



SmartSDR™ for Windows v1.0.0

Release Notes

September 30, 2013

SmartSDR for Windows v1.0.0 is a general availability release intended for use with the FLEX-6500™, FLEX-6700R™ and FLEX-6700™ software defined radios.

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IMPORTANT: Please read this document in its entirety before installing the new release of SmartSDR for Windows.

We at FlexRadio Systems strive to provide you with the best possible software defined radio experience. As promised in the FLEX-6000 roadmap we are continuing to focus on performance and baseline functionality. SmartSDR v1.0 delivers SSB/AM/CW/QSK CW, international support, brick wall filters, antenna modes and basic persistence. This new software is available for immediate download at our website, www.flexradio.com. For detailed information on the new software, see the Release Notes below. As always, please share your feedback and experiences via the FlexRadio Community (community.flexradio.com).

SmartSDR for Windows v1.0.0 New Features and Updates

Please refer to the release specific information for SmartSDR v1.0.0 below for a detailed listing of enhancements, changes and defect corrections.

Important Release Details

- **This release of SmartSDR contains an upgrade of SmartSDR CAT. The new version is 1.1.7**
- As with any new software product, there will be some as yet undiscovered defects in the software. If you happen to encounter a behavior that you consider a software defect or bug, please submit a support ticket report to: <http://helpdesk.flexradio.com>. This will help us properly track the issues and interact with you directly if further information for testing is needed. Thanks in advance!
- Your FLEX-6500 or FLEX-6700 transceiver with SmartSDR included 1 year of software updates and support. Limited Edition versions were provided an additional 2nd year of software updates and support. Your software update and support period will not start until SmartSDR for Windows Development Roadmap items have been completed (<http://support.flexradio.com/Downloads.aspx?id=425>).

Recommendations for Using SmartSDR Features

1. When setting up your microphone audio for optimal modulation *with Compression turned off*, adjust the input gain so that the peak hold indicator shown on the Level bar meter is peaking at or just at or above the 0 dB a majority of the time. Occasionally exceeding 0 dB is acceptable.
2. After setting the microphone input level as described, enabling the compressor will result in a higher peak level reading – do not change the mic gain to achieve a 0 dB reading on voice peaks with the compressor enabled.
3. When using a FlexControl with SmartSDR, plug the FlexControl into the PC running SmartSDR for Windows and not the USB port on the radio.

SmartSDR for Windows:

- Initial release of SmartSDR for Windows
- Ability to create four (4) Panadapters / Slice Receivers for the FLEX-6700
- Ability to create two (2) Panadapters / Slice Receivers for the FLEX-6500
- High resolution Panadapter spectrum display
- Variable display frame rate settings per panadapter
- Demodulation Modes: AM, CW, USB, LSB, DIGU and DIGL
- Quick Select “favorite” demodulation mode feature per slice
- Demodulation mode specific Preset filters
- DSP Capabilities: ANF, NB and NR
- AGC Modes: Fast, Medium, Slow and Off with AGC Threshold control
- Individual Slice receiver audio gain, mute and left/right pan controls
- Individual Master audio mute and gain controls for Speaker and headphone outputs
- S-Meter with dBm readout for each Slice receiver
- Individual Antenna selection capabilities for Panadapters and Slice Receivers
- Direct keyboard entry for changing slice frequency
- FlexControl and mouse scroll wheel for changing the Active Slice frequency
- Quick QSK feature for creating a Slice receiver in a ham band
- Real-time metering for signal strength, RF power, SWR, mic level and mic compression
- Operational Antenna Tuning Unit (ATU) with manual TUNE capability
- Multiple microphone and audio input selections
- Microphone boost, compression and monitor controls
- VOX for “PTT free” operation
- Separate 8-band TX and RX Equalizers (EQs)
- Variable low and high cut transmit filter setting up to 10 kHz for each side band
- Quick Set Mic bias voltage feature on front panel mic connector for condenser mic elements
- Full break QSK CW operation
- CW operation with either straight key or paddles
- Iambic A and B internal keyer with paddle swap feature
- Internal keyer with speeds up to 100 WPM and user configurable delay settings
- CW Sidetone volume and variable pitch control
- Full GPS readout with automatic Maidenhead grid square calculation for GPSDO enabled FLEX-6000s
- Modification of transmit frequency ranges for IARU region 3, Japan and certain EU countries
- MARS capable (requires a valid MARS license)

SmartSDR CAT:

- The initial release for SmartSDR CAT is v1.1.7
- Integrated Virtual serial port driver
- Dedicated, shared and PTT virtual serial port capability
- Separate FLEX-6000 client software; can be run on one or multiple computers at the same time
- Kenwood CAT and FlexRadio CAT commands supported
- Interfaces directly with DDUtil via an IP connection; no CAT ports needed.

Known Issues, Caveats and Limitations

1. Many settings in the radio are persisted across startup of the radio. Band and Mode oriented controls are not persisted at this time but are planned for future release.
2. It is recommended that compression and EQ be disabled while using DIGL or DIGU modes to prevent altering the transmitted digital waveform.
3. Hardware ALC input for amplifier exciter control is not currently implemented.
4. Hardware Remote Power On is not currently implemented.
5. FLEX-6700 support for 8 Panadapters/Slices and FLEX-6500 support for 4 Panadapters/Slices is not currently implemented. Only 4 and 2 Panadapter/Slices respectively are currently supported.
6. The FlexControl supports the tuning of the Active Slice receiver. The multi-function control buttons are not currently implemented.
7. In some situations the FlexControl will choose a COM port that has already been assigned by a virtual COM port or other device. It may be necessary to move the FlexControl to a different COM port and disconnect/reconnect the FlexControl to solve this issue.
8. To use an external 10 MHz clock reference via the back panel input, it must be active when the radio is powered on for the radio to use it.
9. Multiple double clicks on the Band buttons may orphan Slice and Panadapter resources.
10. Pressing a Band button may change the antenna selection for the Panadapter and related Slices.
11. Pressing a Band button may deselect the selected transmit Slice.
12. Pressing a Band button on a FLEX-6500 with multiple Panadapters may cause an existing Slice to be closed when one is expected to show up on the new band.
13. When making antenna changes, the Preamp settings may be lost.
14. When switching bands to 2m or 4m, it may be necessary to change the frequency of the transmit slice before transmit works properly.

SmartSDR for Windows Installation Information

SmartSDR 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 SmartSDR v1.0.0.

1. Minimum recommend CPU for SmartSDR v1.0.0 and greater is an Intel Core 2 Duo or an AMD Athlon 64 X2 and greater. Lesser processors may not perform adequately when displaying multiple or full screen spectrum displays.
2. The minimum version of Windows supported by SmartSDR v1.0.0 is Windows XP Service Pack 3 (SP3). The SmartSDR v1.0.0 Installer will automatically detect your current Windows version and will notify you if it does not meet the minimum operating system requirements. If your Windows XP PC has not been upgraded to SP3, you must do so before installing SmartSDR v1.0.0. See [Minimum Windows and .NET Requirements](#) below for obtaining the Windows XP SP3 software update.
3. SmartSDR™ for Windows is a WPF ([Windows Presentation Foundation](#)) application which utilizes a video card's graphics processing unit (GPU) for optimal performance rendering the spectrum displays. If your video card does not fully support hardware graphics acceleration or DirectX 9 and greater, then SmartSDR™ for Windows will revert to using the PC's CPU for rendering the displays, which will consume more CPU than running with a video card that has sufficient hardware accelerated graphics capabilities. A high-end "gaming" type video card is **not** required for running SmartSDR for Windows. Please see the HelpDesk article [What is important in choosing a Video Graphics Card?](#) for additional information on graphics card recommendations.
4. When SmartSDR for Windows is started for the first time (a cold start), there may be a slight delay of up to 15-30 seconds while .NET framework performs a one-time JIT compile. All subsequent restarts of SmartSDR for Windows should start up much faster after the initial cold start.

Minimum Windows and .NET Requirements

SmartSDR 1.0.0 is a Windows 64 and 32-bit .NET Framework application designed to operate on Windows XP SP3, Vista, Windows 7 and Windows 8. The .NET Framework 4.0 Client Profile is required.

If you need to install Service Pack 3 (SP3) for Windows XP, *install it before installing the .NET Framework 4.0 Client Profile*. The easiest method for obtaining it is to use the [Windows Update](#) service. An optional update method is to download the XP SP3 update software via the Internet directly from Microsoft using this web link: <http://www.microsoft.com/en-us/download/details.aspx?id=24>. Note this is a very large download (~316 MB) which may take over an hour to download using slower Internet connections.

If you need to install the .NET Framework 4.0 Client Profile, the SmartSDR 1.0.0 Installer will automatically install it from the [SmartSDR Installation CD](#) or attempt to download the necessary software from the Internet if the CD is not available. Alternately, you can download it directly from Microsoft using this web link before installing SmartSDR for Windows. <http://www.microsoft.com/en-us/download/details.aspx?id=17113>

FLEX-6000 Software Update/Modification Procedure

Preparing for the FLEX-6000 Software Upgrade

Before operating a new or different version of SmartSDR for Windows with your FLEX-6000, shut down any programs (clients) that can communicate with the radio such as SmartSDR CAT. To ensure that all client connections have been terminated, it is best to power cycle the radio first using the front panel power button.

When running SmartSDR for Windows a software version validation check occurs to ensure that any FLEX-6000 available for selection from the Radio Chooser is running the required software. If the FLEX-6000 is not running the required software, an upgrade (or downgrade if you are using a previous version) will be required. This is the case when running a new version of SmartSDR for Windows for the first time with your FLEX-6000 or running an older version of SmartSDR for Windows.

Upgrading the FLEX-6000 Software

If an available FLEX-6000 requires a software modification, an indication is shown in the Radio Chooser; the FLEX-6000 radio icon will display a yellow Upgrade "status dot" rather than the green Available status dot. After selecting a FLEX-6000 from the Radio Chooser that requires a software modification, the Update info screen is displayed on the right side of the Radio Chooser window. Click the yellow Update button to start the upgrade process. This may take several minutes to complete.

Do not close SmartSDR for Windows, disconnect the network connection or power off the FLEX-6000 during the software modification process. Leave the SmartSDR for Windows application running for status update messages. The "Available" status prompt will be shown after the software modification has successfully completed indicating the radio is ready to use.

Transferring the radio software from the client PC to the FLEX-6000 is the first step of the software modification process. This stage of the software modification process takes usually less than a minute and is indicated by the SmartSDR for Windows progress bar starting to move towards the right along with the FLEX-6000 console LED display showing "Updating Software" and the power button LED turning purple.

After the FLEX-6000 upgrade software package has been successfully transferred, the FLEX-6000 will reboot and may show several different status messages on the console LED, such as "Calibrating" and "Updating Software" during the software modification process. The radio may reboot several times too depending on the software components being updated. During one stage of the software modification process, the chassis fans may momentarily operate at full speed. Do not be alarmed, as this behavior is normal.

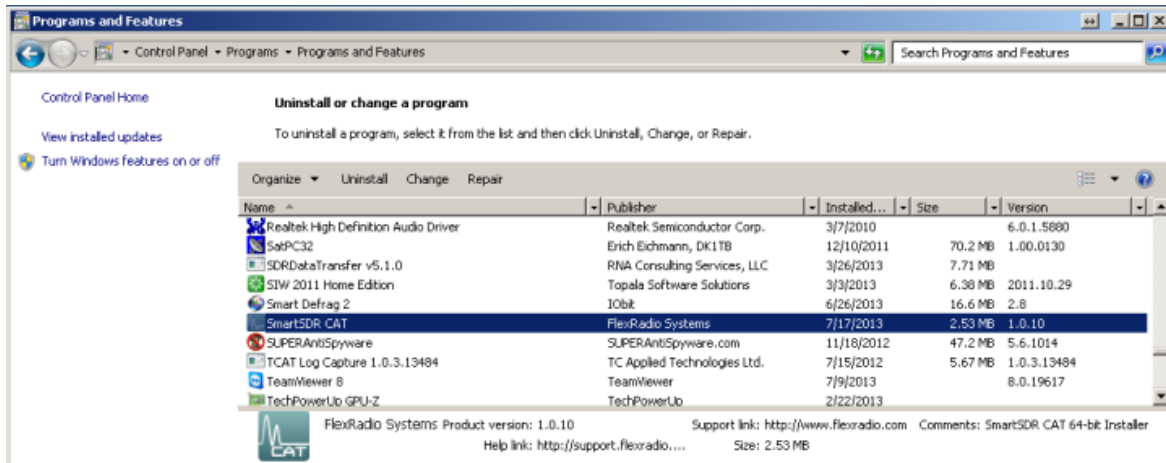
When the software modification process is complete, the FLEX-6000 console display will show the model number of your radio. At this time you should see the FLEX-6000 show up in the SmartSDR for Windows radio chooser window with the green "Available" status dot. Double click on the FLEX-6000 icon to begin using the radio.

SmartSDR CAT Upgrade Procedure

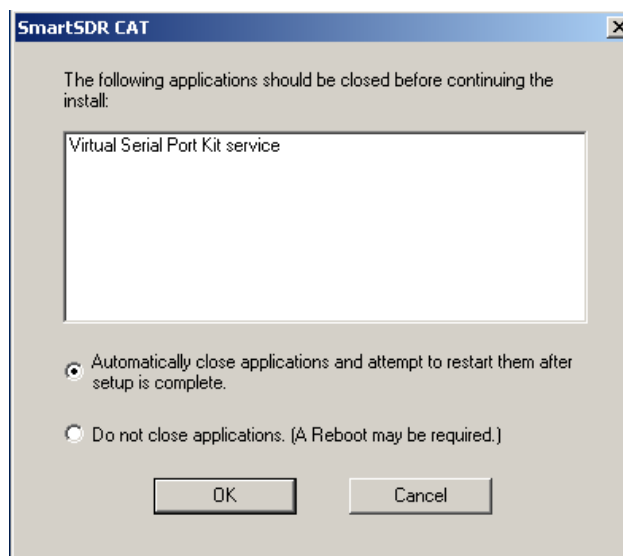
SmartSDR CAT is not automatically installed with SmartSDR for Windows because it must be manually uninstalled and your PC rebooted before installing a new version.

Uninstalling SmartSDR CAT

1. Close the **SmartSDR CAT** application and any programs that connect to the FLEX-6000 via CAT including DDUtil.
2. Open the **Windows Control Panel** and select **Uninstall a Program**
3. Look for the **SmartSDR CAT**, **CAT_32** or **CAT_64** program entries and right click on it to display the Uninstall menu



4. Left click on the Uninstall option.
5. Answer **Yes** to the prompt *"Are you sure you want to uninstall SmartSDR CAT"*
6. SmartSDR CAT will begin to uninstall.
7. If you receive a prompt to *"Automatically close applications and attempt to restart them after setup is complete"*, click on **OK** to continue. See image below.

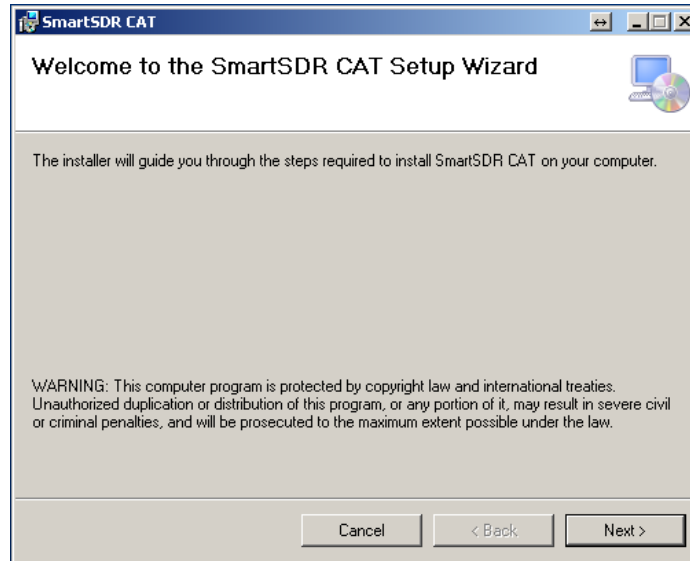


8. After SmartSDR CAT has finished uninstalling, reboot your PC.

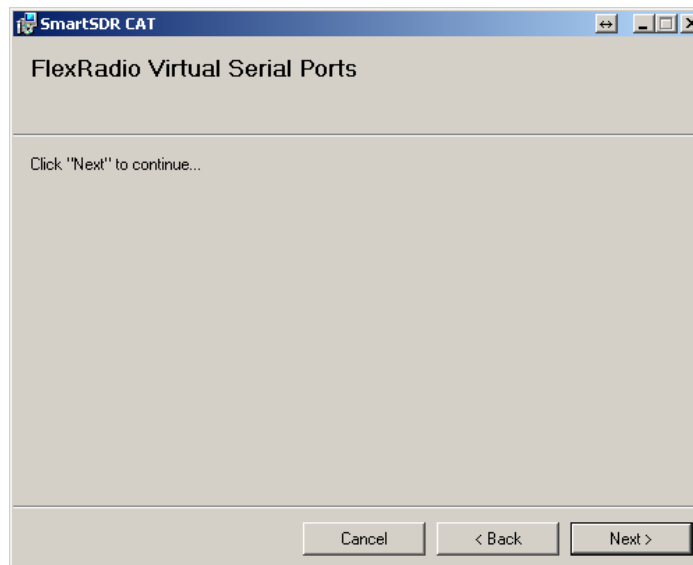
Installing SmartSDR CAT

The **SmartSDR CAT setup** file is copied to your PC for installation after SmartSDR for Windows has been installed. It can be found in the **FlexRadio Systems -> SmartSDR v1.0.0 program folder** that is accessible via the Windows Start button.

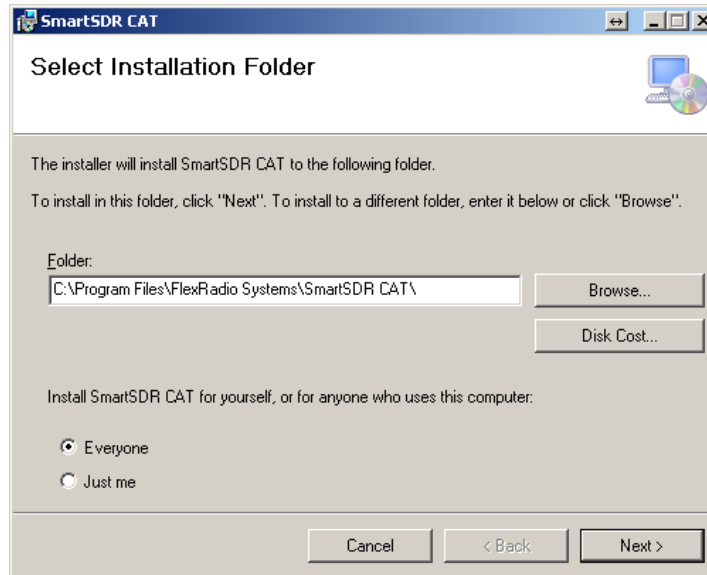
1. Click on SmartSDR CAT to start the installation. The Welcome to SmartSDR CAT Setup Wizard screen is displayed. Click on the **Next** button to continue.



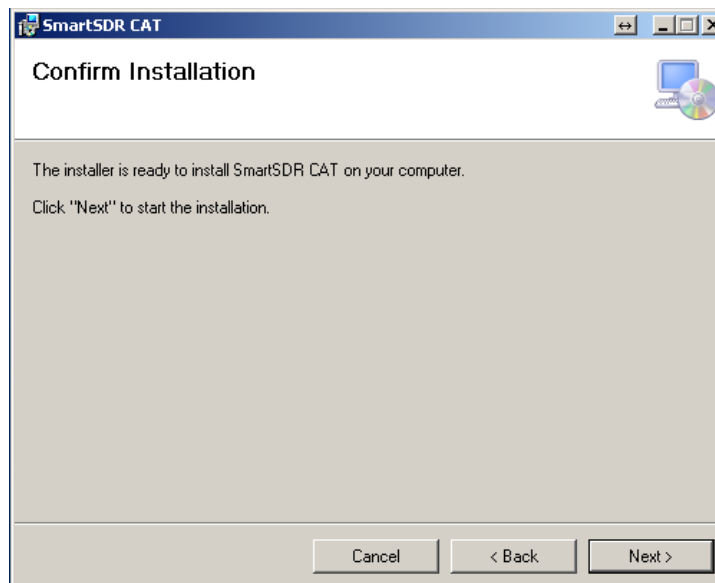
2. The FlexRadio Virtual Serial Ports screen is displayed. Click on the **Next** button to continue.



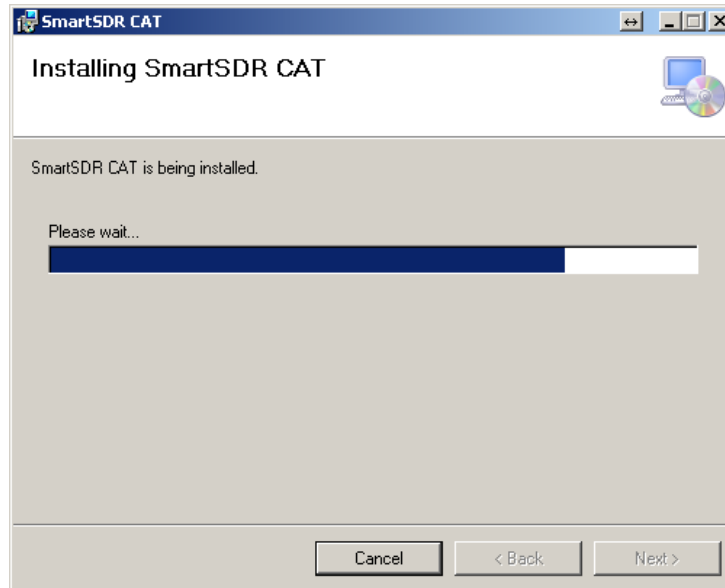
3. The Select Installation Folder screen is displayed. Choose the folder location for the SmartSDR CAT application. The default location is recommended. Click on the **Next** button to continue.



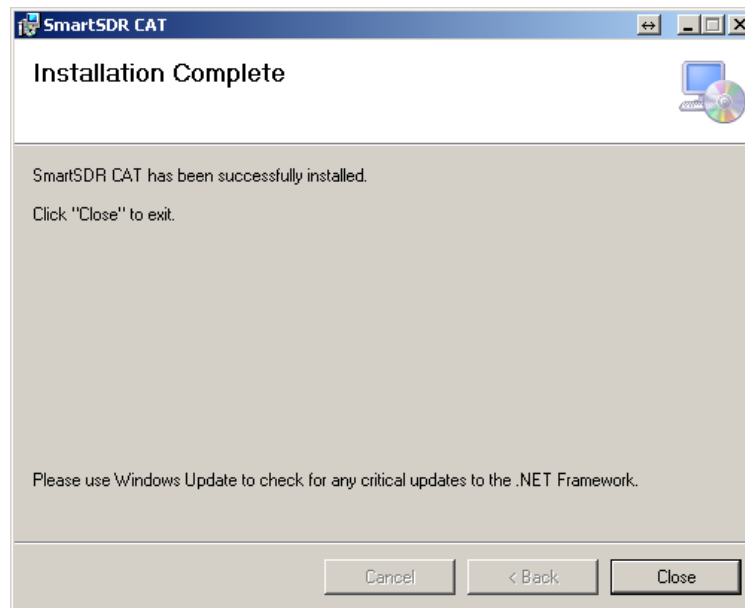
4. The Confirm Installation screen is displayed. Click on the **Next** button to continue.



5. The Installing SmartSDR CAT screen is displayed. A progress bar is displayed to visually indicate the percent of completion.



6. The Installation Complete screen is displayed once SmartSDR CAT has been successfully installed. Click on the **Close** button to exit the SmartSDR CAT setup program.



Refer to the SmartSDR CAT user Guide for a detailed explanation how to interface third-party CAT enabled application to a FLEX-6000 Signature Series SDR.

Obtaining Technical Support

If you encounter any issues installing or operating SmartSDR v1.0.0 with FlexRadio Systems' Signature Series software defined radios, please use our on-line Support Community (<http://community.flexradio.com>) for authoritative information about SmartSDR and the FLEX-6000. If you are unable to find an answer to your issue on the Support Community, 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. 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 9:00am-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 during regular business hours in the order it was received.

You may always post a question or report a problem on the Support Community or submit a HelpDesk support ticket at any time.

If you need assistance using the Support Community, please refer to the community topic "[How to use the FlexRadio Systems Support Community](#)" (http://community.flexradio.com/flexradio/topics/how_to_use_the_flexradio_systems_support_community).

If you need assistance opening a HelpDesk ticket, please refer to the [HelpDesk Assistance Center](#) home page for step-by-step instructions.

Please refrain from using the existing Yahoo groups, Facebook, *FlexRadio* or *FlexEdge* reflectors to post SmartSDR Preview related questions. Thank you for your cooperation and understanding.

SmartSDR Documentation

A detailed and cumulative **changelog.txt** file along with other ancillary documentation can be found in the Documentation folder under the FlexRadio Systems Windows Start menu for SmartSDR v1.0.0

SmartSDR for Windows Software Manual

The most current SmartSDR for Windows Software Manual is available for download from the FlexRadio Systems web site using this direct URL: <http://support.flex-radio.com/Downloads.aspx?id=427>

FLEX-6000 Signature Series Hardware Reference Guide

The most current FLEX-6000 Signature Series Hardware Manual is available for download from the FlexRadio Systems web site using this direct URL: <http://support.flex-radio.com/Downloads.aspx?id=428>

FLEX-6000 Signature Series Quick Start Guide

The most current FLEX-6000 Signature Series SDR Quick Start Guide (QSG) in PDF format is available for download from the FlexRadio Systems web site using this direct URL:

<http://support.flex-radio.com/Downloads.aspx?id=420>.

SmartSDR CAT User Guide

The most current SmartSDR CAT User Guide is available for download from the FlexRadio Systems web site using this direct URL:

<http://support.flex-radio.com/Downloads.aspx?id=424>

SmartSDR Troubleshooting Tips

In the event that you encounter problems running SmartSDR for Windows, please use the following troubleshooting tips

FLEX-6000 Does Not Show Up in the Radio Chooser

If the FLEX-6000 does not show up in the Radio Chooser, the most probable fault is network related. There are several network components that can be at fault.

Physical Layer Issues

After connecting your FLEX-6000 to either a network router, an Ethernet switch or directly connected to your PC, check to make sure the FLEX-6000 is properly connected at the network physical layer.

Looking at the back of the FLEX-6000 at the Ethernet connection, below the connector on the left is the link state LED. It should be illuminated Yellow when the radio is powered on. If not, you do not have a physical layer connection and you should check or try the following:

- Make sure the Ethernet cable is plugged all the way in on both ends. A click should be heard when it is seated completely.
- Make sure the network router, PC or Ethernet switch is powered on before powering up the FLEX-6000.
- Most network routers and Ethernet switches will have their own link state LEDs associated with the port the FLEX-6000 is connected. Check to make sure the link state LED for the port connected to the FLEX-6000 is illuminated. If the port connected to the FLEX-6000 is blinking at a steady rate, this can indicate that the port is partitioned. Please refer to your network hardware manual for additional information
- Power cycle the FLEX-6000 to re-initialize the Ethernet port.

Firewalls Preventing Network Access from the FLEX-6000

The FLEX-6000 broadcasts a network discovery packet (message) that is received by SmartSDR for Windows. SmartSDR for Windows uses this information to populate the Radio Chooser. Therefore if the FLEX-6000 is not displayed in the Radio Chooser or after connecting to a FLEX-6000 there is no spectrum displayed, one reason may be that a firewall on your PC (software firewall) is preventing access. The SmartSDR for Windows Installer automatically modifies the Windows firewall to allow the FLEX-6000 discovery packet and other network traffic to pass properly, but if a third-party network security suite or virus protection package that has been installed; their firewall will most likely block access from the FLEX-6000. You may not even be aware that secondary PC level firewalls are installed on your PC, so if you experience connectivity problems, this is the first thing that needs checking.

Additionally you may have a firewall running on a network router, which is referred to as a “hardware” firewall. It too can be improperly configured that will prevent network access between the FLEX-6000 and SmartSDR for Windows.

In these cases, the action to resolve this condition is to modify the third-party firewall software to allow access from any host on your local network to SmartSDR for Windows by allowing all TCP and UDP port access to SmartSDR for Windows.

If the installed third-party software firewall is redundant, it may be disabled *at your discretion*. Please contact your firewall vendor for information regarding disabling or modifying the firewall for FLEX-6000 access. Below are a few of the more popular third-party firewall products.

Third-party Software Firewalls

- ESET Smart Security (www.eset.com/SmartSecurity)
- Norton 360 (<http://us.norton.com/360/>)
- Comodo Firewall Pro (<http://personalfirewall.comodo.com/>)
- ZoneAlarm Free Firewall (<http://www.zonealarm.com/>)
- Ashampoo (<https://www.ashampoo.com/en/usd>)
- Agnitum (<http://www.agnitum.com/>)
- TinyWall (<http://tinywall.pados.hu/>)
- Online Armor Free (<http://www.online-armor.com/products-online-armor-free.php>)
- OutpostFree Security Suite (<http://free.agnitum.com/>)
- Private Firewall (http://www.privacyware.com/personal_firewall.html)
- AVS Firewall (<http://www.avs4you.com/AVS-Firewall.aspx>)

MAC Address Filtering

Some hardware firewall / router / Wireless access point products have a feature that restricts access to the network based on the connected device's media access control (MAC) address. If this feature has been enabled, failure to add the FLEX-6000 to the permitted MAC address access control list will prevent the FLEX-6000 from showing up in the SmartSDR for Windows Radio Chooser control panel.

The MAC address of the FLEX-6000 can be determined from the Firewall's device list.

For hardware based firewalls, resetting it to factory defaults will usually resolve the misconfiguration that is preventing network access between the FLEX-6000 and SmartSDR for Windows.

RF Spectrum Not Displayed after Selecting a FLEX-6000

After a FLEX-6000 has been selected, a default panadapter is displayed showing active RF spectrum. If no spectrum is displayed, there are several possibilities that could be causing the failure.

Low bandwidth connection between the FLEX-6000 and the PC running SmartSDR for Windows – If the PC running SmartSDR for Windows is connected to the FLEX-6000 via a wireless network connection, there is a possibility that a combination of low data streaming throughput and packet loss can result in a spectrum display that momentarily freezes or will not be displayed at all. If you experience this behavior, connect the FLEX-6000 directly to the PC via the Ethernet cable and reboot the radio when the PC is powered on. If the direct connect method resolves the problem, then the wireless network is not sufficient for connecting to the FLEX-6000.

Panadapter resource not available – If a panadapter resource is not available in the radio, it is possible that the resource has been orphaned by an abnormal close of SmartSDR for Windows. In this case, power cycling the radio will free the locked panadapter resource.

Use of an Intel HD 4600 Embedded Graphics adapter – There are verified problems with the new Intel HD 4600 graphics chipset that results in no spectrum display. The HD 4600 Graphics adapter is found in Intel Haswell-based CPU system that incorporates the Z87 chipset. There is no known resolution at this time other than adding a third-party graphics adapter to the PC.

SmartSDR™ for Windows End User License Agreement

SmartSDR™ for Windows End User License Agreement

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For a period of ninety (90) days from the date of shipment or from the date that you download the Software Product, as applicable, FlexRadio Systems warrants that when properly installed and used under normal conditions, the storage medium on which the Software Product is shipped will be free of material defects in material and workmanship.

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