13. REMOTE CONTROL OPERATION

13.1. Overview

In many circumstances you will adjust and control your Sabine SWM7000 wireless microphone system using the front panel controls, as outlined in previous sections of this operating guide. In circumstances where an enhanced level of control over a single receiver is desired, or to enable simultaneous computer-based control of multiple receivers, you will need to install (on either a laptop or desktop computer) the free Sabine SWM Remote Control Software Software included with your system. Only receivers may be remotely controlled; handheld and belt pack transmitters cannot be remotely controlled.

For online instructions for any function in the software, you may also refer to the Help menu.

13.1.1. Single Receiver vs. Multiple Receiver Remote Control

All SWM7000 series receivers have an RS-232 jack on the back for serial connection to your computer. Thus, any single receiver can be controlled remotely. Control over multiple receivers from a single computer is possible only for ND-series (SW51ND-R and SW52ND-R) receivers. These units have additional RS-485 network connections (RJ-45 jacks) for daisy-chain connection from one receiver to the next. Up to 35 receivers (70 transmission channels if all receivers are 2-channel) may be connected in this network, all under the control of a single computer. Single and dual channel receivers can be mixed in the same network. The first receiver in such a network can be connected to the computer via an RS-232 or RS-485 serial cable; the remaining units will then be connected via RS-485.

It is not possible to upgrade/retrofit a standard receiver to make it an ND-series unit.

13.1.2 Features & Controls Added by SWM Remote Software

All front panel controls and displays are duplicated in the software. In addition, a deeper level of software control over receiver operation is enabled. These new controls are complete and independent for each transmission/reception channel, meaning there are two sets of controls for dual channel receivers. These controls and displays include:

- **Parametric filter access and control.** FBX filters can be changed to parametric filters, and their width, depth, and frequency can be adjusted. Changes can be made at any time, both before and after FBX filters have been set. Parametric and FBX filters can be mixed in any combination, totaling 12 for each receiver channel.

- **Adjustable FBX parameter control.** Maximum depth of FBX filters can be adjusted globally; filter width can be adjusted globally or individually. Two controls, Sensitivity and Persistence, can be tweaked to tailor the operation of automatic FBX filter placement to match the audio program. Proper settings will optimize the balance between false filtering and delayed response to feedback (the factory default settings should operate excellently in the vast majority of conditions and may never need to be changed).

- **Control over balance of FBX Fixed and Dynamic filters.** Any FBX filter can be set to be either fixed or dynamic.

Tech Tip

Front Panel Control

LOCK 1 — All front panel controls are locked.

LOCK 2 — Programmable lock; you can select which controls are locked.

- **Adjustable high and low cut filters.** High Cut Filter, user-controllable between 3 KHz and 20 KHz; 12dB/octave roll-off

- **Additional compressor controls.** Aside from adjustments for ratio, threshold, and attack (which duplicate front panel controls), the Remote Software provides control of compressor release time and knee. The effect of compression on the output signal as a function of input signal strength and parameter settings is displayed in Sabine's unique dynamic ColorComp graph, in addition to the traditional opposing-meter indicators.

- **RF Scan and Report,** which measures strength for each of the 70 transmission channels, and displays a hierarchical ordering of the clearest, strongest channels to use during system setup and operation. You can print a copy of the scan results.

- **Additional memory options.** In addition to saving presets in receiver memory, channel configuration settings can be saved to and recalled from disc or hard drive. All parameter settings made with the remote control, including adjustments that are not accessible from front panel controls (e.g., compressor knee and release), are saved with presets. All software settings stored for each of the 15 presets, including settings not accessible from the front panel, will be loaded whether presets are recalled by remote control or from the front panel. Note that all settings made in Off-line/Edit mode can be saved and applied in online operation..

- **Ability to print a report of all parameter settings,** creating hard copy documentation.

- **A receiver channel output mute button.**

- **The ability to custom name each RF channel and receiver.** This name will be displayed in both software operation, and on the receiver front panel.

- **Display of important transmitter status information.** In addition to duplicating the battery charge status, battery warning message, and transmitter on/off/mute status from the front panel display, the Remote Software displays the type of battery in use, the number of hours the battery has been in use, the frequency midpoint (in GHz) of the transmission channel chosen, the transmitter pad and low cut filter settings, and a warning indication in the case of low RF signal strength. For handheld transmitters, the software display also shows the type of mic capsule in use.

- **Improved and expanded operational displays.** In addition to organizing all front panel displays on a single computer screen, the Remote Software also displays the exact frequency, width, and depth of FBX filters. The frequency response curve resulting from combined filter settings (including FBX, parametric, and high and low cut) is graphically displayed in the software. Frequency response changes imposed by choosing various microphone models are also shown.

- **Customizable front panel lock settings.** Software control allows you to program selective access to front panel controls to be made available once the Remote Control is disconnected. Customizable front panel lock settings are saved and recalled as part of each receiver's settings. All software-only accessible settings are saved with presets. Careful programming enables some powerful operational features — for example, locking Program Save but enabling other front panel controls (including Program Load) will let front

panel users update settings temporarily, yet reload the original settings at the push of a button. Such a temporary adjustment would not permanently alter a setup designed to work in most situations, but would allow tweaking to address unusual situations.

13.1.3. Multiple Unit Control by Remote Software

The true extent of the power of the SWM Remote Software is realized when it is used to control multiple wireless receivers. When ND-series receivers are connected in a network, the additional controls offered by the Remote Software over the entire system include:

• **Simultaneous multiple channel/system monitoring.** The Remote Software "All Channel View" (figure 13g) shows all important status conditions for up to 50 transmission channels. Color-coded warnings and alerts draw attention to potential problems.

• **Detailed, quick access to a single set of controls.** The "Command View" (figure 13c) displays comprehensive information about a single selected RF channel, and easy adjustment of all its controls. Command View channel is selected by clicking the appropriate All Channel View button. (NOTE: Each channel display in the All Channel View also allows quick access to parameter adjustments, by using the right mouse button to popup a parameter control menu.)

• **Quick, interactive control of wireless network channels.** All or selected parameter settings for a given channel can be copied to one or more additional channels, using the Copy Parameters option.

13.2. Software Installation

13.2.1. System Requirements/Recommendations

• PC computer equipped with Pentium processor 100 MHz or faster

• Hard disc with at least 10 MB of available space for program files.

• Windows 95 or higher.

• SVGA or greater resolution graphic card and monitor.

• Recommended minimum monitor resolution: 1024 x 768 pixels (or 800 x 600 pixels for 15 inch monitors). Select "small fonts" and 16 bit color as defaults for monitor display.

• One COM port for a serial connection, with a 16550 or faster COM chip.

13.2.2. Connections

There are two types of connections that are used in a remote controlled Sabine SWM7000 system:

• For connecting from the serial port on your computer to either a single receiver, or to the first unit in a multiple receiver system, use a cable with standard 9-pin D-connectors (male on one end, female on the other). This plugs into the RS-232 jack on the receiver rear panel. One connection is all that is necessary even if the receiver is a 2-channel unit.

 NOTE: for connections using a USB connector, a USB to RS-232 adaptor is necessary (see Appendix).

• For connecting to additional (ND-series only) receivers (beyond the first unit) in a multiple receiver system, use cable adhering to RS-

485 standards, with RJ-45 connectors on either end. There are two such jacks on the back of all ND-series receivers. Either jack can connect to another receiver either "upstream" or "downstream" from the computer remote control. As signals travel in both directions (from computer to receiver and back), it is not necessary to connect the last receiver in a network back to the computer (you do not need to make a "loop"). Up to 35 two-channel (or one-channel, or any combination) receivers (up to 70 transmission channels) can be connected in a single network.

13.2.3. Installing the Software

Follow these simple instructions for installing the Sabine SWM Remote Software on your computer:

1. Start Windows 95 or higher.

2. Insert the Sabine software CD into your PC's CD ROM drive and wait a few seconds for the auto-start software installer to open. Select the SWM7000 Remote Control Software installation icon and follow the instructions given in the dialog boxes that appear. NOTE: For best results, allow the installation program to install the software within the default directories. If you choose to install in other than the default directories, be sure to remember program storage location.

13.3. Launching the software

Launching the software produces the Startup Screen (Fig. 13a).

13.3.1. Off-Line Edit/Demo

Clicking the right button ("Off-Line Edit/Demo") will open the main software screen regardless of whether any SWM receivers are connected. The software functions in Off-Line mode are completely programmable, and may be saved and downloaded to a connected receiver at a later time. Display settings (e.g., level, compression, transmitter settings) which are dependent on the presence of actual signal are simulated, for demonstration only. You may turn the simulated displays on or off using the OPTIONS menu.

13.3.2. Connecting Receivers.

Clicking "Connect Receiver" will direct the software to poll the bus on the designated COMM port to detect connected, powered-on receivers. If no receivers are detected, you may change the designated COMM port by clicking the appropriate button. If this also proves ineffective, check your cables and connections, and make sure the connected receivers are powered on. In very rare instances you may need to reset your COMM port settings on your computer.

Once polling is completed, the software will display all the receivers detected, in sequence, and the model of each receiver (ND series or standard; 1 or 2-channel). (See figure 13b for a sample opening display)

Once you confirm that the information reported is correct, proceed to the main screen, and you may begin remote control operation.

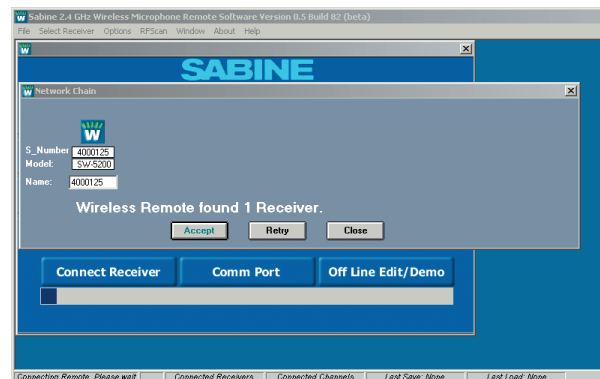Fig. 13a   Control Software Startup window

Fig. 13b - Connection Screen

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13.4. Remote Control Operation

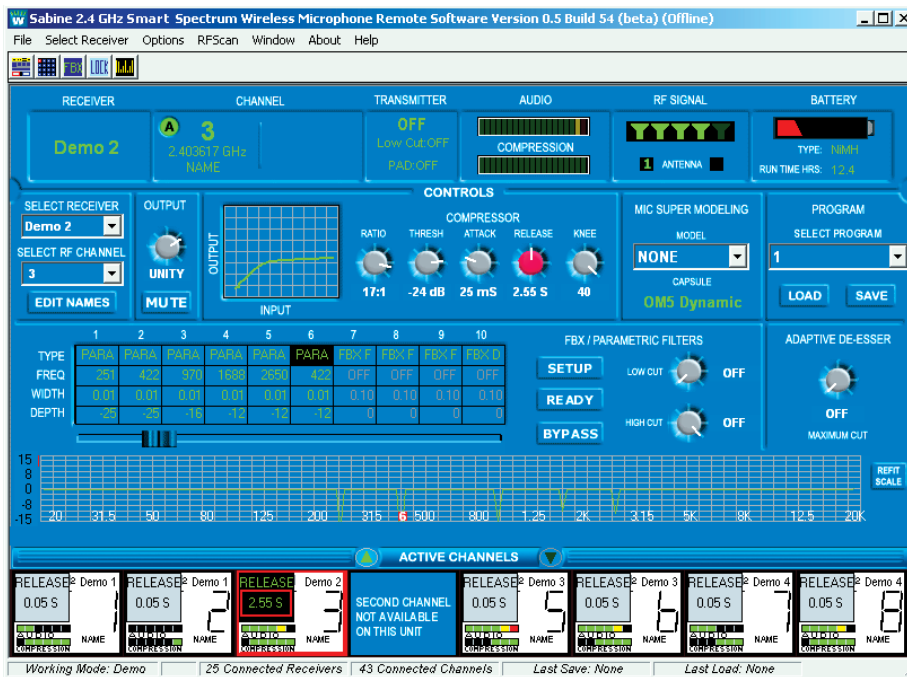### 13.4.1. Two Views, Two Sets of Controls

Fig. 13c - Control Software Command View

The default main screen appears as shown in figure 13c.

The top portion of the screen (above the "Active Channels" bar and two arrow buttons) is the Command View, showing details and allowing parameter adjustments for a single receiver channel at a time.

The bottom portion (below "Active Channels") is the All Channel View, capable of simultaneously showing the most important (but less detailed) information for multiple channels. Each audio (RF) channel in the system has its own display box, arranged in rows of eight channels each, organized in order to correspond to the string of receivers in the serial bus.

If you have 8 or fewer RF channels, both View Modes will fit on your monitor. For more than 8 channels, there are quick shortcuts for optimizing your display and switching and mixing View Modes:

- Click and drag the Active Channel bar to pull the All Channel View up or down, partially or completely covering the Command View. You cursor will change to a hand icon.

- Use the up/down arrows flanking "Active Channel" to scroll the rows displayed in the space allocated to the All Channel View.

- Click on the Command View or All Channel View button in the upper left menu bar (or use F2 and F3), to immediately change from one to the other.

- To select a channel to edit in either view, left click on a channel in All Channel View (indicated by a red border around the selected channel). This displays that channel's settings in the Command View. A right mouse click on a single channel shown in the All Channel View pops up a menu of parameters. The value of the parameter selected is displayed in the All Channel View for each RF channel, and also pops up an adjustment screen for the selected channel. You can review and compare settings on all channels, one parameter at a time, and adjust any setting on any unit from the All Channel View.

Fig. 13d - All Channel View (with right click on Ratio).

- Parameter adjustments in the Command View can be made by clicking and turning any knob; or by a right-clicking on a parameter to pop up an adjustment window, and keying in a value.
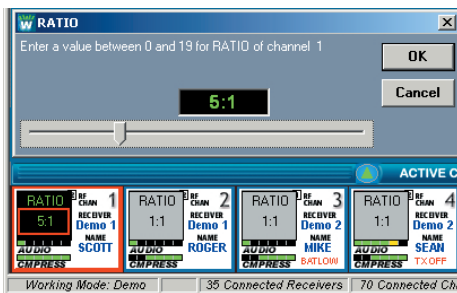
13.4.2. Menus and Icons

Quick access to the features described above, plus some additional software control, is available from four pull-down menus (File, Select Receiver, Options, and RF Scan) and five icons (FBX, Lock, Command View, All Channel View, and RF Scan) at the top of the screen. The controls associated with the five icons can also be accessed using function keys F2 through F6, respectively. Figure 13e shows the location of the menus and icons, and describes associated controls which are accessed.
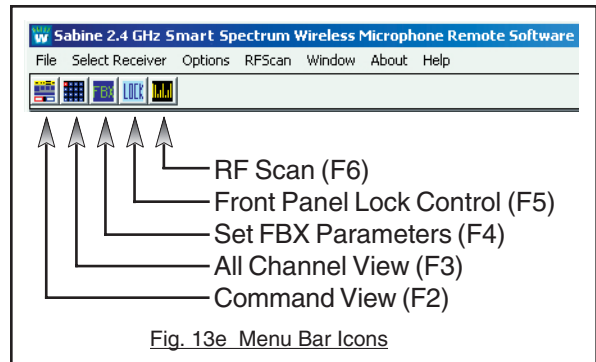
RF Scan (F6)
Front Panel Lock Control (F5)
Set FBX Parameters (F4)
All Channel View (F3)
Command View (F2)

Fig. 13e Menu Bar Icons

13.4.2.1. FBX Settings (F6)

Allows global settings of FBX filter width and maximum allowed FBX filter depth. As filters are set, they will conform to the global width chosen at the time of setting. It is thus possible to mix filter widths by changing the width value in between setting FBX filters. Maximum depth will be common to all FBX filters, and the value will update if the global setting is changed.
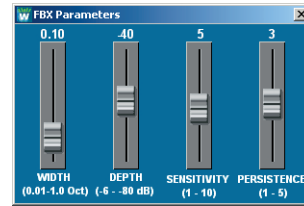
Sensitivity and Persistence are controls that allow the speed and analysis of the FBX algorithm to match the type of audio program. Some audio programs, notably certain types of classical music, produce occasional waveforms that are difficult to distinguish from acoustic feedback. The factory default Sensitivity and Persistence values should work in almost all conditions; however, you may change them if necessary to prevent the possibility of triggering a false filter, or to more quickly set the FBX filters. There is a trade off between speed of filter placement and how carefully the filter is placed. More demanding audio sources may require higher Sensitivity & Persistence settings, which will slightly slow down the speed of filter placement, but decrease any possibility of mistaking program audio for feedback.
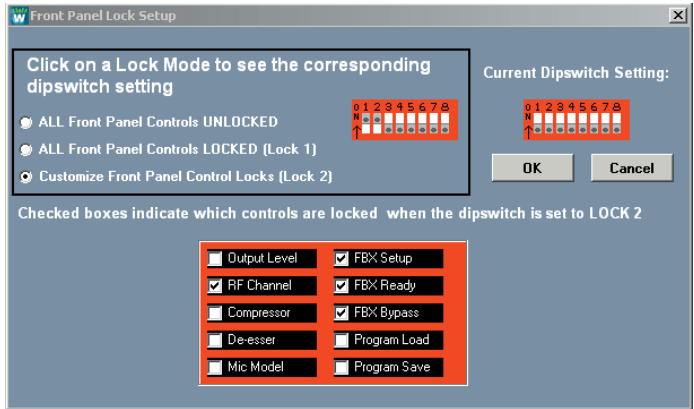
Fie. 13f - FBX Parameters window

Flg. 13g - Front Panel Lock Setup

13.4.2.2. Lock (F5)

You can customize the mix of functions that will be locked when choosing Front Panel Lock 2 (figure 13g).

13.4.2.3. All Channel View (F3)

Shows the All Channel View as a (vertically) resizable window (figure 13h).

13.4.2.4. Command View (F4)

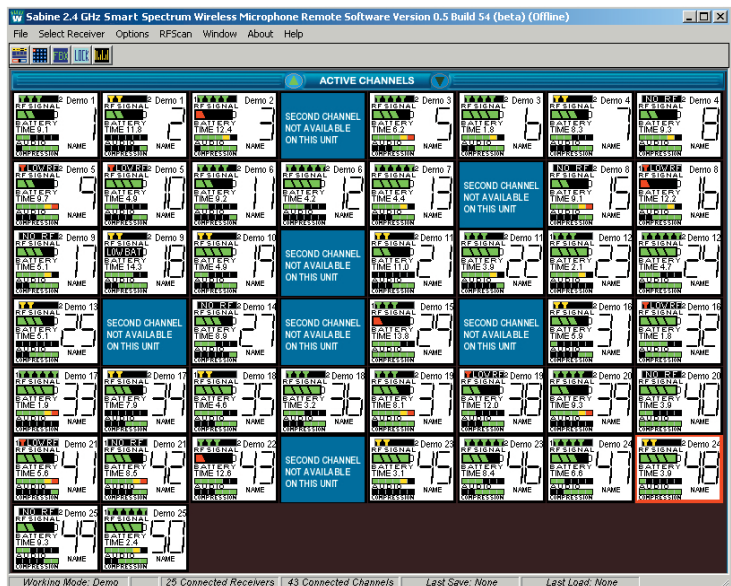Shows the Command View on the screen (figure 13c).

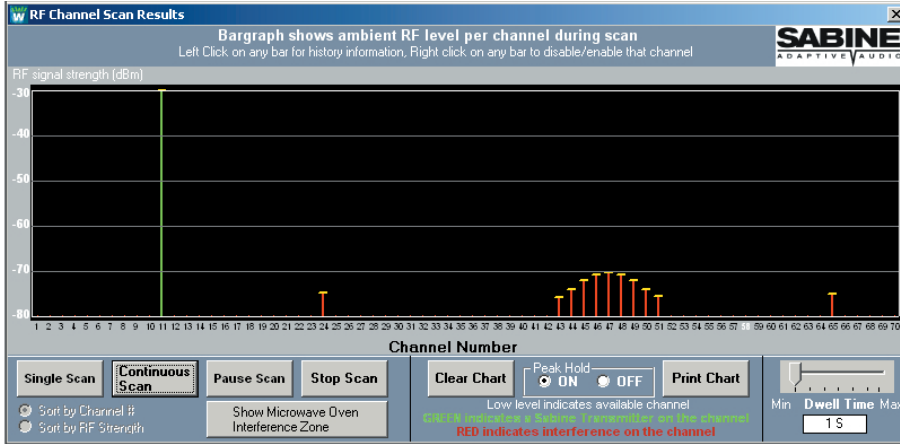Fig. 13h - Active Channels Window - All Channel View

13.4.2.5. RF Scan (F6)

Fig. 13i RF Scanner results: one Sabine Transmitter (will display as a green line) and some low-level RF interference (will display as red lines)

Fig. 13J Delete Channel confirmation box

Fig. 13k RF Scan Channel Information

Use the RF scan to get a "picture" of the potential RF interference in your location. You should perform a scan before every program so you can see the ambient RF levels on all 70 channels of your system.

Caution: The RF Scan mutes and takes control of the selected receiver. All other functions are disabled on the selected receiver. **Do not perform an RF scan during your program!**

Select RF Scan by using the toolbar button, the F6 hot key, or the RF Scan menu tem. You will see the screen shown in Figure 13i. Select Single Scan or Continuous scan if you want to look at the RF levels over time. The software will take control of the selected receiver, and will step through all 70 channels. You can control the speed of the scan using the Dwell Time adjustment.

Scan results are shown in several ways. A green line indicates a Sabine transmitter is active on the associated channel. A red line indicates ambient RF is present on the channel, at a level indicated by the scale on the left side of the chart. A dotted red line indicates a previous RF level from an earlier scan, and a small yellow "T" indicates the peak RF level observed over the entire time. Left click on any line brings up a window allowing you to disable the specific channel (figure 13J). If you chose Continuous Scan you can also choose to see the Channel Details (figure 13k) and a history of all RF activity on a particular channel for the duration of the Continuous scan (figure 13L).

Channels with very low RF signals (below -70 dBm) should be considered open channels. We include this low level measurement so you can see the activity in your location, but the Sabine transmitters will overpower and ignore those very low signals.
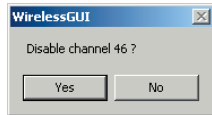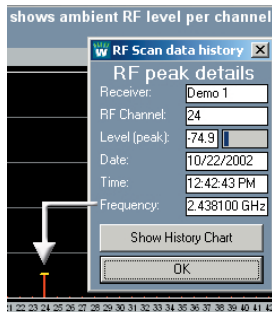

Fig. 13L RF Scan Channel History

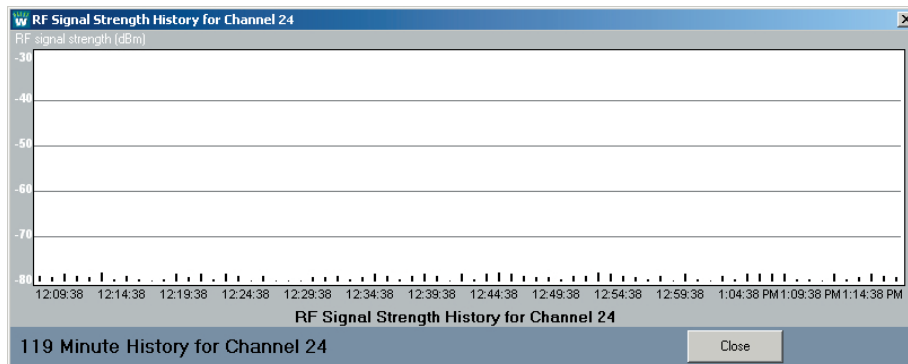**⚠ RF Scan CAUTION ⚠**

Do not perform an RF scan during your program!