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Refer to the GenWatch3 Manual Overview for your full license. All license information contained on pages 4-7 (Book 600-2.12.0-AA.1) are to be considered as contained herein.

Support

Customer satisfaction is our number one priority at Genesis. We are here to provide you with the best software possible, and we want to know when you have any questions, concerns or problems with GenWatch3 so that we can make it a better product for everyone.

Refer to the *Troubleshooting & Support* section of the GenWatch3 Manual Shell (Book 600-2.12.0-AA.1) for complete support and contact information.

Document History

Revision	Description	Author
2.0.2	Document created	KIH
2.0.3	Release Revisions	KIH
2.0.3	Topaz Revisions	KIH
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2.5	Revisions Before Release	CWF
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2.7	Revisions Before Release	JAW
2.8	Revisions Before Release	CWF
2.9	Revisions Before Release	CWF
2.10	Revisions Before Release	CWF
2.11	Conversion to docx	BCY
2.12	Revisions Before Release	ATG

600-2.12.0-FF.1

Table of Contents

600-2.12.0-FF.1

Goals

This document guides you through the GenWatch3 setup process. After you complete the steps in this document, your GenWatch3 installation will be configured to receive data from a digital transceiver on your Project 25 (P25) compliant system.

Who Should Read This Manual?

This document is written for an audience of Project 25 (P25) compliant system administrators and persons tasked with maintaining GenWatch3 on a P25 system.

How This Manual Is Organized

This manual is organized as follows:

- **Programming the Digital Transceiver:** How to set up and program a digital transceiver.
- **Configuring the GW_RSP25 Module:** Instructions on setting up a connection to a digital transceiver.

This manual contains the following images, used to indicate that a segment of text requires special attention:

- **Additional Information**: Additional information is used to indicate shortcuts or tips.

- **Warning**: Warnings are used to indicate possible problem areas, such as a risk of data loss, or incorrect/unexpected functionality.

Chapter 1   Programming the Digital Transceiver

What is a Digital Transceiver?

Radio

The radio must be an EF Johnson digital transceiver capable of outputting P25 control channel data. This data is contained in Outbound Signaling Packets. The EF Johnson RS-5300 and 53SL mobile radios are digital transceivers.

Power

A standard EFJohnson power supply can be used to power the transceiver. To ensure reliability, an Uninterruptible Power Supply (UPS) should be considered.

Antenna

The radio must be installed within range of the Trunk System. A high gain, Yagi style directional antenna is recommended for all installations. Good coax design is required between the antenna and the radio. In order to minimize phasing interference in a Simulcast trunking system, the use of a Yagi directional antenna is of utmost importance.
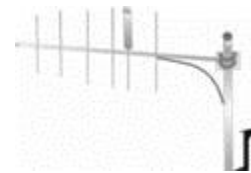
Placement

The radio can be placed in any convenient out-of-the-way location. Since there is rarely any need to touch the radio, there is no need for the radio to be easily accessible. The radio should be located in a way to minimize/eliminate any RF interference that may interrupt its mission.

Connection to the PC

The transceiver is connected to the computer using one of two methods.

- If the transceiver has the Topaz Interface enabled, a TCP/IP connection will be used to receive data from the radio. Standard networking equipment and cables can be used connect to the PC.
- If the transceiver is connected via serial port, the EFJ Remote Programming Interface (RPI) can provide a PC connection through the PTT port on the front of the transceiver. At least one Remote Programming Interface is required to program the transceiver.

A serial connection to the PC is completed by a DB9 RS-232 cable. If necessary, this cable may be extended; however, a cable length over 50 feet (15 meters) is not recommended. If a farther separation distance is required, there are many companies that offer devices that can extend an RS-232 connection up to many miles with no degradation in speed or reliability. One source is Black Box Corporation, http://www.blackbox.com. Use good data standards to decide if shielded cable is required for a particular situation and RF environment.

Programming the Digital Transceiver

What do I need?

You will need the following to successfully program a transceiver for use on your P25 Trunking system:

- **Digital Transceiver**: The radio that will be used to listen to system activity and forward the P25 data to the RSP25 module.
- **Remote Programming Interface (RPI) Box**: An interface box used to connect the transceiver to the GenWatch3 host machine.
- **Serial Cable**: A DB9 serial cable length determined by application.
- **System Key**: A software key provided by EF Johnson.
- **Programming Software**: EF Johnson PC Configure programming software.

In order to obtain a System Key from EF Johnson, a Letter of Authorization to Provide System Key (Form: 720EF034D) must be completed.

The following describes programming a transceiver for P25 Trunking systems only. For information regarding programming a digital transceiver for P25 conventional monitoring, please contact GenWatch3 support.

System Configuration

In order to receive control channel data, the transceiver must be authenticated on the system. The following system configuration changes must be made before programming the transceiver:

- Each transceiver will require a unique ID that is activated on the system.
- A dedicated group ID must be activated on the system to which any and all transceivers will affiliate.

The dedicated group must not be involved in any type of system call. If such a call occurs, the transceivers will stop monitoring the control channel for the duration of the call.

Installing XTL Radio Drivers

XTL radio drivers are provided in the GenWatch directory. Follow the instructions below to install.

1. To install on Windows 8 or 8.1, follow the instructions in the Hardware Installation Guide under "Installing drivers without digital signatures on Windows 8".
2. Plug in the XTL Radio.
3. After the initial setup, open Device Manager and find the radio in the Other section.
4. Right click the radio and select the option to update the driver.
5. Choose the options to provide your own driver files and browse to the following directory: C:\Program Files (x86)\Genesis\GenWatch3. Windows will pick the appropriate driver.
6. Complete the setup.

PC Configure

Install PC Configure on the computer that will be used to program the radios. The following steps will guide you through programming the radio.

This guide is intended to help in programming the transceiver for control channel monitoring. For more information on programming options, see the *Help Contents* within PC Configure.

7. Retrieve the current radio programming file.
   a. Select a serial port using **Transfer → Comports…**
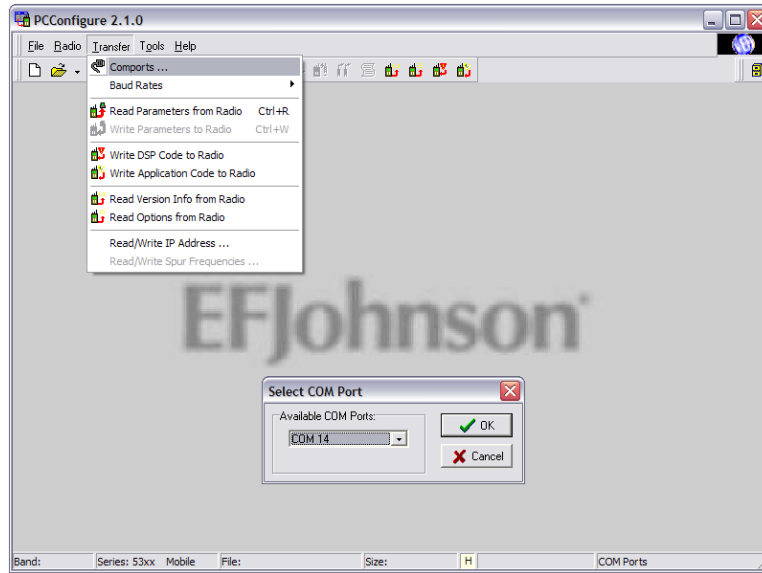
Figure 1.1 - PC Configure, COM port

b. Get the current programming file using **Transfer → Read Parameters from Radio**
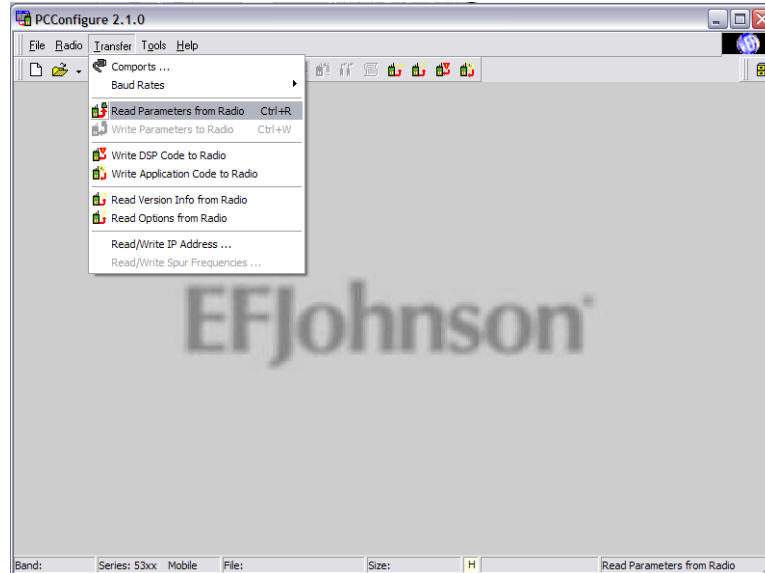
Figure 1.2 - PC Configure, Reading Parameters

ℹ️ If the transfer does not complete, check the selected serial port and the connection to the radio. If problems persist, try connecting the radio to a different serial port.

8. Add your system to the programming file…
a. Load your system key: **Radio → Load System Keys**
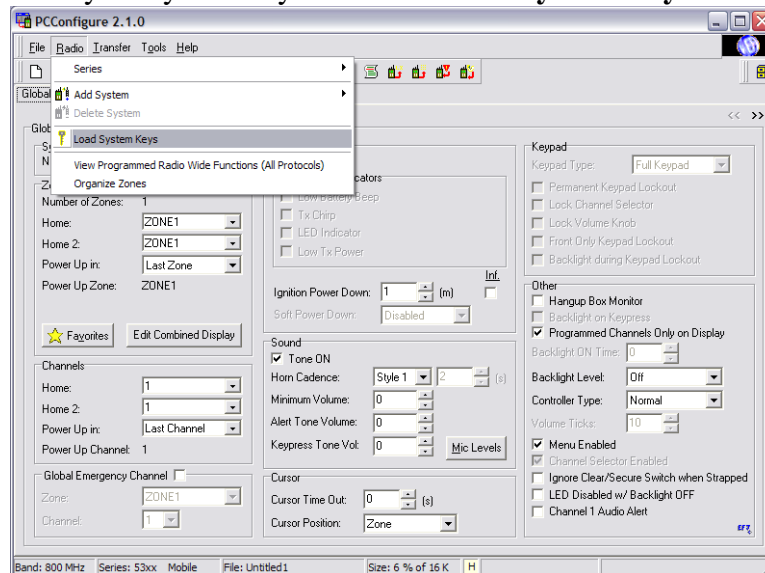
Figure 1.3 - PC Configure, Loading Keys

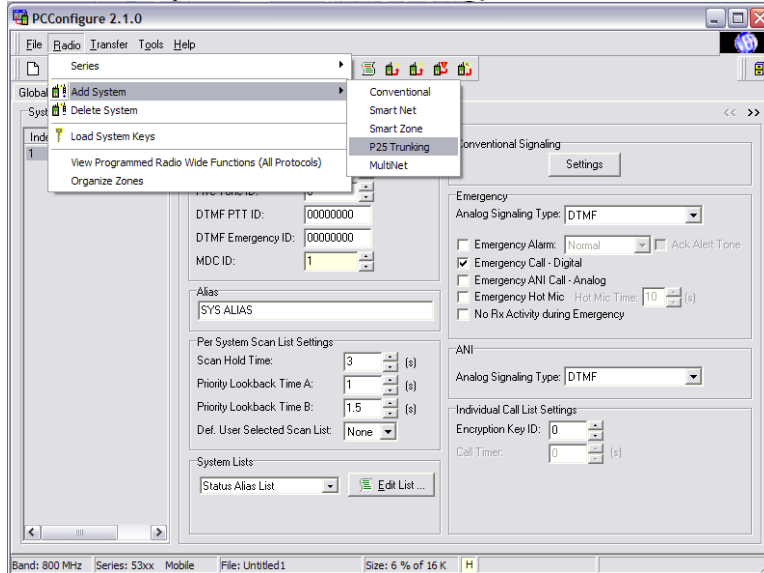b. Add a new System: **Radio → Add System → P25 Trunking**

Figure 1.4 - PC Configure, Adding System

9. Define system parameters on the *Per System* tab.
   a. Select your system ID from the drop down selector. Then enter the Site, RFSS, and unique **Unit ID** for this radio.
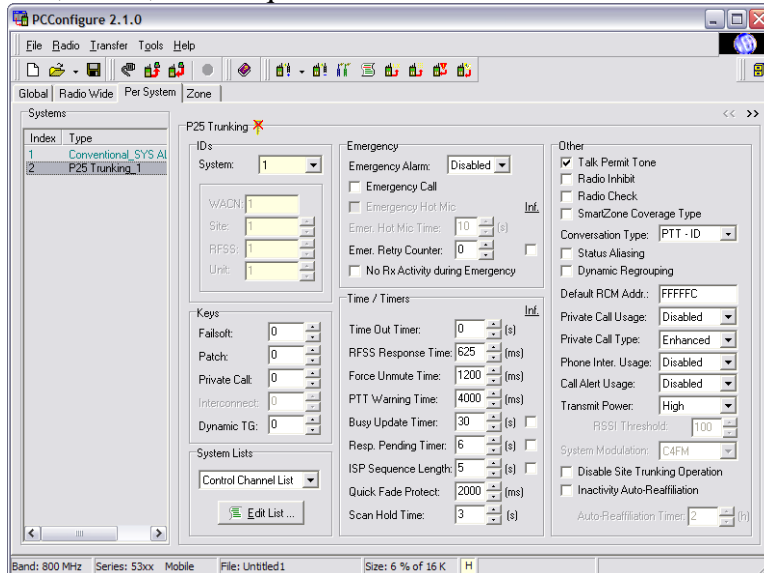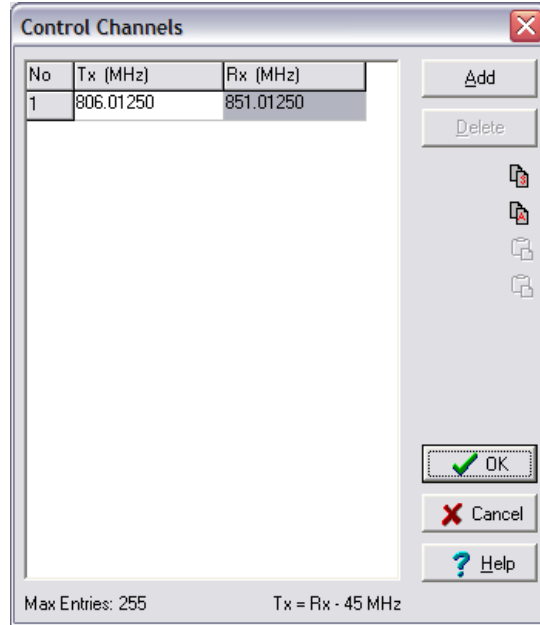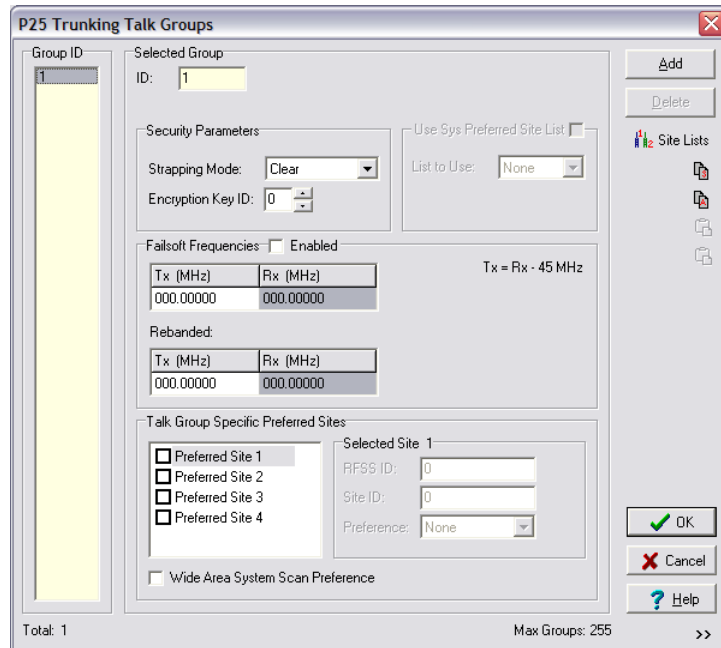

Figure 1.5 - Per System tab

b. In the **System Lists** section, select the *control channel* list and click **Edit List**.

Figure 1.6 - Control Channels

c. In the **System Lists** section, select the *talkgroup* list and click **Edit**.

Figure 1.7 – Talk Groups

10. Define RFSS parameters on the **Zone** tab.
   a. Click on the **Edit Zones** button to open the *Zones and Channels* screen. Enter an alias for your system and remove all but one channel. Select P25_Trunking for the system type of that channel. Click OK.
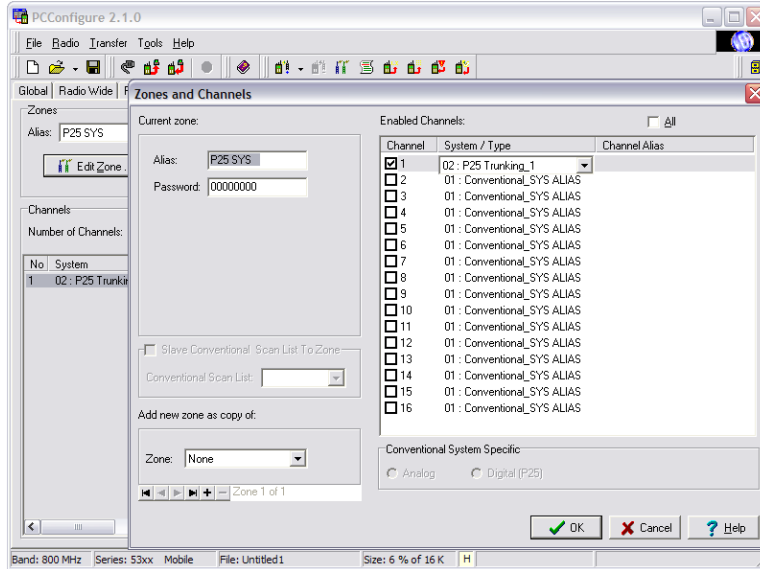
Figure 1.8 – Zones and Channels

   b. Enter an Alias for the channel and select the group defined in the **Talk Group List** on the **Per System** tab.
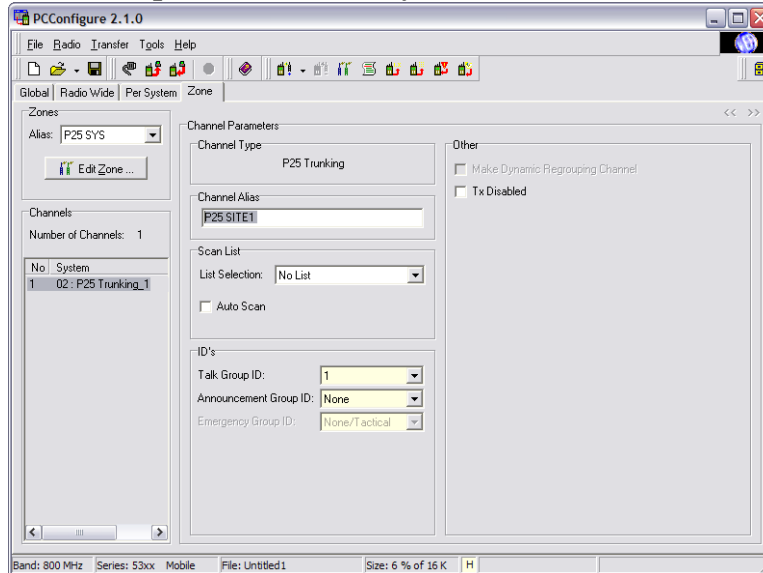
Figure 1.9 – Zone tab

11. If the Topaz interface is enabled, the network settings must be configured on the Global tab page 2:
    a. **Host IP Address** does not need to be defined.
    b. **Data Gateway** must be enabled, in **Rx** mode.
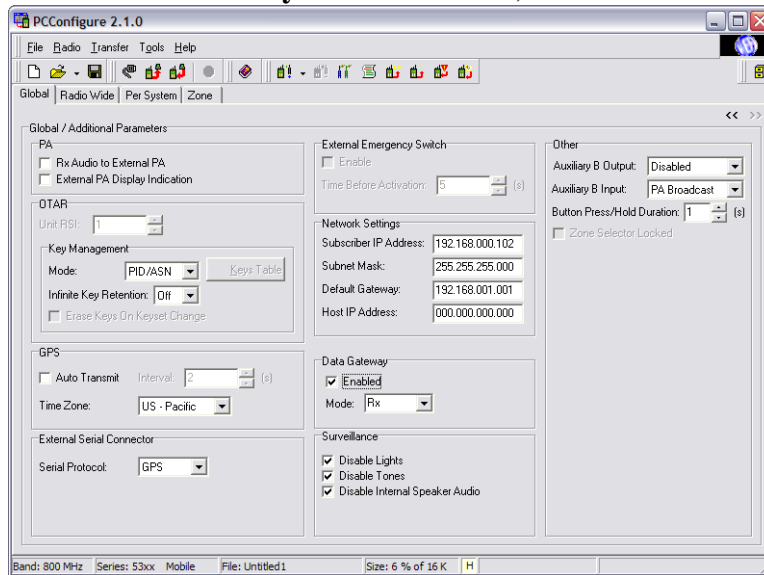
12. Write parameters to the radio: **Transfer → Write Parameters to Radio**

Figure 1.10 – PC Configure, Writing Parameters

In order to program the XTL series radio, you must install the *Motorola ASTRO 25 CPS* software. To program the XTL series radio:

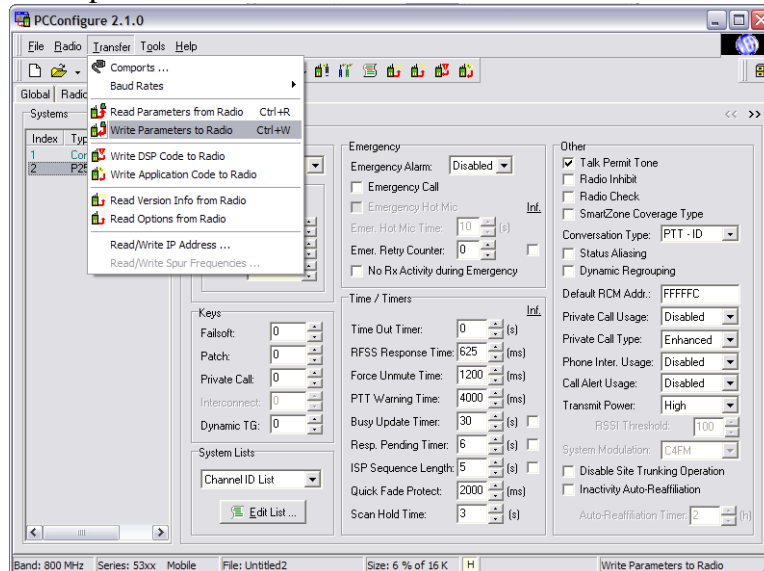1. Load the ASTRO 25 CPS software.

2. In the main menu, choose **File->Read Device…**: This will load the *Select Port* window.

3. For the **Port** option, select **USB** and click the **OK** button: the CPS software will read the settings from the radio and load the *Tree View*.

Figure 2.1 – ASTRO 25 Mobile CPS Tree View

4. Enable the RF Modem option

    a. In the *Tree View*, expand the **Radio Configuration** node.

    b. Double-click on the **Radio Wide** node: This will load the *Radio Wide* window.

    c. On the *Advanced* tab, for the **RF Modem** option, choose **APCO Project 25 Mode**: This will allow the radio to function in RF Modem mode.

    d. Click the **Close** button.

Figure 2.2 – Advanced Tab of Radio Wide Options

5. Consider changing the Subscriber and Mobile Computer IP Addresses

    a. Double-click on the **Radio Wide** node: This will load the *Radio Wide* window.

    b. On the *Data* tab, evaluate the *Subscriber IP Address*. If this address is not compatible with your network, change this value to a compatible IP Address.

    c. Also on the *Data* tab, evaluate the *Mobile Computer IP Address*. If this address is not compatible with your network, change this value to a compatible IP Address.

    d. Click the **Close** button.

Figure 2.3 – Data Tab of the Radio Wide Options

6. Change the Zone and Channel aliases

    a. In the *Tree View*, expand the **Zone Channel Assignment** node.

b. Double-click on the **Zone Channel Assignment – 1** node: This will load the *Zone Channel Assignment – 1 of 1* window.

c. On the **Zone** tab, in the **Zone** box, replace the current text with "P25 RF-Modem".

Figure 2.4 – Zone Tab of the Zone Channel Assignment Options

d. On the *Channels* tab, in the *Channel Name* column of the grid, replace the current text with "GenWatch3".

Figure 2.5 – Channels Tab of the Zone Channel Assignment Options

e. Click the Close button.

7. In the main menu, choose **File->Write Device…**: This will load the *Select Port* window.

8. For the **Port** option, select **USB** and click the **OK** button: The CPS software will write the settings to the radio. The resulting display is shown in Figure 2.6.

Figure 2.6 – Radio Display

Chapter 3   Configuring the GW_RSP25 Module

What is GW_RSP25?

The GW_RSP25 Graphical User Interface (GUI) shows the current configuration of each of your GW_RSP25 connections. A connection is a P25 packet source, i.e. a digital transceiver connected to your PC.

The number of connections you are allowed to create within the GW_RSP25 module is limited by your license. Please contact GenWatch3 Support with questions regarding licensing for additional connections.

Loading the GW_RSP25 GUI

Launch the GUI for the GW_RSP25 module by following the steps below:
1. Launch the GW_Launchpad (explained in Chapter 3 of the *GenWatch3 Core Manual*).
2. Locate the GW_RSP25 module icon in the Modules list. The GW_RSP25 module uses this icon:

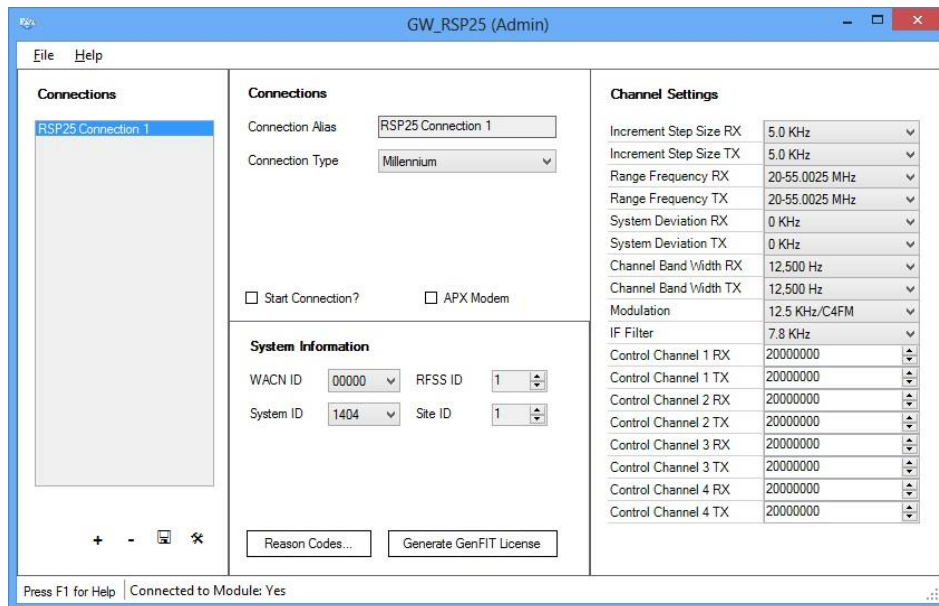3. Double-click the GW_RSP25 icon: This will load the GW_RSP25 GUI.

Figure 3.1 – GW_RSP25 GUI

Adding RSP25 Connections

When the GenWatch3 application is installed, no connections exist. You must create a connection to receive control channel data. To create a new connection, follow the steps below:

1. Click the **Add** button. This will place the GW_RSP25 GUI in Add mode and allow you to enter connection settings.
2. Change the properties in the **Connections** and **System Information** sections.
3. Click **Update** to save changes.

Connections

In this section, provide an alias for the connection and set the connection type for this connection to **Serial**, **Topaz**, **Millennium** or **TCP/IP.** Enter the appropriate values in the input fields that are enabled. The **Start Connection?** checkbox determines if the connection will be active. Detailed information on the connection settings can be found in the GenWatch3 GW_RSP25 Module Book document.

System Information

In this section, provide specific information about your system. Select the **WACN ID** and **System ID** for your system. Your selection options are from the license file. If you do not see the correct WACN or System ID, contact GenWatch3 Support for a new license file. Next, enter an **RFSS ID** and **Site ID**. The RFSS and Site IDs must match the site for which the transceiver is programmed. If the RFSS or Site ID is incorrect all packets generated by this connection will be corrupt. Detailed information on the system settings can be found in the GenWatch3 *GW_RSP25 Module Book* document.

Channel Settings

This section allows you to view and edit the channel settings for the current connection. The channel settings are used to calculate the frequencies for P25 systems. Thus, if frequencies are not being decoded on a connection, you may need to edit the channel settings. The values must be entered in Hz. As most control channels are shown in MHz, you may need to multiply the MHz control channel value by 1,000,000. Detailed information on the channel settings can be found in the GenWatch3 *GW_RSP25 Module Book* document.

❌ When entered, each base frequency must be exactly 9 digits.