

## **Portable Radio Programming Procedure**

This document describes how-to program a TP9400 Tait Radio with all necessary radio frequencies, channels, and zones (as needed) for monitoring and transmission on two-way radio systems.

### WARNING: DO NOT TRANSMIT ON ANY FREQUENCIES WITHOUT PRIOR AUTHORIZATION FROM THE LICENSEE. MAKE SURE TO OBTAIN PROPER PERMISSIONS FROM PUBLIC SAFETY AGENCIES BEFORE ANY TESTING THAT REQUIRES TRANSMISSION FROM A PORTABLE RADIO.

#### Sub-Procedures:

- 1. Installing Tait Programming Application Software (APCO)
- 2. Setting the correct COM Port
- 3. Downloading current radio settings (Read Function) \*CRITICAL\*
- 4. Setting Zones (incl. Test Zone)
- 5. Setting Channels (incl. Test Channels)
- 6. Writing final radio settings (Program Function)

### Requirement(s):

- TP9400 Tait Radio
- Tait Programming Cable
- Tait Programming Application (APCO)
- Windows PC

Note: **Bold**, **green text** indicates a selection on either the computer software or portable radio.

### 1. Installing Tait Programming Application (APCO)

To access the software application (located within the RSI-supplied USB drive), right-click the zip file, titled "Tait PROG\_[version]", and then select **Extract All...** 

| Name   |          |  | Date modified     | Тур | e  | Size                          |
|--|----------|--|-------------------|-----|--|-------------------------------|
| 700800testradio.p94  | p        |  | 8/1/2018 10:13 AM | P94 | P File   | 118 KB                        |
| Tait PROG_v2.12.2.5<br>uhftestradio1.p94p<br>vhftest1.p94p |          | <b>Open</b><br>Open in new win<br>Extract All<br>Pin to Start<br>Move to OneDriv |                   |     | npressed (zipp<br><sup>9</sup> File<br><sup>9</sup> File | 72,624 KB<br>116 KB<br>118 KB |
|  | er<br>Er | Scan with Windo<br>Share<br>Open with  | ws Defender       |     |  |                               |



This will prompt the Tait Terminals Support Software Setup. Press the **Accept** button to allow Tait Terminals Support Software Setup to continue installing FTDI Drivers (per the terms of the pending License Agreement shown).

| 🐻 Tait Terminals  | Support Software Set     | up  | ×    |  |
|---|--------------------------|---|------|--|
| For the following c   | omponents:               |   |      |  |
| FTDI Drivers  |                          |   |      |  |
| Please read the fo<br>of the agreement.   | llowing license agreemer | nt. Press the page down key to see the  | rest |  |
| IMPORTANT NOTICE: PLEASE READ CAREFULLY BEFORE INSTALLING<br>THE RELEVANT SOFTWARE:<br>This licence agreement (Licence) is a legal agreement between you (Licensee or<br>you) and Future Technology Devices International Limited of 2 Seaward Place,<br>Centurion Business Park, Glasgow G41 1HH, Scotland (UK Company Number<br>SC136640) (Licensor or we) for use of driver software provided by the Licensor<br>(Software). |                          |   |      |  |
| OF THIS LICENC  | E WHICH WILL BIND Y      | WARE YOU AGREE TO THE TERMS<br>'OU. IF YOU DO NOT AGREE TO<br>'E UNWILLING TO LICENSE THE | *    |  |
| View EUL  | A for printing           |   |      |  |
| Do you accept the terms of the pending License Agreement?   |                          |   |      |  |
| If you choose Don't Accept, install will close. To install you must accept this<br>agreement.   |                          |   |      |  |
|   | Accept                   | Don't Accept  |      |  |

Press the **Install** button to allow Tait Terminals Support Software Setup to continue installing HASP Drivers and Tait USB Programming Cable Drivers.

| 🎁 Tait Terminais Support Software Setup                     | × |
|---|---|
| The following components will be installed on your machine: |   |
| HASP Drivers<br>Tait USB Programming Cable Drivers          |   |
| Do you wish to install these components?                    |   |
| If you choose Cancel, setup will exit.                      |   |
| Install Cancel  |   |



*Note:* Windows Control may prompt additional dialog boxes confirming the installation of these drivers, depending upon the Windows OS version and/or personalized security settings utilized.

| 💴 Windows Security  | × |
|---|---|
| Would you like to install this device software?<br>Name: TPK-SV-009 Programming Cable Bus Driver<br>Publisher: Tait Electronics Ltd |   |
| Always trust software from "Tait Electronics Ltd". Install Don't Install  | ב |
| You should only install driver software from publishers you trust. How can I decide<br>which device software is safe to install?    |   |

Upon selecting Install / Accept / OK, the Setup Wizard will automatically open.

| 18 | Tait TM9100, TP9100, TM9400 ar | id TP9400 Programming Ap — 🗌 🗙  |
|----|--------------------------------|---|
|    | tait                           | Welcome to the Tait TM9100, TP9100,<br>TM9400 and TP9400 Programming<br>Application 2.12.2.5 Setup Wizard |
|    |                                | 19100, TP9100, TM9400 and TP9400 Programming<br>Iter. Click Next to continue or Cancel to exit the Setup  |
|    |                                | Back Next Cancel  |

Select the **Next** button to continue.



Click the **checkbox** to accept the terms in the End-User License Agreement for Tait Communications. Then select the **Next** button.

| iİ | F Tait TM9100, TP9100, TM9400 and TP9400 Programming Ap — 🗌 🗙  |
|----|--|
|    | End-User License Agreement   |
|    | Please read the following license agreement carefully  |
|    | Tait Software License Agreement  |
|    | This Software License Agreement ("Agreement") is between you ("Licensee") and Tait Limited ("Tait").               |
|    | By using any of the Software items embedded and pre-loaded in the related Tait Designated Product, included on CD, |
|    | I accept the terms in the License Agreement  |
|    | Print Back Next Cancel   |

Select the preferred Destination Folder and Optional Features as shown below. It is recommended to use the default settings for installation.

| 🙀 Tait TM9100, TP9100, TM9400 and TP9400 Programming Ap — 🗆 🗙   | 🔀 Tait TM9100, TP9100, TM9400 and TP9400 Programming Ap — 🛛 🗙  |
|---|--|
| Destination Folder  | Optional features  |
| Click Next to install to the default folder or click Change to choose another.  | Enable or disable options as required for this installation.   |
| Install Tait TM9100, TP9100, TM9400 and TP9400 Programming Application 2.12.2.5 to:<br>C:\Program Files (x86)\Tait Applications\TM9400 XPA\<br>Change | Restrict programming of terminals to those with Read Write Protection enabled.<br>Selecting this check box will mean the programming application can only program<br>read/write protected radios. Only select this option at installation time if it is your<br>organization's policy to do so, and you are aware of the consequences. If unsure, leave<br>this check box cleared. |
| Back Next Cancel  | Back Next Cancel   |

Make note of the Destination Folder's file path.

The default optional feature is unchecked.

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Click the **Install** button, then the **Finish** button to complete installation.

| 🕞 Tait TM9100, TP9100, TM9400  | and TP9400 Programming Ap — 🗌 🗙  |
|--|--|
| tait   | Ready to install Tait TM9100, TP9100,<br>TM9400 and TP9400 Programming<br>Application 2.12.2.5           |
| Click Install to begin the installatic<br>settings. Click Cancel to exit the | on. Click Back to review or change any of your installation<br>wizard.                                   |
|  | Back Sancel  |
|  |  |
|  |  |
| 📊 Tait TM9100, TP9100, TM9400  | and TP9400 Programming Ap — 🗆 X  |
| i Tait TM9100, TP9100, TM9400  | Completed the Tait TM9100, TP9100, TM9400 and TP9400 Programming Application 2.12.2.5 Setup Wizard       |
| Tait TM9100, TP9100, TM9400  | Completed the Tait TM9100, TP9100,<br>TM9400 and TP9400 Programming<br>Application 2.12.2.5 Setup Wizard |

*Note:* Windows Control may prompt additional dialog boxes confirming the installation of these drivers, depending upon the Windows OS version and/or personalized security settings utilized.

The Tait Programming application should automatically open. If not, refer to the Destination Folder's file path noted from the previous step to manually locate and open the program.



### 2. Setting the Correct COM Port

Upon successfully installing the software onto a Windows PC, press the  $mathbb{B}$  and R keys to prompt Run. Enter *devmgmt.msc* into the dialog box, then select **OK**.

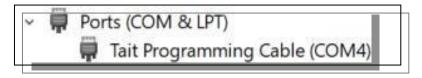
| 🔎 Run         | ×   |
|---------------|---|
|               | Type the name of a program, folder, document, or Internet resource, and Windows will open it for you. |
| <u>O</u> pen: | devmgmt.msc ~   |
|               | OK Cancel <u>B</u> rowse  |

This will open the Device Manager.

| File Action View Help                |
|--------------------------------------|
| Þ 🔿 🖬 🖺 🛛 🖬 💭                        |
| V 📇 WINDOWS-0VUI2VJ                  |
| > 4 Audio inputs and outputs         |
| > 💻 Computer                         |
| > 👝 Disk drives                      |
| > 🏣 Display adapters                 |
| > 🐺 Human Interface Devices          |
| > 📹 IDE ATA/ATAPI controllers        |
| > 🔤 Keyboards                        |
| > II Mice and other pointing devices |
| > 💻 Monitors                         |
| > 🚅 Network adapters                 |
| > 🛱 Ports (COM & LPT)                |
| > 📑 Print queues                     |
| > Processors                         |
| Security devices                     |
| Software devices                     |
| Sound, video and game controllers    |
| > Storage controllers                |
| > E System devices                   |
| > Universal Serial Bus controllers   |



Locate Ports (COM & LPT) to determine the port number assigned to the Tait Programming Cable. For example, the below figure shows the assignment (COM4).



Go back to the Tait Programming Application (if not already open) and select the applicable Radio Model from the available tabs:

| TM9100/TP9100/TM9400/TP9400 Programming Application (2.12.2.5) |  |  |  |
|--|--|--|--|
| File Edit Radio Tools Help                                     |  |  |  |
| 🛍 🎬 😰 Radio 👍 Read 🤺 Interrogate 🔺 Program                     |  |  |  |
| Radio Model TP9100 TM9100 TP9400 TM9400                        |  |  |  |

Navigate through the following menu path:

Tools > Options > General (tab) > Communication Port (section)

| TM9100/TP9100/TM9400/TP9400 Programming Appli             |      |                                       |  |  |
|---|------|---------------------------------------|--|--|
| File Edit Radio   | Tool | s Help                                |  |  |
|   |      | Firmware Upgrade<br>Optional Features |  |  |
| Radio Model   | Ø    | Options                               |  |  |
| Specifications<br>Startup/Shutdown<br>Receiver Monitoring |      | Quick Reference Card   Trunking Keys  |  |  |
| Tait Radio API  |      | Fleet Configuration                   |  |  |

From there, select the assigned port number in the drop-down menu, same as it appears within the Device Manager (i.e. COM4). Click **OK** once selected.

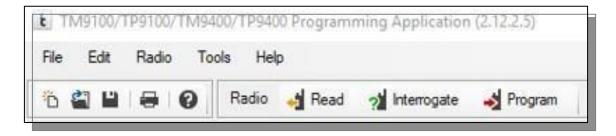
| Options | 3                   |           |
|---------|---------------------|-----------|
| General | System Key Settings |           |
| Comm    | unication Port      |           |
| CON     | 14 ~                | Safe Mode |



## 3. Downloading Current Radio Settings (Read Function)

# WARNING: Failing to perform this function will result in the loss of existing programming. *DO NOT SKIP THIS STEP!*

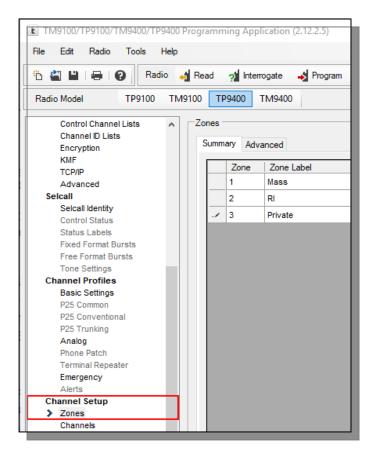
Connect the radio to the programming cable, then press the **Read** button on the main screen (CTRL + R).



This will download any existing programming onto the radio, which will eliminate the need to reenter any preset frequencies.

### 4. Setting Zones

From the main screen, refer to the left-side menu and then scroll down to the Channel Setup section. Select Zones to prompt the Summary tab on the right-hand side.





Using the Add button, enter each applicable Zone Label into the summary tab as a new line item.

Add an additional zone labeled "Private" for BDA testing; private zones are very useful during DAS / Isolation testing (See "DAS / Donor Isolation Testing Procedure").

| Zones    |     |       |          |
|----------|-----|-------|----------|
| Zone 1 V | ← → | 🛉 Add | 🗙 Delete |
|          |     |       |          |

Zone information can be collected from the local AHJ (<u>www.radioreference.com</u> should only be used as a set of guidelines).

## 5. Setting Channels

Referring to the left-side menu, select Channels (1) underneath the Channel Setup header (also located directly beneath Zones).

| E TM9100/TP9100/TM9400             |             | -             | g Applica  | tion (2.12.2.5 | )                 |                |              |        |        |        |        |       |           |         | - 8                    | ×  |
|------------------------------------|-------------|---------------|------------|----------------|-------------------|----------------|--------------|--------|--------|--------|--------|-------|-----------|---------|------------------------|----|
| <u>File Edit Radio Tools</u>       | <u>H</u> el | p             |            |                |                   |                |              |        |        |        |        |       |           |         |                        |    |
| *` 41 🖶 😝 🔞                        | Radio       | 👍 Read 🛛 🥱    | Interrog   | ate 🔥 Prog     | gram              |                |              |        |        |        |        |       |           |         |                        |    |
|                                    | 00 T        |               | -          | -              |                   |                |              |        |        |        |        |       |           |         |                        |    |
| Radio Model TP91                   | 00 1        | M9100 TP94    |            | 19400          |                   |                |              |        |        |        |        |       |           |         |                        |    |
| Advanced 🔺                         | Chann       | els           |            |                |                   |                |              |        |        |        |        |       |           | Revert  | - Validate             |    |
| Selcall                            | Summ        | ary Detailed  | Advanced   | Signaling Pr   | reset Selcal Pres | et Calls Signa | aling Decode |        |        |        |        |       |           |         |                        |    |
| Selcall Identity<br>Control Status |             |               |            |                |                   |                | -            |        | 1      |        |        | _     |           |         | 1                      |    |
| Status Labels                      |             | Label         | Number     | Profile        | Talkgroup         | Rx Freq        | Tx Freq      | Rx NAC | Tx NAC | Rx Sig | Tx Sig | Power | Bandwidth | Squelch | In-Zone Scan<br>Member |    |
| Fixed Format Bi                    |             |               |            |                |                   |                |              |        |        | -      |        |       |           |         | Member                 |    |
| Free Format Bu                     | ►           | BFD Main 1    | 1          | Profile 1      | Group1            | 483.162500     | 486.162500   | 293    | 293    | None   | D023   | Low   | 12.5      | City    | Yes                    |    |
| Tone Settings<br>Channel Profiles  |             | CFD Dispatch  | 2          | Profile 1      | Group1            | 470.025000     | 473.025000   | 293    | 293    | None   | C114.8 | Low   | 12.5      | City    | Yes                    |    |
| Basic Settings                     |             | 3             |            |                |                   |                | 4            |        |        |        | E      |       |           |         |                        |    |
| P25 Common                         |             | 5             |            |                |                   |                | -            |        |        |        | 5      |       |           |         |                        |    |
| P25 Convention<br>P25 Trunking     |             |               |            |                |                   |                |              | -      |        |        |        | -     |           |         |                        |    |
| Analog                             |             |               |            |                |                   |                |              |        |        |        |        |       |           |         |                        |    |
| Phone Patch                        |             |               |            |                |                   |                |              |        |        |        |        |       |           |         |                        |    |
| Terminal Repeat                    |             |               |            |                |                   |                |              |        |        |        |        |       |           |         |                        |    |
| Emergency<br>Alerts                |             |               |            |                |                   |                |              |        |        |        |        |       |           |         |                        |    |
| Channel Setup                      |             |               |            |                |                   |                |              |        |        |        |        |       |           |         |                        |    |
| Zones 1                            |             |               |            |                |                   |                |              |        |        |        |        |       |           |         |                        |    |
| Scan Groups                        |             |               |            |                |                   |                |              |        |        |        |        |       |           |         |                        |    |
| 16-Way Selecto                     | <           |               |            |                |                   |                |              |        |        |        |        |       |           |         |                        | >  |
| UI Preferences                     |             |               |            |                |                   |                |              |        |        |        |        |       |           |         |                        |    |
| Function Ctrl Setting              | Cher        | nnels         |            |                |                   |                |              |        |        |        |        |       |           |         |                        |    |
| PTT<br>Lone Worker                 |             | Main 1        |            |                | Add               | 4              | Repeat       | X Dele | te     |        |        |       |           |         |                        |    |
| Audio Services                     | DFU         | Main          |            | • •            | - 200             |                | inopout      |        |        |        |        |       |           |         |                        |    |
| Radio Menu                         | Zone        | es ,          | -          |                | _                 |                |              |        |        |        |        |       |           |         |                        |    |
| Log Entries 🗸 🗸                    | Mass        |               | 2 、        | · + -          |                   |                |              |        |        |        |        |       |           |         |                        |    |
| < >                                |             |               |            |                | -                 |                |              |        |        |        |        |       |           |         |                        |    |
| Database Version: 0189             | Port: C     | OM4 + Last ac | tion: Read | radio TP9400   | )                 |                |              |        |        |        |        |       |           |         |                        | .: |

From there, select the correct Zone (2) by utilizing the left and right selection arrows.

| Channels                      |   | Delete         |
|-------------------------------|---|----------------|
| Channel 1 ~<br>Zones          | ← → Add ↓ Repeat × C  |                |
| Zone 1 ~                      | ← →   |                |
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Using the **Add** button, enter each applicable Label (3) into the Channel section's summary tab as a new line item.

| 🏭 💾 🖶 🔞   | Radio | 付 Read 💡        | Interrog | ate 🔥 Pro     | ogram               |                 |              |        |        |        |        |       |           |         |                        |
|---|-------|-----------------|----------|---------------|---------------------|-----------------|--------------|--------|--------|--------|--------|-------|-----------|---------|------------------------|
| adio Model TP9  | 100   | TM9100 TP94     | 100 TN   | 19400         |                     |                 |              |        |        |        |        |       |           |         |                        |
| Advanced 🔺  | Chan  | nels            |          |               |                     |                 |              |        |        |        |        |       | 4         | Revert  | Validate               |
| Selcall   | Sum   | mary Detailed   | Advanced | d Signaling F | Preset Selcall Pres | set Calls Signa | aling Decode |        |        |        |        |       |           |         |                        |
| Selcall Identity<br>Control Status  |       |                 |          |               |                     |                 | 1            | 1      | 1      |        |        | 1     | 1         | 1       |                        |
| Status Labels<br>Fixed Format Bu  |       | Label           | Number   | Profile       | Talkgroup           | Rx Freq         | Tx Freq      | Rx NAC | Tx NAC | Rx Sig | Tx Sig | Power | Bandwidth | Squelch | In-Zone Scan<br>Member |
| Free Format Bu  | •     | BFD Main 1      | 1        | Profile 1     | Group1              | 483.162500      | 486.162500   | 293    | 293    | None   | D023   | Low   | 12.5      | City    | Yes                    |
| Tone Settings<br>Channel Profiles   |       | CFD Dispatch    | 2        | Profile 1     | Group1              | 470.025000      | 473.025000   | 293    | 293    | None   | C114.8 | Low   | 12.5      | City    | Yes                    |
| Basic Settings  |       | 3               |          |               |                     |                 | 4            |        |        |        | -      |       |           |         |                        |
| P25 Common  |       | 5               |          |               |                     |                 | <b>-</b>     |        |        |        | 5      |       |           |         |                        |
| P25 Convention  |       |                 | •        |               |                     |                 |              | -      |        |        |        | -     |           |         |                        |
|   |       |                 |          |               |                     |                 |              |        |        |        |        |       |           |         |                        |
| P25 Trunking<br>Analog  |       |                 |          |               |                     |                 |              |        |        |        |        |       |           |         |                        |
| Analog<br>Phone Patch   |       |                 |          |               |                     |                 |              |        |        |        |        |       |           |         |                        |
| Analog<br>Phone Patch<br>Terminal Repea   |       |                 |          |               |                     |                 |              |        |        |        |        |       |           |         |                        |
| Analog<br>Phone Patch<br>Terminal Repea<br>Emergency  |       |                 |          |               |                     |                 |              |        |        |        |        |       |           |         |                        |
| Analog<br>Phone Patch<br>Terminal Repeat<br>Emergency<br>Alerts   |       |                 |          |               |                     |                 |              |        |        |        |        |       |           |         |                        |
| Analog<br>Phone Patch<br>Terminal Repeat<br>Emergency<br>Alerts<br>Channel Setup<br>Zones   |       |                 |          |               |                     |                 |              |        |        |        |        |       |           |         |                        |
| Analog<br>Phone Patch<br>Terminal Repea<br>Emergency<br>Alerts<br>Channel Setup<br>Zones<br>Channels  |       |                 |          |               |                     |                 |              |        |        |        |        |       |           |         |                        |
| Analog<br>Phone Patch<br>Terminal Repeat<br>Emergency<br>Alerts<br>Channel Setup<br>Zones   | <     |                 |          |               |                     |                 |              |        |        |        |        |       |           |         | >                      |
| Analog<br>Phone Patch<br>Terminal Repear<br>Emergency<br>Alerts<br>Channel Setup<br>Zones<br>Channels<br>Scan Groups<br>16-Way Selectc<br>UI Preferences  | <     |                 |          |               |                     |                 |              |        |        |        |        |       |           |         | >                      |
| Analog<br>Phone Patch<br>Terminal Repear<br>Emergency<br>Alerts<br>Channel Setup<br>Zones<br>Channels<br>Scan Groups<br>16-Way Selectc<br>Ul Preferences<br>Function Ctrl Setting                       |       | innels          |          |               |                     |                 |              |        |        |        |        |       |           |         | >                      |
| Analog<br>Phone Patch<br>Terminal Repear<br>Emergency<br>Alerts<br>Channel Setup<br>Zones<br>Channels<br>Scan Groups<br>16-Way Selectc<br>UI Preferences<br>Function Ctrl Setting<br>PTT                | Cha   | nnels           |          | 7 6 6         |                     | 1.4             | Reneat       | X Dela | ete (  |        |        |       |           |         | >                      |
| Analog<br>Phone Patch<br>Terminal Repea<br>Emergency<br>Alerts<br>Channel Setup<br>Zones<br>Channels<br>Scan Groups   | Cha   | nnels<br>Main 1 |          |               | > + Add             | 4               | Repeat       | X Dele | te     |        |        |       |           |         | >                      |
| Analog<br>Phone Patch<br>Terminal Repear<br>Emergency<br>Alerts<br>Channel Setup<br>Zones<br>Channels<br>Scan Groups<br>16-Way Selectc<br>UI Preferences<br>Function Ctrl Setting<br>PTT<br>Lone Worker | Cha   | ) Main 1<br>Ies | 2        |               | → Add               | 4               | Repeat       | X Dele | te     |        |        |       |           |         | >                      |

Channel information can be collected from the local AHJ (<u>www.radioreference.com</u> should only be used as a set of guidelines).

The Channel Label may also be referred to as the Alpha Tag:

| Frequency | Input 🗊   | License | Туре | Tone    | Alpha Tag  | Description        | Mode | Tag           |
|-----------|-----------|---------|------|---------|------------|--------------------|------|---------------|
| 483.16250 | 486.16250 | KGA645  | RM   | 023 DPL | BFD Main 1 | Fire Main Dispatch | FMN  | Fire Dispatch |
| Frequency | Input 🝺   | License | Туре | Tone    | Alpha Tag  | Description        | Mode | Tag           |
|           |           |         |      |         |            |                    |      |               |

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Input the corresponding Frequency and Input data into the Rx Frequency and Tx Frequency columns, respectively, for each Label (4).

|                                   | ols <u>H</u> e | elp          |          |                  |                     |                |                 |        |        |         |          |       |           |         |              |   |
|-----------------------------------|----------------|--------------|----------|------------------|---------------------|----------------|-----------------|--------|--------|---------|----------|-------|-----------|---------|--------------|---|
| ) 省 💾 I 🖶 I 😧                     | Radio          | 👍 Read 💡     | Interrog | ate 🚽 Pro        | ogram               |                |                 |        |        |         |          |       |           |         |              |   |
| Radio Model TP                    | 9100           | ТМ9100 ТР94  | 400 TN   | 19400            |                     |                |                 |        |        |         |          |       |           |         |              |   |
| Advanced A                        | ⊂Chan          | nele         |          |                  |                     |                |                 |        |        |         |          |       |           | Revert  | Validate     | 1 |
| Selcall                           |                |              | A        | Cinceline D      | Colorall Dece       | at Calls Size  | dine Decede     |        |        |         |          |       |           | Ineven  | Vandate      | _ |
| Selcall Identity                  | Jum            | Detailed     | Advanced | s Signaling P    | Preset Selcall Pres | et Calls Signa | aling Decode    |        |        |         |          |       |           |         |              |   |
| Control Status<br>Status Labels   |                | Label        | Number   | Profile          | Talkgroup           | Rx Freq        | Tx Freq         | Rx NAC | Tx NAC | Rx Sig  | Tx Sig   | Power | Bandwidth | Squelch | In-Zone Scan |   |
| Fixed Format Bi                   |                | Laber        | Number   | Frome            | Taikgroup           | FX Fleq        | TX Fleq         | EX NAC | TX NAC | Fix big | TX Sig   | Fower | Danuwidin | Squeich | Member       |   |
| Free Format Bu                    | Þ              | BFD Main 1   | 1        | Profile 1        | Group1              | 483.162500     | 486.162500      | 293    | 293    | None    | D023     | Low   | 12.5      | City    | Yes          |   |
| Tone Settings<br>Channel Profiles |                | CFD Dispatch | 2        | Profile 1        | Group1              | 470.025000     | 473.025000      | 293    | 293    | None    | C114.8   | Low   | 12.5      | City    | Yes          |   |
| Basic Settings                    |                | 3            |          |                  |                     |                | 4               |        |        |         | <b>F</b> |       |           |         |              |   |
| P25 Common                        |                | 5            |          |                  |                     |                | <b>-</b>        |        |        |         | 5        |       |           |         |              |   |
| P25 Convention<br>P25 Trunking    |                |              |          |                  |                     |                |                 | -      |        |         |          | -     |           |         |              |   |
| Analog                            |                |              |          |                  |                     |                |                 |        |        |         |          |       |           |         |              |   |
| Phone Patch<br>Terminal Repea     |                |              |          |                  |                     |                |                 |        |        |         |          |       |           |         |              |   |
| Emergency                         |                |              |          |                  |                     |                |                 |        |        |         |          |       |           |         |              |   |
| Alerts                            |                |              |          |                  |                     |                |                 |        |        |         |          |       |           |         |              |   |
| Channel Setup<br>Zones            |                |              |          |                  |                     |                |                 |        |        |         |          |       |           |         |              |   |
| Zones Channels                    |                |              |          |                  |                     |                |                 |        |        |         |          |       |           |         |              |   |
| Scan Groups                       | <              |              |          |                  |                     |                |                 |        |        |         |          |       |           |         |              | > |
| 16-Way Selecto<br>UI Preferences  |                |              |          |                  |                     |                |                 |        |        |         |          |       |           |         |              | _ |
| Function Ctrl Setting             | 0              |              |          |                  |                     |                |                 |        |        |         |          |       |           |         |              |   |
| PTT<br>Lone Worker                |                | annels       |          |                  | → <u></u> Add       | 4              | <u>R</u> epeat  | X Dele | to     |         |          |       |           |         |              |   |
| Audio Services                    | BFL            | ) Main 1     | `        | · • -            | → <u>A</u> dd       | - +            | <u>IV</u> ehear |        | sie    |         |          |       |           |         |              |   |
| De d'a Marcu                      | Zon            | ies ,        | 2 、      |                  |                     |                |                 |        |        |         |          |       |           |         |              |   |
| Radio Menu<br>Log Entries         |                |              |          | / <del>(</del> - |                     |                |                 |        |        |         |          |       |           |         |              |   |

Next, input the Sig data (5) for each Label. ALWAYS LEAVE Rx Sig INFO BLANK (Displays as "None" on Summary tab). PL/DPL Tones go into the Tx Sig column.

| Rx Freq    | Tx Freq    |  |
|------------|------------|--|
| 483.162500 | 486.162500 |  |
| 470.025000 | 473.025000 |  |
|            | 4          |  |



Once the Sig data has been entered, create a set of "Private" channels to correspond with the "Private" zone (configured earlier in Step #5) for testing the DAS / Isolation (See "DAS / Donor Isolation Testing Procedure").

The following are examples of test channels for each band:

### VHF

| Edit Radio Tools Help   |                                  | /TP9400 Program | ~                                       |               |                  |                 |                     |        |        |           |             |              |           |          |                        |                              |
|---|----------------------------------|-----------------|---|---------------|------------------|-----------------|---------------------|--------|--------|-----------|-------------|--------------|-----------|----------|------------------------|------------------------------|
| 🗳 🔛   🖶   😧 🛛 Radio 🛶   | Read                             | ? Interrogate   | 🚽 Pr                                    | rogram        |                  |                 |                     |        |        |           |             |              |           |          |                        |                              |
| adio Model TP9100 TM9   | 0100 TF                          | 9400 TM940      | 00                                      |               |                  |                 |                     |        |        |           |             |              |           |          |                        |                              |
| Reset to defaults   |                                  |                 |   |               |                  |                 |                     |        |        |           |             |              |           | -        | _ 1 _                  |                              |
| Phone Call Lists A<br>Message Lists<br>Status Lists   | Channe                           |                 | dvanced                                 | Signaling Pre | eset Selcall Pre | set Calls Signa | aling Decode        |        |        |           |             |              |           | <u>_</u> | Revert - 🔽             | Validate                     |
| Site Lists<br>Control Channel Lists<br>Channel ID Lists   |                                  | Label           | Number                                  | Profile       | Talkgroup        | Rx Freq         | Tx Freq             | Rx NAC | Tx NAC | Rx Sig    | Tx Sig      | Power        | Bandwidth | Squelch  | In-Zone Scan<br>Member | Voice<br>Annunci<br>File Nam |
| Encryption  | Þ                                | 154.5275 1      |   | Analog Conv   | Group1           | 154.527500      | 154.527500          | F7E    | 293    | None      | C100.0      | Low          | 12.5      | City     | Yes                    |                              |
| KMF   |                                  | 151.7000 2      | 2                                       | Analog Conv   | Group1           | 151,700000      | 151,700000          | 293    | 293    | None      | None        | V. Low       | 12.5      | City     | Yes                    |                              |
| TCP/IP<br>Advanced  |                                  | 151.7600 3      | 8                                       | Analog Conv   |                  | 151.760000      | 151.760000          | 293    | 293    | None      | None        | V. Low       | 12.5      | City     | Yes                    |                              |
| elcali  |                                  | 1011000 0       |   | , analog conv | o.oup1           |                 | 101.100000          | 200    | 200    | Home      | TOTO        | T. LOW       | 12.0      | July     |                        | -                            |
| Free Format Bursts<br>Tone Settings<br>Channel Profiles<br>Basic Settings<br>P25 Common   |                                  |                 |   |               |                  |                 |                     |        |        |           |             |              |           |          |                        |                              |
| Tone Settings<br>Channel Profiles<br>Basic Settings<br>P25 Conventional<br>P25 Conventional<br>P25 Trunking<br>Analog<br>Phone Patch<br>Terminal Repeater<br>Emergency<br>Alerts<br>Channel Setup<br>Zones  | 4                                |                 |   |               |                  |                 |                     |        |        |           |             |              |           |          |                        |                              |
| Tone Settings<br>hannel Profiles<br>Basic Settings<br>P25 Conventional<br>P25 Conventional<br>P25 Trunking<br>Analog<br>Phone Patch<br>Terminal Repeater<br>Emergency<br>Alerts<br>hannel Setup<br>Zones<br>Channels<br>Scan Groups<br>16-Way Selector                                | < Chan                           | nois            |   |               |                  |                 |                     |        |        |           |             |              |           |          |                        |                              |
| Tone Settings Channel Profiles Basic Settings P25 Conventional P25 Conventional P25 Trunking Analog Phone Patch Terminal Repeater Emergency Alerts Channel Setup Zones Channels Scan Groups 16-Way Selector II Preferences unction Crf Settings                                       | <<br>Chanı<br>154.52             |                 | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | • •           | Add              | 4               | Repeat              | × Dele | ste    |           |             |              |           |          |                        |                              |
| Tone Settings Channel Profiles Basic Settings P25 Common P25 Conventional P25 Trunking Analog Phone Patch Terminal Repeater Emergency Alerts Channel Setup Zones Channels Scan Groups 16-Way Selector U) Preferences Function Ctrl Settings TtT Lone Worker                           | Chani<br>154.52<br>Zones         | 275             |   |               | J                |                 | Repeat              | × Dela | ste    |           |             |              |           |          |                        | . 3                          |
| Tone Settings Channel Profiles Basic Settings P25 Common P25 Conventional P25 Trunking Analog Phone Patch Terminal Repeater Emergency Alerts Channels Scan Groups I6-Way Selector Il Preferences unction Ctrl Settings TT one Worker udio Services                                    | Chan<br>154.52                   | 275             |   |               | J                | 4               | Repeat              | × Dele | ste    |           |             |              |           |          |                        |                              |
| Tone Settings Channel Profiles Basic Settings P25 Conventional P25 Conventional P25 Trunking Analog Phone Patch Terminal Repeater Emergency Alerts Channels Scan Groups 16-Way Selector IPreferences unction Ctrl Settings TT one Worker unction Services Iadio Menu                  | Chani<br>154.52<br>Zones<br>test | 275             | ~                                       | · · ·         | J                | 4               | Repeat              | × Dele | ete    |           |             |              |           |          |                        |                              |
| Tone Settings Channel Profiles Basic Settings P25 Common P25 Conventional P25 Trunking Analog Phone Patch Terminal Repeater Emergency Alerts Channel Setup Zones Channels Scan Groups 16-Way Selector UI Preferences 'unction Ctrl Settings PTT Cone Worker Audio Services Badio Menu | Chani<br>154.52<br>Zones<br>test | 275<br>5        | ~                                       |               | J                |                 | Repeat I Brynolfson | × Dele |        | olfson@ar | nericansecu | irity.co Pen | ding      | May      | 7-9.2019               |                              |



# UHF

| Radio  | 🛃 Read                        | 2 Interrogate                         | ە لە    | rogram                                     |                   |                |                |        |         |            |                       |        |           |            |                        |                             |
|--|-------------------------------|---------------------------------------|---------|--|-------------------|----------------|----------------|--------|---------|------------|-----------------------|--------|-----------|------------|------------------------|-----------------------------|
| <b>—</b> — — — — — — — — — — — — — — — — — —   |                               | 2 Interrogate                         |         | rogram                                     |                   |                |                |        |         |            |                       |        |           |            |                        |                             |
| Status Lists   | Chann                         |                                       | Adverse | d Cincolina Da                             | eset Selcall Pres | at Calla Signa | line Decede    |        |         |            |                       |        |           | <b>5</b> P | levert 📘 🔽 🗸           | /alidate                    |
| Control Channel Lists<br>Channel ID Lists<br>Encryption  |                               | Label                                 | Number  | Profile                                    | Talkgroup         | Rx Freq        | Tx Freq        | Rx NAC | Tx NAC  | Rx Sig     | Tx Sig                | Power  | Bandwidth | Squelch    | In-Zone Scan<br>Member | Voice<br>Annunc<br>File Nan |
| KMF<br>TCP/IP  | •                             | 462.8375                              | 1       | Analog Conv                                | Group1            | 462.837500     | 462.837500     | 293    | 293     | None       | None                  | V. Low | 12.5      | City       | Yes                    | File Na                     |
| Advanced   | L L                           |                                       | 2       | Analog Conv                                | Group1            | 452.125000     | 457.125000     | 293    | 293     | None       | C74.4                 | V. Low | 12.5      | City       | Yes                    | -                           |
| Selcall  |                               |                                       | 3       | -  |                   |                | 457.125000     | 293    | 293     | C203.5     | None                  |        | 12.5      | City       | Yes                    | -                           |
| Selcall Identity<br>Control Status   | -                             | A DESCRIPTION OF THE PARTY            |         | Analog Conv                                | Group1            | 453.175000     |                | 57.66  | 22-28-3 | 1000000    | 100000                | High   |           | 100 100    | 1503.65                |                             |
| Status Labels  |                               |                                       | 4       | Analog Conv                                | Group1            | 482.675000     | 000.000000     | 293    | 293     | D754       | None                  | High   | 12.5      | City       | Yes                    | -                           |
| Fixed Format Bursts  |                               |                                       | 5       | Analog Conv                                | Group1            | 464.500000     | 464.500000     | 293    | 293     | None       | None                  | V. Low | 12.5      | City       | Yes                    | -                           |
| Free Format Bursts<br>Tone Settings  |                               | 462.6750                              | 6       | Analog Conv                                | Group1            | 462.675000     | 462.675000     | 293    | 293     | None       | None                  | V. Low | 12.5      | City       | Yes                    |                             |
| P25 Common<br>P25 Conventional<br>P25 Trunking   |                               |                                       |         |  |                   |                |                |        |         |            |                       |        |           |            |                        |                             |
| P25 Conventional   |                               |                                       |         |  |                   |                |                |        |         |            |                       |        |           |            |                        |                             |
| P25 Conventional<br>P25 Trunking<br>Analog<br>Phone Patch<br>Terminal Repeater<br>Emergency<br>Alerts  |                               |                                       |         |  |                   |                |                |        |         |            |                       |        |           |            |                        |                             |
| P25 Conventional<br>P25 Trunking<br>Analog<br>Phone Patch<br>Terminal Repeater<br>Emergency<br>Alerts<br>Channel Setup   |                               |                                       |         |  |                   |                |                |        |         |            |                       |        |           |            |                        |                             |
| P25 Conventional<br>P25 Trunking<br>Analog<br>Phone Patch<br>Terminal Repeater<br>Emergency<br>Alerts<br>Channel Setup<br>Zones  |                               |                                       |         |  |                   |                |                |        |         |            |                       |        |           |            |                        |                             |
| P25 Conventional<br>P25 Trunking<br>Analog<br>Phone Patch<br>Terminal Repeater<br>Emergency<br>Alerts<br>Channel Setup<br>Zones<br>Channels<br>Scan Groups   | ۲                             |                                       |         |  |                   |                |                |        |         |            |                       |        |           |            |                        | 3                           |
| P25 Conventional<br>P25 Trunking<br>Analog<br>Phone Patch<br>Terminal Repeater<br>Emergency<br>Alerts<br>Channel Setup<br>Zones<br>Channels<br>Scan Groups<br>16-Way Selector  | ٢                             |                                       |         |  |                   |                |                |        |         |            |                       |        |           |            |                        | ;                           |
| P25 Conventional<br>P25 Trunking<br>Analog<br>Phone Patch<br>Terminal Repeater<br>Emergency<br>Alerts<br>Channel Setup<br>Zones<br>Channels<br>Scan Groups<br>16-Way Selector  |                               | nnels                                 |         |  |                   |                |                |        |         |            |                       |        |           |            |                        | 2                           |
| P25 Conventional<br>P25 Trunking<br>Analog<br>Phone Patch<br>Terminal Repeater<br>Emergency<br>Alerts<br>Channel Setup<br>Zones<br>Channels<br>Scan Groups<br>16-Way Selector<br>UPreferences<br>Function Ctrl Settings  |                               |                                       |         |  | Add               | 4              | Repeat         | × Dele | ste     |            |                       |        |           |            |                        |                             |
| P25 Conventional<br>P25 Trunking<br>Analog<br>Phone Patch<br>Terminal Repeater<br>Emergency<br>Alerts<br>Channel Setup<br>Zones<br>Channels<br>Scan Groups<br>16-Way Selector<br>UI Preferences<br>Function Ctrl Settings<br>PTT<br>Lone Worker  | Char<br>462.1                 | 8375                                  |         | <ul> <li>← →</li> </ul>                    | Add               | 4              | Repeat         | × Dele | ste     |            |                       |        |           |            |                        |                             |
| P25 Conventional<br>P25 Trunking<br>Analog<br>Phone Patch<br>Terminal Repeater<br>Emergency<br>Alerts<br>Channel Setup<br>Zones<br>Channels<br>Scan Groups<br>16-Way Selector<br>UlPreferences<br>Function Ctrl Settings<br>PTT<br>Lone Worker<br>Audio Services   | Char<br>462.1<br>Zone         | 8375<br>es                            |         |  |                   | 4              | Repeat         | × Dele | ste     |            |                       |        |           |            |                        | c                           |
| P25 Conventional<br>P25 Trunking<br>Analog<br>Phone Patch<br>Terminal Repeater<br>Emergency<br>Alerts<br>Channel Setup<br>Zones<br>Channels<br>Scan Groups<br>16-Way Selector<br>UI Preferences<br>Function Ctrl Settings<br>PTT<br>Lone Worker<br>Audio Services<br>Radio Menu                                      | Char<br>462.1                 | 8375<br>es                            |         | <ul> <li>&lt; →</li> <li>&lt; →</li> </ul> |                   | 4              | Repeat         | × Dele | ete     |            |                       |        |           |            |                        | ,                           |
| P25 Conventional<br>P25 Trunking<br>Analog<br>Phone Patch<br>Terminal Repeater<br>Emergency<br>Alerts<br>Channel Setup<br>Zones<br>Channels<br>Scan Groups<br>16-Way Selector<br>UPreferences<br>Function Ctrl Settings<br>PTT<br>Lone Worker<br>Audio Services<br>Radio Menu<br>Log Entries $\vee$                  | Chai<br>462.1<br>Zone<br>Zone | 8375<br>es                            |         |  |                   | 4              | Repeat         | × Dele | ete     |            |                       |        |           |            |                        | >                           |
| P25 Conventional<br>P25 Trunking<br>Analog<br>Phone Patch<br>Terminal Repeater<br>Emergency<br>Alerts<br>Channel Setup<br>Zones<br>Scan Groups<br>16-Way Selector<br>Ul Preferences<br>Function Ctrl Settings<br>PTT<br>Lone Worker<br>Audio Services<br>Radio Menu<br>Log Entries                                   | Chai<br>462.1<br>Zone<br>Zone | 8375<br>es<br>+ 1                     |         | stradio1.p94p'                             |                   |                | Repeat Voelker | X Dela |         | er@firetro | ol.net                | Pen    | ding      | TBD        |                        | >                           |
| P25 Conventional<br>P25 Trunking<br>Analog<br>Phone Patch<br>Terminal Repeater<br>Emergency<br>Alerts<br>Channel Setup<br>Zones<br>Scan Groups<br>16-Way Selector<br>Ul Preferences<br>Function Ctrl Settings<br>PTT<br>Lone Worker<br>Audio Services<br>Radio Menu<br>Log Entries v<br>base Version: 0189 Port: CCC | Chai<br>462.1<br>Zone<br>Zone | 8375<br>es<br>e 1<br>t action: Opened |         | stradio 1,p94p'                            | ]                 | Budd           |                | × Dele | Bvoelk  |            | ol.net<br>nericansecu |        |           |            | 7-9.2019               |                             |



# 700-800MHz

| 🗳 💾   🖶   😧   Radio 斗  | Read            | ? Interrogate | e 🚽 P    | rogram                               |                 |                  |             |        |        |          |        |         |
|--|-----------------|---------------|----------|--------------------------------------|-----------------|------------------|-------------|--------|--------|----------|--------|---------|
| dio Model TP9100 TM91  | 00 TP           | 9400 TM94     | 400      |                                      |                 |                  |             |        |        |          |        |         |
| Control Channel Lists  | Channe          | ls            |          |                                      |                 |                  |             |        |        | S Revert |        | alidate |
| Channel ID Lists   | Summa           | ry Detailed   | Advances | Cionalina De                         | aast Salaall Br | eset Calls Signa | ling Decede |        | -      |          |        |         |
| Encryption   | Samina          | Detailed      | Advanced | J Signaling Fi                       | eset Seicali Fi | eset Calls Signa | aing Decode |        |        |          |        |         |
| KMF  |                 |               |          |                                      |                 |                  |             |        |        |          |        |         |
| TCP/IP   |                 | Label         | Number   | Profile                              | Talkgroup       | Rx Freq          | Tx Freq     | Rx NAC | Tx NAC | Rx Sig   | Tx Sig | Power   |
| Advanced   |                 |               |          |                                      |                 |                  |             |        |        |          |        |         |
| Selcall  |                 | 859.100       | 1        | Analog Conv                          | Group1          | 859.100000       | 000.000000  | 293    | 293    | None     | None   | Low     |
| Selcall Identity   |                 | 859.8375msp   | 2        | Analog Conv                          | Group1          | 859.837500       | 000.000000  | 293    | 293    | None     | None   | Low     |
| Control Status   |                 |               |          |                                      |                 |                  |             |        |        |          |        |         |
| Status Labels  |                 | 859.2875msp   | 3        | Analog Conv                          | Group1          | 859.287500       | 000.000000  | 293    | 293    | None     | None   | Low     |
| Fixed Format Bursts  |                 | mbta edacs    | 4        | Analog Conv                          | Group1          | 851.225000       | 000.000000  | 293    | 293    | None     | None   | High    |
| Free Format Bursts   |                 | Logan800      | 5        | Analog Conv                          | Group1          | 857.012500       | 000.000000  | 293    | 293    | None     | None   | High    |
| Tone Settings<br>Channel Profiles  |                 | 774.99375     | 6        |                                      |                 | 774.993750       | 774.993750  | 293    | 293    | Nees     | Nees   | -       |
| Basic Settings   |                 | //4.993/5     | 0        | Analog Conv                          | Group1          | 114.993150       | 114.993750  | 293    | 293    | None     | None   | V. Low  |
| P25 Common   |                 |               |          |                                      |                 |                  |             |        |        |          |        |         |
| P25 Conventional   |                 |               |          |                                      |                 |                  |             |        |        |          |        |         |
| P25 Trunking   |                 |               |          |                                      |                 |                  |             |        |        |          |        |         |
| Analog   |                 |               |          |                                      |                 |                  |             |        |        |          |        |         |
| -  |                 |               |          |                                      |                 |                  |             |        |        |          |        |         |
| Phone Patch  |                 |               |          |                                      |                 |                  |             |        |        |          |        |         |
| Phone Patch<br>Terminal Repeater   |                 |               |          |                                      |                 |                  |             |        |        |          |        |         |
| Terminal Repeater  |                 |               |          |                                      |                 |                  |             |        |        |          |        |         |
|  |                 |               |          |                                      |                 |                  |             |        |        |          |        |         |
| Terminal Repeater<br>Emergency<br>Alerts   |                 |               |          |                                      |                 |                  |             |        |        |          |        |         |
| Terminal Repeater<br>Emergency<br>Alerts   |                 |               |          |                                      |                 |                  |             |        |        |          |        |         |
| Terminal Repeater<br>Emergency<br>Alerts<br>Channel Setup<br>Zones   |                 |               |          |                                      |                 |                  |             |        |        |          |        |         |
| Terminal Repeater<br>Emergency<br>Alerts<br>Channel Setup<br>Zones   | <               |               |          |                                      |                 |                  |             |        |        |          |        | >       |
| Terminal Repeater<br>Emergency<br>Alerts<br>Channel Setup<br>Zones<br>Channels   | <               |               |          |                                      |                 |                  |             |        |        |          |        | >       |
| Terminal Repeater<br>Emergency<br>Alerts<br>Channel Setup<br>Zones<br>Channels<br>Scan Groups<br>16-Way Selector   |                 | _             |          | _                                    | _               |                  |             |        |        |          | _      | >       |
| Terminal Repeater<br>Emergency<br>Alerts<br>Channel Setup<br>Zones<br>Channels<br>Scan Groups<br>16-Way Selector<br>UI Preferences   | <<br>Chan       | nels          |          |                                      |                 |                  |             |        |        |          |        | >       |
| Terminal Repeater<br>Emergency<br>Alerts<br>Channel Setup<br>Zones<br>Channels<br>Scan Groups<br>16-Way Selector<br>UI Preferences<br>Function Ctrl Settings                         |                 |               |          | √ € →                                | Add             | 4                | Repeat      | × Dele | ete    |          |        | >       |
| Terminal Repeater<br>Emergency<br>Alerts<br>Channel Setup<br>Zones<br>> Channels<br>Scan Groups<br>16-Way Selector<br>UI Preferences<br>Function Ctrl Settings<br>PTT                | Chan            |               |          | < ← →                                | Add             | 4                | Repeat      | × Dele | ste    |          |        | >       |
| Terminal Repeater<br>Emergency<br>Alerts<br>Channel Setup<br>Zones<br>> Channels<br>Scan Groups<br>16-Way Selector<br>UI Preferences<br>Function Ctrl Settings<br>PTT<br>Lone Worker | Chan            | 00            |          | < + +                                | Add             | 4                | Repeat      | × Dele | ste    | _        |        | >       |
| Terminal Repeater<br>Emergency<br>Alerts<br>Channel Setup<br>Zones<br>> Channels<br>Scan Groups  | Chani<br>859.10 | 00            |          | <ul> <li>← →</li> <li>← →</li> </ul> | ] <u>.</u>      | 4                | Repeat      | × Dele | ste    |          |        | >       |

# 6. Writing Final Radio Settings (Program Function)

Once all zones and channels are completely inputted into the programming application, write-toradio by selecting the **Program** button (CTRL +M)

| E TM9100/TP9100/TM | /19400/TP9400 Programming Application (2.12.2.5) |
|--------------------|--|
| File Edit Radio    | Tools Help                                       |
| 1 🗳 🗎 I 🖶 I        | 🖓 Radio 对 Read 🥂 Interrogate 🚽 Program           |
| Radio Model        | TP9100 TM9100 TP9400 TM9400                      |