



Release Notes and Errata

PowerSDR™ v2.2.3 Release

September 15, 2011

IMPORTANT: Read this document in its entirety before installing the new release.

PowerSDR v2.2.3 is an official release intended for use with the SDR-1000™, FLEX-1500™, FLEX-3000™ and FLEX-5000™ transceivers. Please check the list of updates and changes below before upgrading. Please report any issues found in the FlexRadio bug tracker at <http://support.flexradio.com/BugList.aspx?it=b>.

Important PowerSDR Installation Information

Required Dependencies for FLEX-x000 Users Upgrading from PowerSDR 1.x to PowerSDR 2.x

This is required only if you have NOT used a previous version of PowerSDR 2.x with your radio hardware.

If you have previously used a 2.x version of PowerSDR with your FLEX-5000 or FLEX-3000, the following steps are NOT required. Please skip to the [PowerSDR 2.x Software Installation Recommendations and Guidelines](#) section below.

If you are upgrading from a 1.x version of PowerSDR, the following dependencies and prerequisites are REQUIRED to ensure that your upgrade will be successful. The following software and firmware components must be installed before attempting the upgrade to PowerSDR v2.x for FLEX-5000 and FLEX-3000 users.

- PowerSDR v1.18.6
- Firewire Driver: v3.5.0.7171
- FLEX-5000 Firmware: 1.3.0.8
- FLEX-3000 Firmware: 1.2.5.6

Upgrade to the Latest 1.x Version of PowerSDR

Before upgrading to PowerSDR 2.x, you must upgrade to the latest version of PowerSDR 1.x which is version 1.18.6. You can download PowerSDR v1.18.6 from the FlexRadio Systems web site.

<http://support.flexradio.com/Downloads.aspx?id=322>

Download the PowerSDR v1.18.6 software installation package and run it, following all of the default installation options.

Upgrade to Firewire Driver v3.5.0.7171

If you are not running version v3.5.0.7171 of the Firewire driver for PowerSDR v.18.6, you will need to upgrade your Firewire driver. This is to ensure that the firmware upgrade performed in the next step is successful.

You can download the Firewire v3.5.0.7171 driver from the FlexRadio Systems web site

<http://support.flexradio.com/Downloads.aspx?id=306>

Upgrade your FLEX-x000 Firmware to the Latest 1.x Version

After you have confirmed that the Firewire driver is version 3.5.0.7171 or upgraded the Firewire driver to 3.5.0.7171 you must upgrade your radio's firmware to the latest 1.x version. You can download the firmware from the FlexRadio Systems web site.

- FLEX-5000 Firmware: 1.3.0.8 <http://support.flexradio.com/Downloads.aspx?id=287>
- FLEX-3000 Firmware: 1.2.5.6 <http://support.flexradio.com/Downloads.aspx?id=289>

Once you have brought up your FLEX-5000 and/or FLEX-3000 to the latest versions of 1.x firmware and software, follow the recommendations below in the [PowerSDR 2.x Software Installation Recommendations and Guidelines](#) section

PowerSDR 2.x Software Installation 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.x

1. It is not necessary to uninstall any previous versions of PowerSDR before installing PowerSDR v2.2.3
2. **When upgrading from v1.18.6, the radio will do an automated RX image calibration. Disconnect all antennas before performing the installation so that signals on the antenna do not affect proper image calibration. STOP and START PowerSDR after the RX image calibration(s) has completed.**
3. **If you are upgrading from v1.18.6 on Windows XP, uninstall the FireWire driver using Windows Add/Remove Programs and reboot before installing v2.2.3. CAUTION: If you uninstall the old FireWire driver after installing v2.2.3, PowerSDR will not operate properly.** See FLEX-5000/FLEX-3000 Operation Notes below for driver recovery instructions.
4. **It is not necessary to remove the Firewire driver if you were previously running PowerSDR 2.1.5 and above. Doing so after PowerSDR 2.x is installed may make your FLEX-5000 / FLEX-3000 inoperable.**
5. Do not change the default installation drive letter directory or errors may occur when running PowerSDR 2.x.
6. The PowerSDR v2.x installer requires administrator level rights to install the kernel mode device drivers for the various SDR hardware. 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 and select the "Run As..." option and run the setup as the administrator account, and not your login account ID.
7. Firmware updates will happen automatically when loading the new version of PowerSDR. Do not stop the firmware load until it has fully completed or your radio may not operate properly thereafter.
8. **Do not import a v1.18.6 (or earlier) database into v2.2.3.** This will cause unstable operation. It is possible to import *some* database settings from previous versions using the K9DUR SDR Data Transfer Utility only if the STATE and MEMORIES tables are not imported. For more information regarding the K9DUR SDR Data Transfer Utility please see the following KB article <http://kc.flexradio.com/KnowledgebaseArticle50327.aspx>
9. See additional operation notes regarding your specific model radio later in this document.
10. If you have a FlexControl connected to your PC, make sure that you choose it in the device selection section of the Integrated Installer to ensure you have the latest drivers and firmware loaded for your FlexControl.
11. **If you are installing a FlexControl with PowerSDR v2.2.3 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.**

Major New Improvements in PowerSDR v2.2.3

NOTE: A detailed changelog.txt file can be found in the:

\Program Files\FlexRadio Systems (x86)\Documentation directory for 64-bit operating systems

\Program Files\FlexRadio Systems\Documentation directory for 32-bit operating systems.

New Features

1. Tracking Notch Filters (TNF) has been implemented. PowerSDR v2.2.3 now has an RF based manual tracking notch filter. RF Tracking notch filters are different than normal notch filters as they operate at the RF level, actually removing the offending RF signal rather than notching out the audio frequency which results in no AGC pumping on large signals and also stay fixed on the offending signal even when you tune the VFO. Up to six, 3-deep (3x) variable width notch filters can be enabled in the RX passband. An unlimited number of notch filters can be assigned to any frequency. The TNFs can either be made persistent, being remembered after PowerSDR is shut down; or temporary, where they are only active for the current operating session. TNFs have a ZOOM feature to easily align the TNF on the offending signal.
2. Enhanced Signal Clarity (ESC) is now officially supported in PowerSDR. ESC with the FLEX-5000 and an RX2 is a unique synchronous dual receiver system that allows for the enhancement or nulling of signals in RX1 by manipulating the phase and magnitude from the second receiver to provide a beam steering or null forming functionality in software.
3. The Memory form has been enhanced to allow for double click selection of memory channels and the optional automatic closing of the memory form after a channel has been selected.
4. New CAT commands to support recently added PowerSDR features. See PowerSDR CAT Command Reference Guide (<http://support.flexradio.com/Downloads.aspx?id=3>) for detailed information.

Known Issues with New Features Included in this Release

TNF may exhibit anomalous behavior when playing back I/Q data files.

TNF will cause an un-handled exception error if used with the DRM mode.

Bug Fixes and Enhancements Incorporated in Release v2.2.3

DE565 FM Squelch results in big CPU jump on medium performing PCs
DE577 TNF: Fixed TNF being turned off by enabling BIN on F5K
DE578 memory.xml is corrupted and reset if PowerSDR is not closed in proper sequence
DE579 TNF: does not work on LSB and AM
DE580 TNF: does not work the first time you start PowerSDR
DE581 TNF: 2x/3x notch not working the first time
DE582 TNF: Zoom tuning view modified
DE583 TNF: Fixed Signal in TNF causing AGC pumping on un-notched signals
DE584 AM AGC does not take carrier into account
DE585 CW Sidetone not working at startup
DE586 Memories not recalling correct split info
DE587 CWX crashes power SDR
DE589 TNF: Fixed Notch status window being drawn below other Notches
DE592 TNF active in other display modes other than Panadapter
DE593 VAC left/right channels swapped on FLEX-5000
DE594 TNF: Notch status is now displayed for remembered notches
DE595 ZZKY "get" command changes the radio's mode to CW
DE598 TNF notch buffer zone is too wide
DE599 ZZSQ and ZZSX commands broken with the new FM Squelch code
DE601 Fixed issue with ZZMN CAT command
DE602 Gain mislabeled on ESC form
DE607 Fixed issues with ZZVB/ZZVC CAT commands
DE608 Fixed issue with ZZTP CAT command
DE609 Memory form option not anchored after screen size change
DE611 Corrected misspelled tooltip in Setup form
DE616 Fixed issue with ZZMZ CAT command
US669 Double click on memory to select
US695 TNF: Maximum number of notches allowed in passband is now six x3 deep
US696 TNF: The TNF+ button is only enabled for compatible display modes
US698 Add CAT commands ZZML, ZZSV, ZZSX to PowerSDR
US699 Change Repeater offset frequency scroll values
US699 FM: FM repeater offset control now changes offset in 100 kHz steps
US707 Add checkbox to close Memory Form after selection is made
US725 Added CAT commands for waterfall control

Database Import Recommendations

We highly recommend starting with a clean database when upgrading from versions prior to v2.0.19 RC1. If you import an old database, please proceed with caution because a number of important parameters have changed.

Firmware Upgrade Procedure

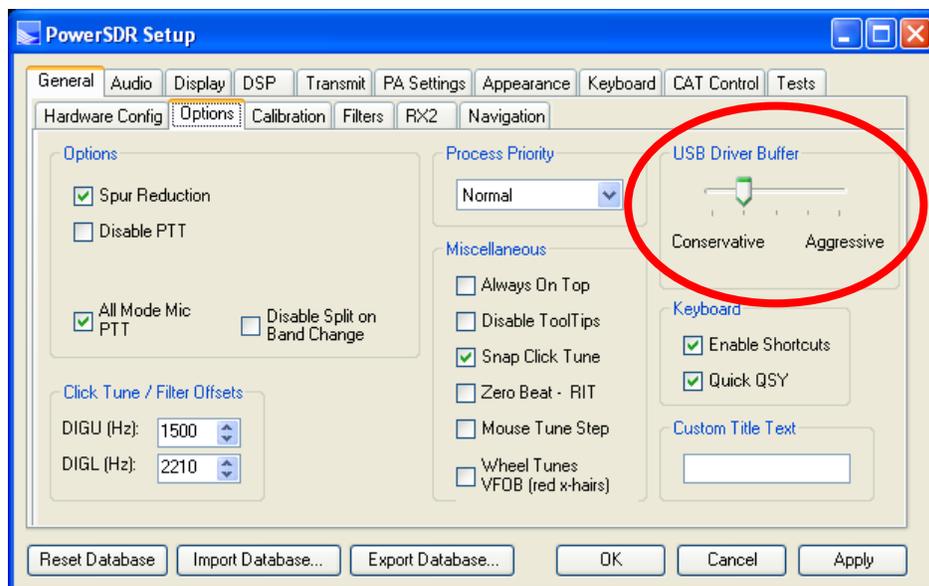
Beginning with PowerSDR v2.0.22, drivers and firmware specific for the model of SDR you are using are automatically installed as part of the software installation & startup process. Do not attempt to manually install a driver or firmware update unless specifically requested by FlexRadio Customer Support.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

Obtaining Technical Support

If you have issues installing or operating PowerSDR v2.2.3 official release with FlexRadio's software defined radios, please contact FlexRadio Systems technical support by opening a helpdesk ticket on-line at <http://helpdesk.flexradio.com> or by phone at +1 (512) 535-4713 extension #2

FLEX-1500 Operation Notes

1. 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 keying. These will reduce latency to a minimum. The exact settings are dependent on your computer hardware but will usually be 512 or 256.

2. The IF offset default is set to 9 kHz in this software release. This causes the centering of the received passband to be slightly off to the side. If you want better centering, you may check the "Expert" box in Setup/General/Hardware Config and set the IF in Hz to some value between 500 Hz and 5000 Hz for better centering.
3. The SPUR REDUCTION (SR) control is default "ON." The frequency span of the Panadapter screen will be wider with SR turned off. Since there are extremely few spurs visible on the FLEX-1500, the recommended normal use of SR is "OFF."

FLEX-5000 and FLEX-3000 Operation Notes

1. If the FLEX 3.5.5.10185 FireWire driver fails to load properly after installing PowerSDR v2.2.3, it will prevent previous version(s) of PowerSDR from working correctly. On rare instances, a previous FireWire driver install can prevent the Integrated Installer from properly installing the FireWire driver. If this condition exists after installing PowerSDR v2.2.3, remove all previous FireWire driver installations and perform a new driver installation by running the following procedure.
 - Shut down PowerSDR and power off your software defined radio.
 - If the FLEX FireWire control panel is open, close it.
 - Run the PowerSDR v2.2.3 Integrated Installer and select the REMOVE option.
 - Using the Windows Control Panel, select the Remove Program applet.
 - Look for any instances of the FLEX FireWire driver. They will be listed as FlexRadio 3.5.2.8028 or FlexRadio 3.5.0.7171. Remove all instances of the FlexRadio FireWire driver.
 - Reboot your PC.
 - Run the PowerSDR v2.2.3 Integrated Installer Suite setup program.
 - After the PowerSDR v2.2.3 Integrated Installer has completed, reboot your PC if requested.
 - 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 (see the PowerSDR v2.0 Quick Start Guide for your particular SDR for additional details on installing the FireWire driver).
 - Verify that the FireWire driver is properly installed by opening the FLEX FireWire Driver Control Panel. The FLEX-x000 should be a recognized device.
 - Start PowerSDR v2.2.3 and proceed with the initial setup wizard.
2. You can run a FLEX-x000 SDR and a FLEX-1500 on the same PC at the same time as long as you use separate databases for each radio. A new "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.

SDR-1000 Operation Notes

The new CW keyer provided in PowerSDR versions starting with v2.0.22 require a microprocessor inside the radio to achieve the real time performance levels needed for break-in CW using attached paddles. The SDR-1000 does not incorporate such a microprocessor. Therefore, beginning with v2.0.22, attached paddles are no longer supported on the SDR-1000. From this point forward CW paddles are supported on the SDR-1000 only through the use of COM port keying. Please refer to the SDR-1000 Operating Manual pages 138-140 for setup and operation using this method.