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SimFx  
AUDITORY SIMULATION SOFTWARE  
USER MANUAL  
PST-100737





## **SimFx Auditory Simulation Software User Manual**

**PST-100800**

**Rev 3**

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*This manual describes the installation procedure for the SimFx software. Please review the manual completely and thoroughly before beginning the system installation.*

**The SimFx Auditory Simulation Software (PST-100737) is for research purposes only.**



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# Chapter 1: Introduction

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## 1.1 Software Overview

Psychology Software Tools' SimFx software creates an auditory simulation of an authentic MRI environment. SimFx not only replicates the active scanner noises, and generates ambient sounds; it has the ability to play back up to four different sound files simultaneously. It also is capable of accepting serial input. Coupled with a simulator, SimFx allows you to recreate an effective, simulated MRI environment.

The following pages will guide you through the use and installation of SimFx.

 **NOTE:** *This program is compatible with 32-bit and 64-bit Window XP, VISTA and Windows 7. Please note that the file paths will vary accordingly.*

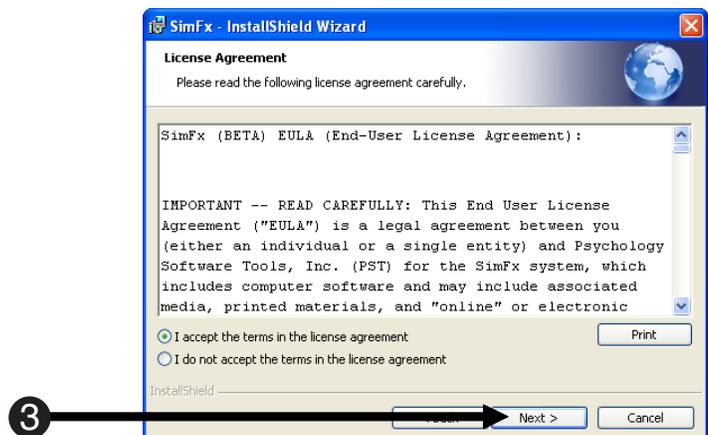
# Chapter 1: Introduction

## 1.2 Software Installation

Before continuing, be sure that you have administrative rights to install this software on the computer. If you do not have administrative rights, you will be unable to install SimFx. If you are unsure of your administrative privileges, contact your System Administrator.

**! NOTE:** The version number on the following screen grabs may not correspond to the version number on your software.

- 1) **Insert** the SimFx installation CD into your CD-ROM drive. If the CD does not automatically start, **navigate** to your CD-ROM drive in Windows Explorer and **open Setup.exe** to launch the installation.
- 2) **Click "Next"** when you see the window.
- 3) **Please read** the License Agreement and make sure that you **agree completely** with the terms and conditions described in the agreement before proceeding. Once you have read the agreement, **click "Next"** to proceed with the installation.
- 4) **Enter** the Customer Information in the window shown. **Specify a User Name and Organization** or check with your system administrator for appropriate information.
- 5) **Click "Next"** to begin transferring files to your computer.



## Chapter 1: Introduction

6) **Click** “Next” to install to the Destination folder.

7) **Click** “Install” to begin the installation.

8) **Wait** for the installation to finish.

9) If SimFx was installed properly, you will see the following window. **Click** “Finish” to complete the installation.

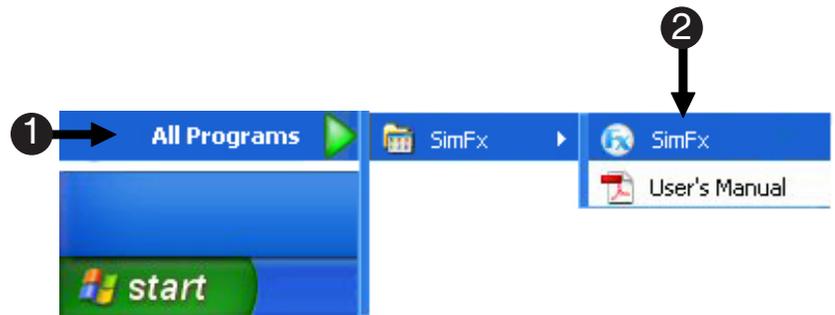


## Chapter 2: Getting Started Guide

### 2.1 Opening the Application

Once you have successfully installed the SimFx software you can open the application through the Windows Start Menu.

- 1) **Click** on the **Windows Start** menu, **select All Programs**, and then **select SimFx**.
- 2) **Click** on **SimFx** to launch the application.
- 3) **Wait** for the application to load.



## Chapter 3: User Interface

### 3.1 Sound Playback

The SimFx software was designed to be user friendly. It includes pre-recorded ambient noises, anatomical and functional scanner sounds, and it supports a number of file formats if you would like to add sound files to the library.

#### 3.1.1 Supported file formats

*.wav, .mpa, .mp2, .mp3, .au, .aif, .snd, and .wma.*

#### 3.1.2 Sound library

Background Sounds			
File Name	Scan Type/Description	Length	Sound Type
AmbientNoise.wav	White noise, static	10 seconds	monophonic
CryogenicPump.wav	Noise from cryogenic pumps in scanner room	7.47 seconds	monophonic
AmbientCryogenic.wav	Ambient.wav and CryogenicPump.wav in one .wav file	7 Seconds	monophonic

Scanner Sounds			
File Name	Scan Type/Description	Length	Sound Type
GE_DTI.wav	Diffusion Tensor Imaging sequence	14.29 seconds	monophonic
GE_SE.wav	Spin Echo sequence	9.89 seconds	monophonic
GE_EPI.wav	Echo Planer Image sequence	4.89 seconds	monophonic
GE_GRE.wav	Gradient Echo sequence, 2D low resolution structural (InPlane)	4.77 seconds	monophonic
GE_SPGR.wav	Incoherent Gradient Echo (RF Spoiled), Spoiled GRASS sequence, 3-D high resolution structural sequence	7 minutes	monophonic
Siemens_DTI.wav	Diffusion Tensor Imaging sequence	16.80 seconds	monophonic
Siemens_Echo.wav	Fast Spin Echo sequence	10.35 seconds	monophonic
Siemens_EPI.wav	Echo Planer Image sequence	59.60 seconds	monophonic
Siemens_Localizer.wav	Low resolution structural image sequence	14.29 seconds	monophonic
Siemens_MPRAGE.wav	Gradient Echo 3D high resolution structural sequence	6 minutes 53 seconds	monophonic
Siemens_PD-T2.wav	Proton density T2 weighted Image sequence, low resolution structurals (InPlane)	57.35 seconds	monophonic

 **NOTE:** You need Administrative rights to add/change/remove any sound file.

## Chapter 3: User Interface

### 3.2 Load Sound

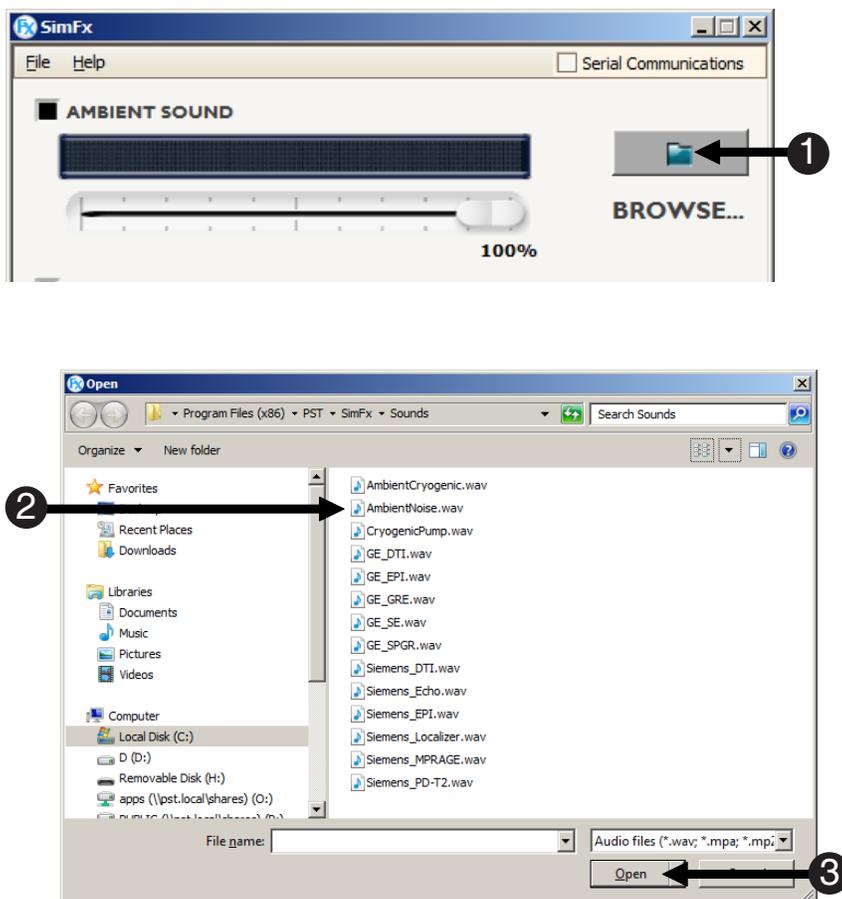
In order to load a sound file, click the browse buttons located on the right side of the application, navigate to the appropriate directory and select the desired sound file to be played. The browse file window will automatically open at the designated location of the installed sound files.

- 1) **Click** on the **Browse** button to select a file.

**NOTE:** You will be directed to the default Sound Folder location which is: C:\Program Files(x86)\PST\SimFx\Sounds. XP users will be directed to C:\Program Files\PST\SimFx\Sounds unless you designated a different location at the installation.

- 2) **Select** a file.

- 3) **Click** Open.



## Chapter 3: User Interface

### 3.3 Play Sound File

The play and stop buttons will be disabled until a sound file is loaded in one of the text boxes. The checkbox that corresponds with the loaded sound file must be checked for SimFx to play the file. The sound file playback is controlled by the start and stop buttons located at the bottom of the application.

- 4) **Confirm** the checkbox is **checked**. The text will appear in the digital display.

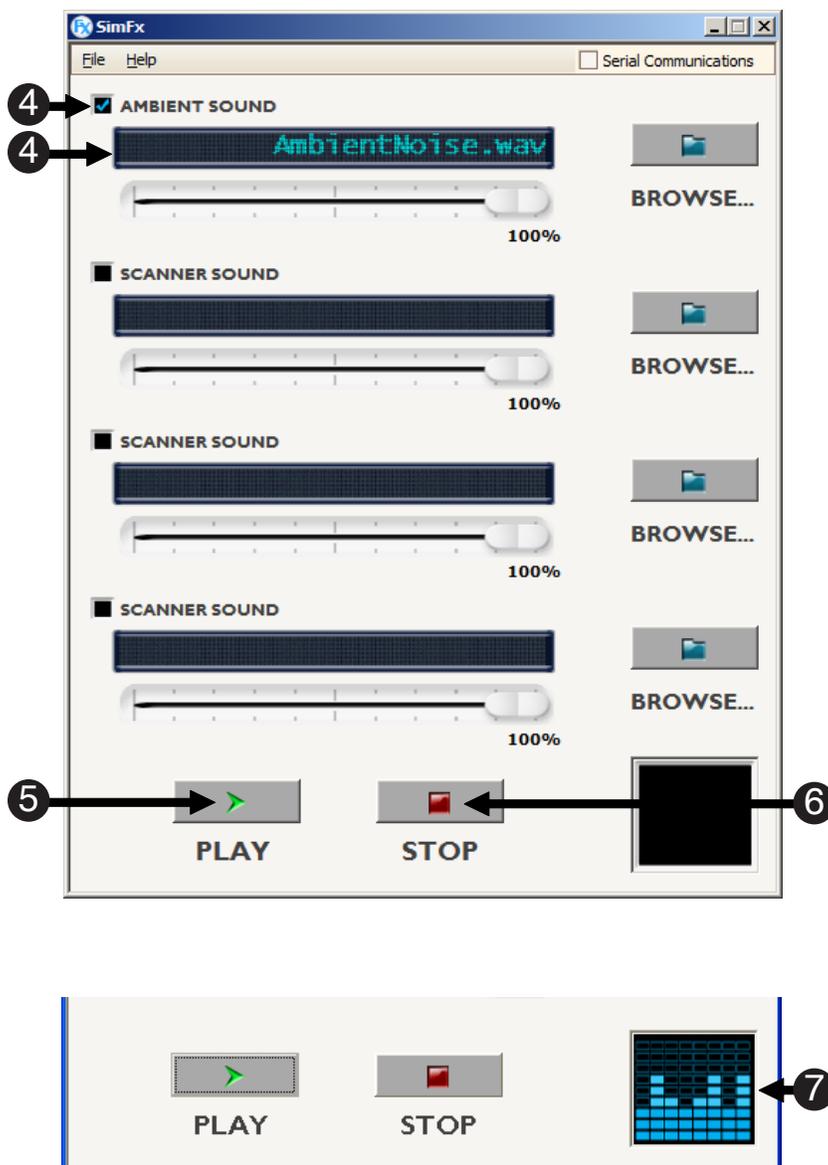
- 5) **Click Play** to begin playback.

- 6) **Click Stop** to terminate playback.

**NOTE:** Once playback has begun, the loaded sound file cannot be changed before playback is terminated.

- 7) **Check** the equalizer.

**NOTE:** If the equalizer is animated, but you cannot hear the sound, check that the system volume is not muted or turned down and check the speaker connections.



## Chapter 3: User Interface

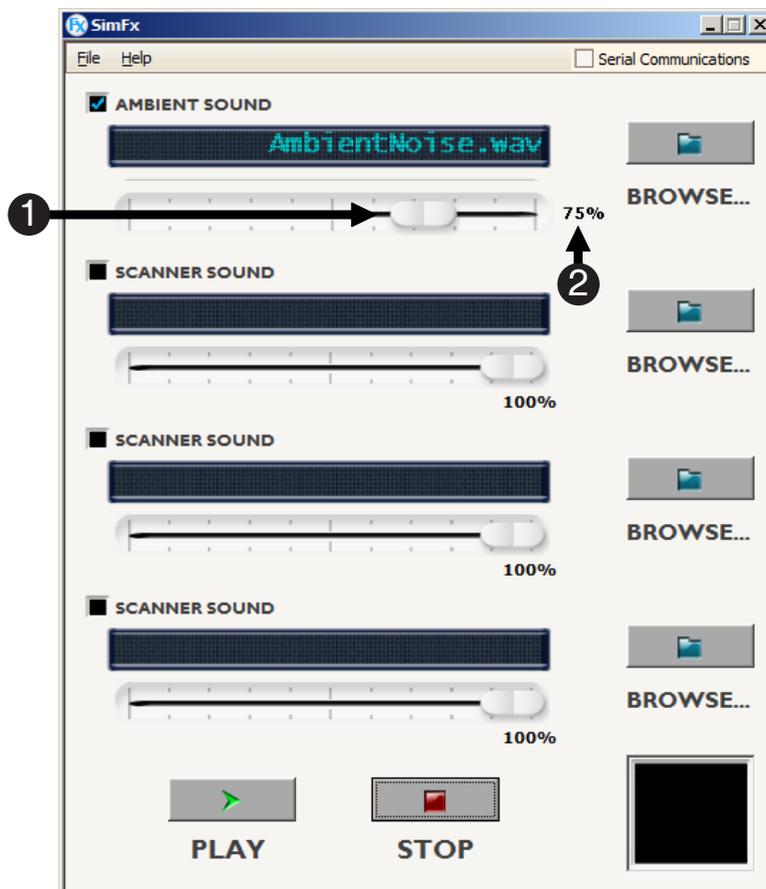
### 3.4 Volume Control

The volume control for each sound file is located beneath the digital display. The slider is used to control the volume of the associated sound file. To decrease the volume, drag the slider to the left, and increase the volume by dragging the slider to the right.

1) **Click** and **drag** the slider left and **right** to **increase** or **decrease** the volume.

2) The **text** below the slider **indicates** the volume level (%).

**NOTE:** The volume control for each sound file is located beneath the digital display.

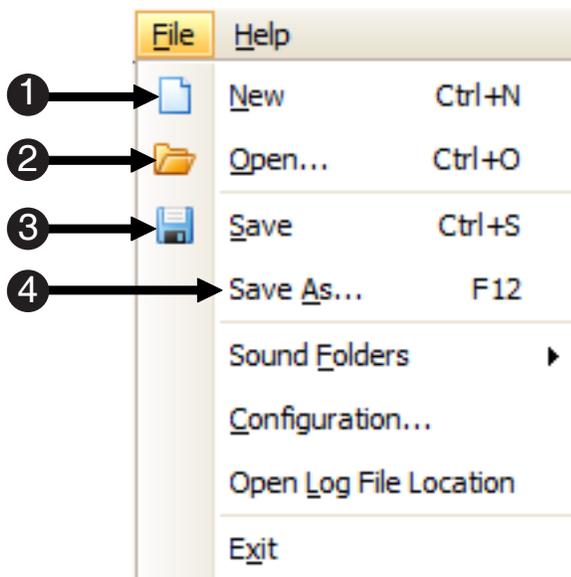


## Chapter 4: File Menu

### 4.1 Basic Features

The File Menu consists of two options, File and Help. The File option of the File Menu contains general application functionality such as the save, open, exit operations. The Help Menu contains a link to the documentation and information about the SimFx installation.

- 1) **New:** This menu option clears all user defined configurations, and returns the application state to default.
- 2) **Open:** Allows a previously saved configuration to be loaded.
- 3) **Save:** Saves current user configuration into a file. If the configuration does not initially have a name, you will be prompted to name the file.
- 4) **Save As:** Saves current open user configuration into a file. The name of the file is specified by user.



## Chapter 4: File Menu

### 4.1 Basic Features

SimFx installs several sample sound files in a default location on the installation system. This location can be accessed via the File Menu for convenience. The default sound folder can also be changed to any folder located on the system. Please note, you must have administrative privileges to write to the default sound folder location.

1) **Go to File Menu, Select Sound Folders.**

2) **Click User Defined Folder.**

3) **Browse** to desired location you wish to save your sound files.

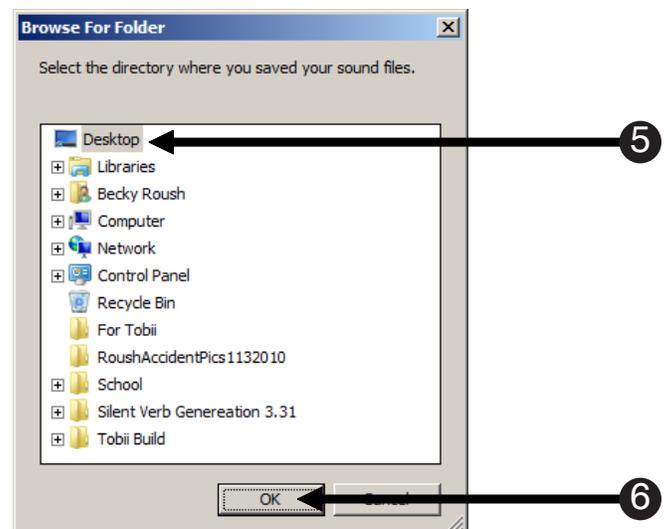
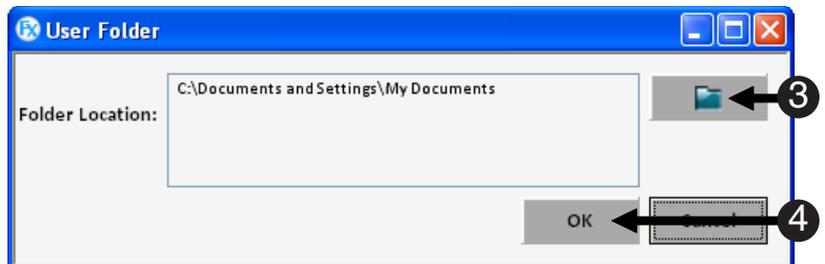
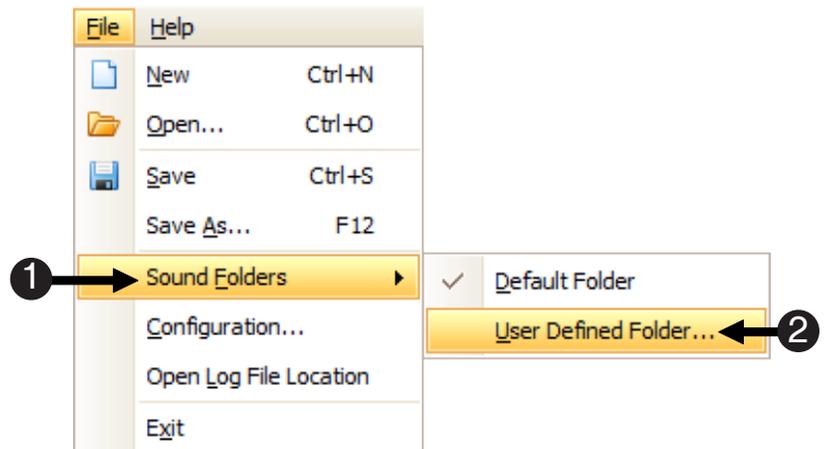
**! NOTE:** *The sound folder must be located in My Documents.*

4) **Click OK.**

5) **Confirm** the **Default Folder** is set to the location of the sound files to be played.

6) **Click OK.**

**! NOTE:** *The location of the sound files can be reset at anytime by selecting the Default Folder option via the File Menu.*



## Chapter 4: File Menu

### 4.2 Configuration

SimFx is able to communicate with other entities via serial connection. The Configuration option in the File Menu opens the Serial Communications options. You will need to determine which COM port is assigned to your serial port. The state of Serial Communications is displayed in the right corner of the application opposite the File Menu. Basic information regarding serial ports settings can be found in **Appendix A: COM Port Settings** (Page 20). If you have questions about your serial port configurations, please contact your network administrator or other computer support personnel.

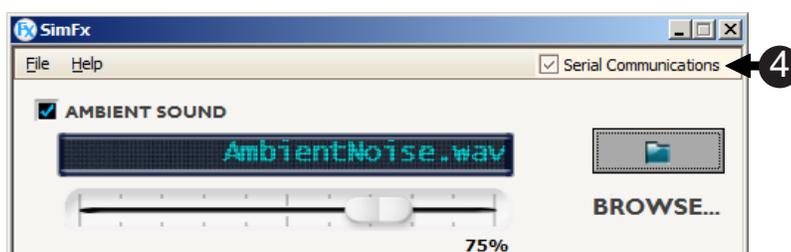
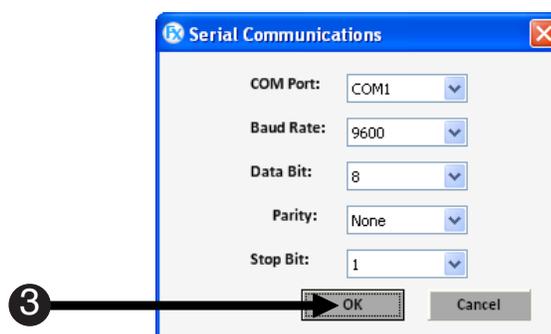
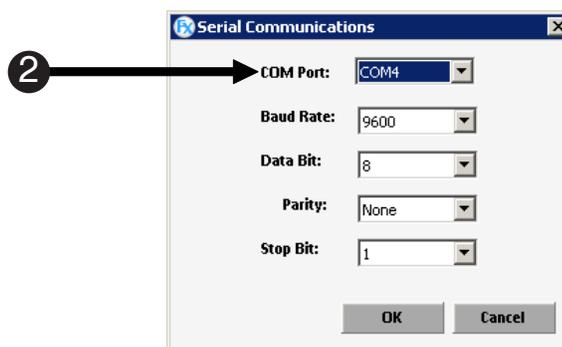
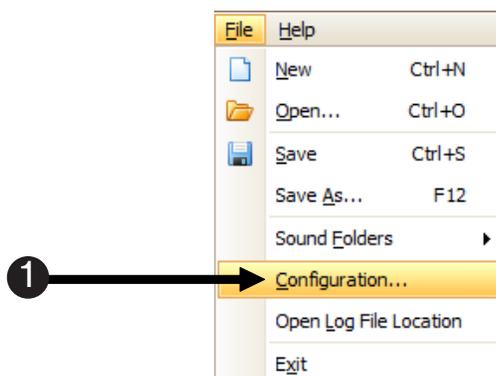
- 1) **Open** the File Menu, **Select Configuration.**
- 2) **Click** the **COM port** drop down menu to set the appropriate **COM port.**

**⚠ NOTE:** A warning dialog will appear if a port is unavailable on your machine.

**⚠ NOTE:** If you have not determined what COM Port number is assigned to your serial port please contact your network administrator or other computer support personnel. See **Appendix A** (Page 20).

- 3) **Click OK** to **close** the **Serial Communications** dialog.
- 4) **Verify Serial Communication** is enabled via the checkbox in the upper right corner of the user interface.

**⚠ NOTE:** If *Serial Communications* cannot be enabled by checking the check box at the top of the user interface, please check that the device settings are correct. See **Appendix A** (Page 20).

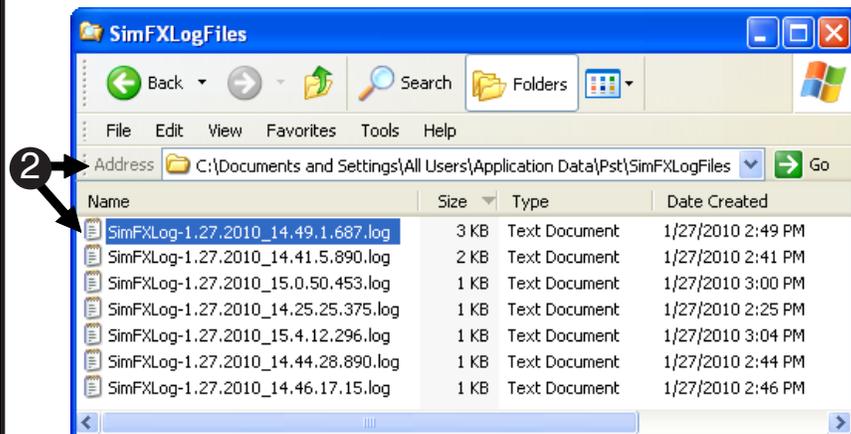
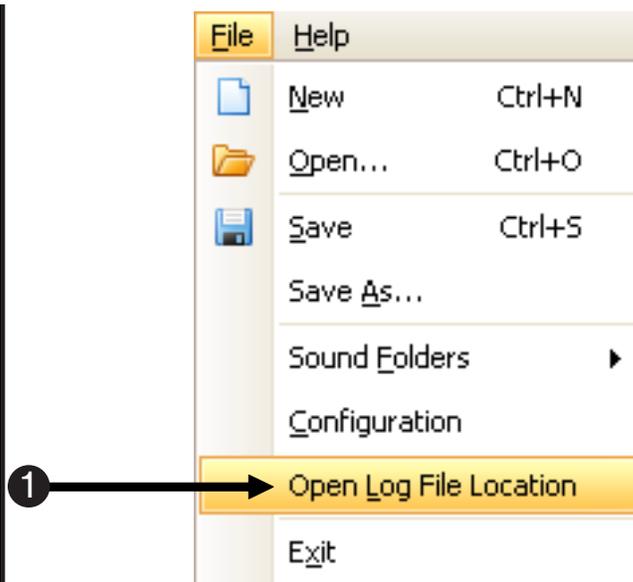


## Chapter 4: File Menu

### 4.3 Open Log File Location

SimFx includes a log file that can be used to double check the application's functioning. The log file is opened via the File Menu. This file contains information and operations performed by the SimFx application.

- 1) **Open** the File Menu, **Select** Open Log File Location.
- 2) The **SimFxLogFiles** dialog **lists** the **location** and **file names** of the available SimFx Log Files.



## Chapter 4: File Menu

### 4.3 Open Log File Location

This is an example of the SimFx log file. It is a tab delimited file and can be opened in notepad. This file tells you the current Serial Communications settings, current sound folder location, and a list of the operations performed by the SimFx application

```

SimFX Log
-----
Event Details
SimFX Initializing      N/A
sound file              C:\Program Files\PST\SimFx\Sounds
Initializing Serial Port ComPort = COM1, BaudRate = 9600, Parity = None,
DataBit = 8, StopBit = One
ConfigureSerialPort()  N/A
Play Ambient Audio     Audio File Location = AmbientSound.wav
Pause Scanner 2 Audio via Checkbox Audio File Location = ECHOSound.wav
All sounds were stopped.
Play Scanner Audio     Audio File Location = EPISound4.wav
Play Scanner 3 Audio   Audio File Location = EPISound1.wav
Pause Ambient Audio via Checkbox Audio File Location = AmbientSound.wav
Pause Scanner Audio via Checkbox Audio File Location = ECHOSound.wav
All sounds were paused.
Play Scanner Audio     Audio File Location = EPISound4.wav
Play Scanner 3 Audio   Audio File Location = EPISound1.wav

```

- 1) **Current Sound Folder Location** (sound file)
- 2) **Serial communication settings** (Initializing Serial Port ComPort = COM1)
- 3) **List of Actions performed by application**
- 4) **What sound file is played** (Audio File Location = EPISound4.wav)

## Appendix A: COM Port Settings

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- COM Port:** This option designates which port you want the program to use to communicate.  
**Predefined values:** COM1, COM2  
**Default value:** The User's Default Communication Port (which will be found by SimFx)
- Baud Rate:** This option controls the number of data bits per second that are transferred via the selected port.  
**Predefined values:** 9600,14400,19200,28800,38400,56000,128000,256000  
**Default value:** 9600
- Data Bit:** This option will change the number of data bits you want to use for each character that is transmitted and received.  
**Predefined values:** 5,6,7,8  
**Default value:** 8
- Parity:** This controls the type of error checking the device performs. Please be advised that the computer or device you are communicating with must have the same setting as what you chose here.  
**Predefined values:** None, Odd, Even, Mark, Space  
**Default value:** None
- Stop Bit:** Changes the time between each character being transmitted.  
**Predefined values:** None  
**Default value:** None

 **NOTE:** *For more information about configuration settings consult the help provided by your OS, or contact your computer support personnel.*

## Appendix B: Contact Information

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### For additional information or support



Contact us at  
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For product support and technical issues  
Please e-mail us at  
[\*\*info@pstnet.com\*\*](mailto:info@pstnet.com)

To report a medical emergency that is suspected to be caused by a SimFx Software failure call **412-449-0078** ext. **1441**.

For failure outside of normal business hours, please call **888-540-9664**.

