands have been modified. *It is not necessary to have these radios re-TURFed in order for these changes to take effect.*

5. **CHU Added to WWV Bandstack.** The three (3) CHU stations have been added to the Time and Frequency Reference Band (WWV) bandstack registers.

6. **Convenient Frequency Selection for Frequency Calibration Routine.** A new feature has been added to capture the VFO-A frequency for use with the Setup Frequency Calibration routine for greater convenience when evaluating several different frequency reference transmission frequencies by using the WWV band select feature.

7. **New Extended PowerSDR CAT commands.** Two (2) new extended CAT commands for PowerSDR, ZZFR and ZZFS have been added for setting RX2 VAR filters.

8. **New PowerSDR Uninstall Option.** The PowerSDR v2.6.4 Installer has a new feature included with the PowerSDR v2.x uninstall process. When using the Uninstaller, the user is provided the option to do a complete "clean up" of the PowerSDR version that is being uninstalled, which includes removing all files that PowerSDR v2.x created as a part of its normal operation, like the DttSP wisdom file and all databases. These files historically have not been removed as part of the PowerSDR uninstall process. By selecting this option, you are completely "cleaning" the PowerSDR v2.x application from your computer. You should select this option if you want to do a clean re-install of PowerSDR v2.x.

9. **Maximum CAT Baud Rate increased.** The maximum baud rate for the CAT serial port has been increased from 57.8k to 115.2k.

10. **Additional Database Error Trapping.** If an XML database fails to properly write to disk, an informative error message now alerts the user of the error condition. Databases are written to disk when PowerSDR I closed down and write errors can result in database integrity issues.

11. **Display Centering for the FLEX-1500**. When operating with a new database or after a database reset, the VFO frequency indicator and RX passband are now centered in the panadapter allowing for equal amounts of viewable spectrum above and below the VFO frequency indicator line.

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Enhancements and Bug Fixes Incorporated in Release v2.6.4

Below is a listing of program changes, enhancements and defects corrected in this release of PowerSDR.

US1590	Support for Legacy SDRs using sound cards has been removed
US1742	Upgraded Firewire driver to version 4.1.1.17085
US1292	Added new 60m band segments for radios TURFed for UK_Plus
US1632	60m band allocation added for Sweden – Requires a radio TURF before using
US1628	Modified 160 and 6m bands for radios TURFed for Italy
US1630	Modified 11 and 10m bands for radios TURFed for Russia
US1693	Modified 6m band for radios TURFed for France
US1674	1500: RX passband is now centered in the middle of the Panadapter with default DB
DE786	1500: Removed Slew Rate option which resulted in high RX noise floor after use
DE770	1500: Fixed PTT via FlexWire in Expert Mode not persistent between band changes
US1705	3000: XML data file write error trapping logic added for ATU database
DE940	DB: BandText harmonization failed if DB was initializing and firmware updated needed
DE784	DB: Incomplete DBs are no longer permitted to be exported
US1703	DB: XML data file write error trapping logic added for main database
US1705	DB: XML data file write error trapping logic added for Master database
DE849	CAT: Fixed a boundary condition that resulted in an UHE when executing ZZRU and ZZRD
US1454	CAT: Increased the maximum input frequency change for ZZRF and ZZXF
US1295	CAT: ZZFR and ZZFS added for setting RX2 VAR filters
US1636	CAT: Increased the maximum CAT port baud rate to 115.2k
DE766	Console: Fixed a TX filter bug when changing modes if disable split on mode change is enabled
DE768	Console: Fixed frequency label formatting errors on Panadapter and waterfall displays
US1296	Console: CHU frequencies now added to WWV bandstack
US1456	Console: XIT enabled for 60m if band is not channelized
US1455	Console: VOX is turned off when Power button turned on and off prevent unintentional TX
US1683	Console: Screen position for Filter Edit form is remembered after closing
US1675	Console: Default startup mode is SAM to match default startup frequency (WWV)
DE767	FlexControl: Fixed a condition that resulted in both VFOs being tuned at the same time
DE771	FlexControl: Fixed a condition that resulted in double tune steps while tuning
US1627	Panadapter: Added a visual 60m UK and Sweden band segment indicator
US1678	Installer: Option added to uninstall process to remove databases for "clean" uninstall
DE1043	Memories: Fixed a bug that resulted in an incorrect VFO-A readout if memory had split enabled
DE785	Profiles: Fixed inconsistent behavior with VAC Auto On option
US1677	Profiles: Added FLEX-1500 Blanking time and Mic Boost to Transmit Profiles
DE990	RX2: Incorrect filter enable function called when switching from AM and DRM mode
US1588	Setup: Added a feature to capture the current VFO-A frequency for Frequency Calibration test
US1708	Added Feature to modify color and line width for the UK/Sweden 60m band segment indicator
US1676	VAC: Spur Reduction is automatically turned off when VAC with DirectIQ is enabled
DE780	WAVE: Fixed a condition where the wrong folder might be opened for selecting WAV files
DE769	WAVE: Fixed a defect where recording sampling rates higher than the radio could be selected
DE1036	Fixed a bug that could result in the FFT spectrum not initializing after a sampling rate change

Firmware Update Information

PowerSDR v2.6.4 requires updated firmware for the FLEX-5000, FLEX-3000 and FLEX-1500

New firmware required and will be automatically installed when running PowerSDR v2.6.4 for the first time. No manual user intervention is required.

Beginning with PowerSDR v2.0.22, drivers and firmware specific for the model of SDR you are operating are automatically installed as part of the software installation & startup process. Do not attempt to manually install a hardware driver or firmware update unless specifically requested by FlexRadio Customer Support. Do **not** power off your radio or shut down PowerSDR if a firmware or device driver installation is being executed.

OPERATIONAL NOTICE: Starting with PowerSDR v2.4.4, a new 4.x Firewire driver is utilized whose architecture is completely different from the previous 3.x driver family. There is also a 4.x firmware dependency for the FLEX-5000 and FLEX-3000 which is NOT backwards compatible with previous versions of PowerSDR. Once you install PowerSDR v2.4.4 or greater you will not be able to run any versions of PowerSDR previous to PowerSDR 2.4.4 which utilized the older 3.x Firewire driver and firmware.

You can however revert back to the previous 3.x Firewire driver. If you need to revert to a previous version of PowerSDR (less than v2.4.4), then follow the procedure #1 listed below in the FLEX-5000 and FLEX-3000 Operation Notes section of these release notes.

Database Import Recommendations and Cautions

Do NOT import via the Setup screen a database that was created from a different radio type. This is prohibited in PowerSDR v2.3.5 and greater. Using a database created with a different radio model than the one you are using can damage your radio will void your warranty!

There is a significant database schema changes with PowerSDR v2.6.4 so importing a database from a previous version of PowerSDR using the Setup Import feature will result in errors.

It is highly recommended to import selected database settings from previous database versions using the third-party **K9DUR SDR Data Transfer Utility**. The K9DUR SDR Data Transfer utility accommodates variations and changes in the database schema between PowerSDR versions that are not accounted for when using the normal database Setup based export (backup) and import (recovery) processes. Please verify PowerSDR version compatibility with the K9DUR SDR Data Transfer utility before using. For more information regarding the K9DUR SDR Data Transfer Utility and its compatibility with PowerSDR v2.6.4 please refer to the following KB article: http://kc.flexradio.com/KnowledgebaseArticle50327.aspx

However, for 60m UK and Swedish operators, importing bandstack data from a previous version of PowerSDR Using the Import utility in the Setup form will result in incorrect bandstack registers and VFO alpha tag displays when using 60m. And importing a database into PowerSDR v2.6.4 will overwrite the new CHU bandstack entries for all users.

If your experience *any* anomalous behavior with your radio after importing data from a database that was created from an earlier version of PowerSDR v2.6.4, **reset your database immediately** using the Factory Defaults feature in the Setup form **and do not re-import any data** or contact FlexRadio Systems support.

FLEX Firewire Driver 4.1.1: The FLEX Firewire driver will be updated to version 4.1.1.17085 with PowerSDR v2.6.4. This new driver has several bug fixes and performance enhancements over the previous 4.0.0 Firewire driver.

Make sure that you power on your FLEX-5000 and/or FLEX-3000 and allow it to complete the Firewire driver installation after your PC has rebooted and **BEFORE** you start PowerSDR v2.6.4. *For Windows XP systems, make sure you install all three (3) driver components when prompted.* For Windows Vista and greater, the Firewire driver installs automatically without user intervention; just wait for the message that your new hardware is ready to use.

The following caveats are only applicable to the Firewire based FLEX-5000 and FLEX-3000. After installing PowerSDR v2.6.4 which automatically installs the updated FLEX Firewire driver 4.1.1.17085, you will not be able to run any previous version of PowerSDR previous to v2.6.4 because one of the driver components is not backwards compatible with the 4.0.0 Firewire driver. This condition is indicated by a message requesting a firmware update when PowerSDR is started, but PowerSDR cannot properly identify your FLEX-5000 or FLEX-3000, as it asks you what type of radio you are using. Click **NO** to exit the initialization of PowerSDR v2.6.4. There is however a workaround to make previous versions of PowerSDR that used the 4.0.0 Firewire driver operational. Manually copy the **pal.dll** file from the PowerSDR v2.6.4 application folder to the PowerSDR v2.4.4 or PowerSDR v2.5.3 application folders. This will allow you to run those two versions of PowerSDR with the new 4.1.1.17085 Firewire driver.

Running versions of PowerSDR previous to PowerSDR v2.4.4: Due to the significant changes in the 4.x Firewire driver architecture, once you update to PowerSDR v2.4.4 or greater with the new 4.x Firewire driver, *you will not be able to run PowerSDR v2.3.5 or any other earlier versions* since the abstraction layer DLL and firmware are ***not*** backwards compatible with the previous v3.x version of the Firewire driver.

Trying to run a version of PowerSDR 2.3.5 or earlier with the 4.x version of the Firewire driver will result in errors when you start PowerSDR indicating that a firmware update is needed when the updated the firmware has already been installed by PowerSDR v2.6.4. Click **NO** to exit the initialization of PowerSDR and run a version of PowerSDR v2.4.4 or greater.

If you need to revert to a previous version of PowerSDR (less than v2.4.4), then follow the procedure #1 listed below in the FLEX-5000 and FLEX-3000 Operation Notes section of these release notes.

New 60m Band Segments for UK: On 1-Jan-2013, OFCOM issued a Notice of Variation Change that refactored the previous channelized 60m band into 11 band segments or blocks allowing any emission mode that does not exceed the bandwidth of the frequency segment. Previously in PowerSDR the 60m band was "channelized" which restricted the mode of operation to USB and only allowed narrow mode transmissions in the center of the channel. With the new change to the UK 60m band, PowerSDR is no longer channelizing the 60m band for the UK, therefore the previous spectrum shading used to indicate a channelized portion of the band is no longer applicable. Refer to the Band text (alpha tags) under the VFO to designate the different band segments numbered 1 through 11.

The UK and Swedish 60m band segments are now visually indicated by a colored rectangular box on the Panadapter. The color and line width of the band segment indicator box can be modified by the user in the Setup->Appearance->Display tab.

New 60m Band Segments for Sweden: As noted previously, in order to use the new 60m Band allocations for Sweden, your radio must have the EEPROM modified for the Swedish transmit region (TURF). Please contact the FlexRadio EU Representative (klaus@flexradio.com) for details on updating your radio hardware.

VOX Turned Off on PowerSDR Power on: VOX is now turned off when the PowerSDR Start/Standby button is off or turned off to prevent unintended transmissions (QRM) when turned on. It can be turned back on after the Start/Standby button is turned on.

Support for Legacy SDRs: Support for all sound card based legacy SDRs has been concluded beginning with PowerSDR v2.6.4. Refer to the section SDR-1000 Software Support Notice below for additional information.

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Troubleshooting FLEX-5000 and FLEX-3000 Connectivity Issues

With the new FLEX 4.x Firewire driver, its improved streaming performance can expose weaknesses and deficiencies in your PC configuration that may result in your FLEX-5000 or FLEX-3000 not being able to properly communicate with the computer after upgrading. It may not connect at all, stop working after a few minutes or freeze when changing sampling rates or buffers. There can be several reasons for these failures, such as Firewire cards that are not fully supported by the new Firewire device driver, Windows OHCI 1394 driver incompatibilities with certain Firewire cards or PCIe bus timing problems. Additionally, PCs that worked perfectly well with the older 3.x interrupt driven Firewire driver may now fail to work properly because the new streaming 4.x Firewire driver, which fully utilizes the 1394 Firewire interface's capabilities, has exposed these existing deficiencies that previously did not result in operational issues.

There are several factors that come into play for proper Firewire communication between the PC and the radio hardware, such as utilizing a compatible Firewire card, operating system version and PC motherboards. These different inter-dependent variables present a unique challenge for troubleshooting the primary cause of the Firewire communication failure.

If you experience these problems, your best course of action is to submit a support HelpDesk ticket so one of our Technical Support Engineers can systematically triage your connectivity problem. Our support engineers have the experience and expertise to quickly analyze and in some cases resolve the problem with a simple system configuration change. However, if you would like to troubleshoot the problem yourself, below are a few troubleshooting steps that you can try on your own.

Checking the Compatibility of your Firewire Card

There is a utility in the FLEX Firewire control panel that allows you to verify that your OHCI Controller (Firewire card) is compatible with the FLEX 4.0 Firewire driver.

Please refer to the HelpDesk article Verifying Firewire Card Compatibility with the FLEX Firewire Driver for a step-by-step procedure for verifying Firewire Card compatibility.

VIA Firewire cards and Windows 7

We have determined that Firewire cards using the VIA chipset and some others that are running on Windows 7 have a higher probability of Firewire related connectivity issues when using the default Windows 1394 bus driver. If you are using a VIA Firewire card, please check that your Windows 1394 bus driver is using the "Legacy" version if you are experiencing connectivity issues. This change may also benefit other Firewire cards that are experiencing connectivity problems running on Windows 7.

If you have checked the compatibility of your Firewire card using the procedure above and it is has a VIA chipset, then refer to the HelpDesk article Setting the Win7 1394 Bus Driver to the Legacy Version for a step-by-step procedure for changing your Windows 7 OHCI Compliant Host Controller driver to the legacy version.

Note that after a Windows update, the Windows 7 OHCI Compliant Host Controller driver may be changed from legacy version back to the native driver, resulting in your radio having connectivity issues after previously running properly. If your PC stops working mysteriously, re-check to make sure your PC is still configured to the legacy Windows 7 OHCI Compliant Host Controller driver.

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FLEX-5000 and FLEX-3000 Operation Notes

1. If you need to revert your FLEX-5000 or FLEX-3000 back to a version of PowerSDR less than v2.4.4 which uses the 3.x version of the Firewire driver, follow the procedure below:

   A. Shut down PowerSDR and power off your software defined radio.
   B. If the FLEX Firewire control panel is open, close it.
   C. Un-install PowerSDR v2.4.x (or greater) using either the Control Panel method or by using the uninstall PowerSDR option in the Start Menu (FlexRadio Systems->PowerSDR application folder)
   D. Using the Windows Control Panel, select the Remove Program applet.
   E. Look for any instances of the FLEX Firewire driver. They will be listed as a variant of FlexRadio 3.x.x and or 4.x.x. Remove all instances of the FlexRadio Firewire driver.
   F. If installed, uninstall PowerSDR v2.3.5 using the Control Panel's Remove Program applet
   G. Reboot your PC.
   H. Download the applicable manual Firmware Installation program for your radio.
      Do not run the manual firmware installer at this time
      a. FLEX-5000 Firmware: v1.3.0.8 http://support.flexradio.com/Downloads.aspx?id=287
      b. FLEX-3000 Firmware: v1.2.5.6 http://support.flexradio.com/Downloads.aspx?id=289
   I. Download PowerSDR v2.3.5 http://support.flexradio.com/Downloads.aspx?id=393
   J. Run the PowerSDR 2.3.5 Installer setup program. This will install the v3.5.5 Firewire driver. Reboot your PC when prompted.
   K. After the PC has completely booted up, power on the FLEX-x000 and allow the Firewire driver to complete its installation. For Vista and Win7 operating systems this is performed silently without any user intervention. For XP systems, the user will have to confirm three sub-driver installations.
   L. **DO NOT START PowerSDR v2.3.5.** Run the manual FLEX-5000 or FLEX-3000 firmware installer downloaded in Step H. Wait for the relay click after the firmware loads. (you can power cycle the radio if you are unsure that the relay clicked)
   M. Verify that the Firewire driver is properly installed by opening the FLEX Firewire Driver Control Panel. The FLEX-x000 should be a recognized device.
   N. Start PowerSDR v2.3.5 and proceed with the initial setup wizard. You will be prompted to do a firmware update. Click OK to do the firmware update. Also you will be prompted if your radio is a FLEX-5000, if it is, acknowledge that prompt. If your radio is a FLEX-3000, click NO until you are prompted if your radio is a FLEX-3000, then acknowledge that prompt.
   O. After the firmware install has completed, PowerSDR will be shut down. Restart PowerSDR v2.3.5
   P. You should see the EEPROM data transfer dialog boxes indicating your radio is working properly. PowerSDR v2.3.5 will start normally. You may have to toggle the stop/standby button to get the audio stream to initialize the first time you start it.

2. You can run a FLEX-x000 SDR and a FLEX-1500 on the same PC at the same time. A radio "Chooser" will appear to allow you to select which radio you would like to operate. The software now keeps track of the database files for you. Just click "USE" next to the radio you want. If USE is grayed out, then check to make sure the radio is properly powered up.

   NOTE: Currently you must start the FLEX-1500 FIRST for multiple radios to operate properly. Also, you can only have one (1) USB-based radio and one (1) Firewire based radio operating at one time.

3. To prevent the possibility of a conflicted hardware state with the Firewire card and the FLEX-5000 or FLEX-3000 resulting in a system crash or hang, set your Windows Power Options for **High Performance** so the PC does not go to "sleep" or into hibernation mode while the SDR is connected and powered up.

FLEX-1500 Operation Notes

1. Do not boot your computer with the FLEX-1500 powered up or the streaming USB drivers may not properly load. Use the following Power Up / Power Down sequence:

    a.) Power off or make sure the FLEX-1500 is powered off
    b.) Boot the PC and allow Windows to completely initialize
    c.) Power on the FLEX-1500 and wait several seconds for Windows to load the drivers
    d.) Start PowerSDR
    e.) Shut down PowerSDR and wait several seconds for the database to close.
    f.) Power off the FLEX-1500
    g.) Shut down Windows

2. Performance optimization: The FLEX-1500 utilizes a real time driver to communicate between PowerSDR and the radio via USB. There are two steps to optimize the streaming performance of the USB interface. This varies by PC. Just because you have the fastest processor out today does not automatically mean that your PC's USB controller will achieve maximum performance. We have created a control to match the USB driver buffer streaming to your specific hardware. There are two steps to this process.

    a. USB Driver Buffer control: The USB Driver Buffer control allows optimization of the low level USB stream. This control is found on the Setup/General/Options form as seen below. *Note that PowerSDR must be in standby in order to change this control.* The default setting has been chosen to allow successful startup of PowerSDR on most machines but may not provide optimal performance on your specific PC. More aggressive settings reduce latency and improve keying performance in CW. More conservative settings will allow lower performing USB controllers and/or CPUs to function smoothly. Choose the most aggressive setting that provides stable operation without popping or distortion of the received signal.
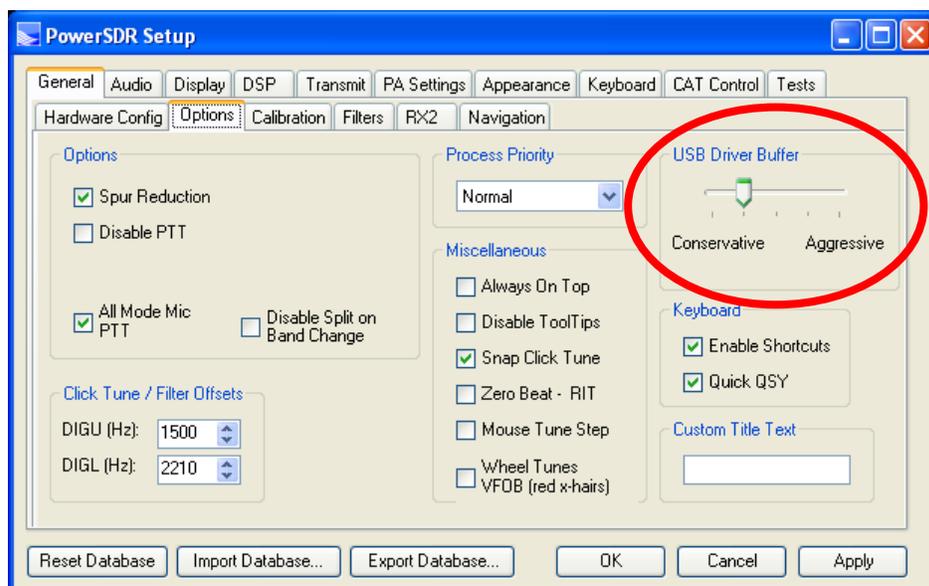
b. Audio Buffer Size: We recommend use of the smallest audio buffer setting on the Setup/Audio/Primary form that provides un-distorted audio and smooth CW keying. These will reduce latency to a minimum. The exact settings are dependent on your computer hardware but will usually be 512 or 256.

3. Using the FLEX-1500 on the same USB controller as low-speed devices, such as a mouse or keyboard will result in the FLEX-1500 be forced to a lower data transfer rate which will *significantly* affect the performance of the radio in regards to latency which is most evident when operating CW. Refer to this KB article regarding the use of USBDeview to determine if the FLEX-1500 is using the same USB controller as other USB devices (http://kc.flexradio.com/KnowledgebaseArticle50459.aspx)

4. You can run a FLEX-x000 SDR and a FLEX-1500 on the same PC at the same time. A radio "Chooser" will appear to allow you to select which radio you would like to operate. The software now keeps track of the database files for you. Just click "USE" next to the radio you want. If USE is grayed out, then check to make sure the radio is properly powered up.

   NOTE: Currently you must start the FLEX-1500 FIRST for multiple radios to operate properly. Also, you can only have one (1) USB-based radio and one (1) Firewire based radio operating at one time.

5. To prevent the possibility of a conflicted hardware state with the USB controller and the FLEX-1500 resulting in a system crash or hang, set your Windows Power Options for **High Performance** so the PC does not go to "sleep" or into hibernation mode while the SDR is connected and powered up.

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SDR-1000 Software Support Notice

Starting with PowerSDR v2.6.x, FlexRadio Systems formally announces the "End of Software Support" for the SDR-1000 transceiver. Repair services and technical support for the SDR-1000 transceiver will continue under the following conditions until further notice:

1. FlexRadio will continue to provide repairs on the SDR-1000 as long as components and subsystems are available. Please submit a HelpDesk support request for an RMA before sending in your SDR-1000 for repair.
2. While many SDR-1000 users enjoy some of the features of PowerSDR v2.x, the last RECOMMENDED stable version of PowerSDR for the SDR-1000 is v1.18.6. It is available at http://support.flex-radio.com/Downloads.aspx?id=322
3. Customer support for the SDR-1000 will continue to be available via the FlexRadio HelpDesk. TELEPHONE SUPPORT FOR THE SDR-1000 WILL NO LONGER BE PROVIDED.
4. A full set of documentation for the SDR-1000 can be found on the Knowledge Center at: http://kc.flexradio.com/KnowledgebaseCategory50.aspx
5. For user supported software fixes and enhancements, versions of PowerSDR that support the SDR-1000, which are licensed under the GNU Public License (GPL), are available for continued development by sending a request for source code to gpl@flexradio.com.

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