# DMR CodePlug 101 AnyTone AT-D878UV

Code Plug Basics for the AnyTone 868/878

David Hull, KC6N

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- Part V Setting up Digital APRS
- Part VI Programmable bells and whistles

# AT D878 CodePlug 101

Part I

Introduction to basic concepts

# Basic Concepts (1)

- Code Plug: This is the program that is loaded into the radio to define it's operational "personality", in terms of Zones, Channels, Scanning, etc.
- CPS (Customer Programming Software): This is the Software that runs on a PC and is used to create, load and maintain the "Code Plug".

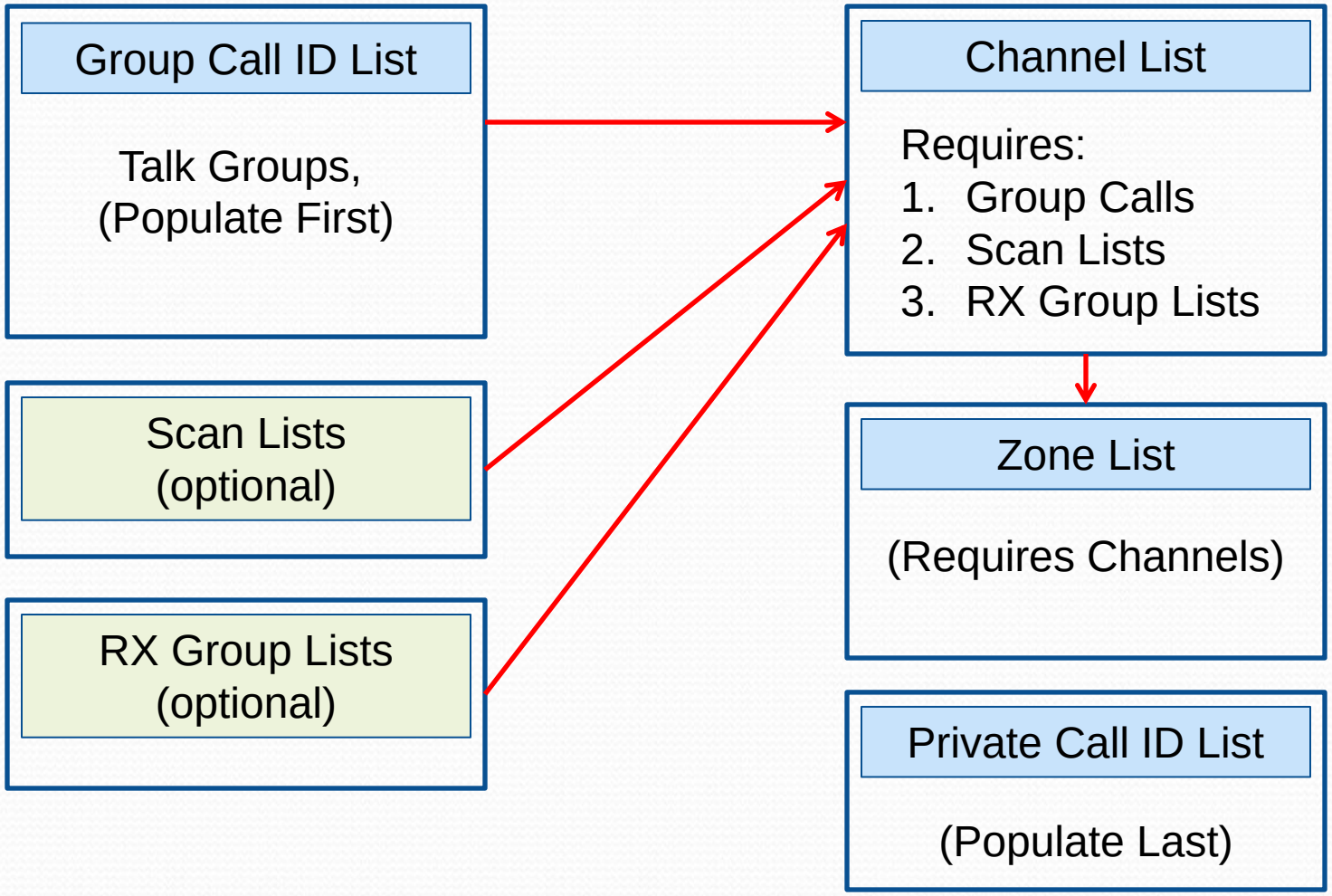
# Basic Concepts (2)

- Zones: Folders containing channels
  - Collects together a group of channels
  - Often dedicated to a physical repeater
  - Sometimes dedicated to a specific location
  - May contain DMR and Analog channels
- Channels: specific talk setup within a zone
  - Digital: Frequency, Color Code, Talk Group
  - Analog: Frequency, PL Tone/DCSS

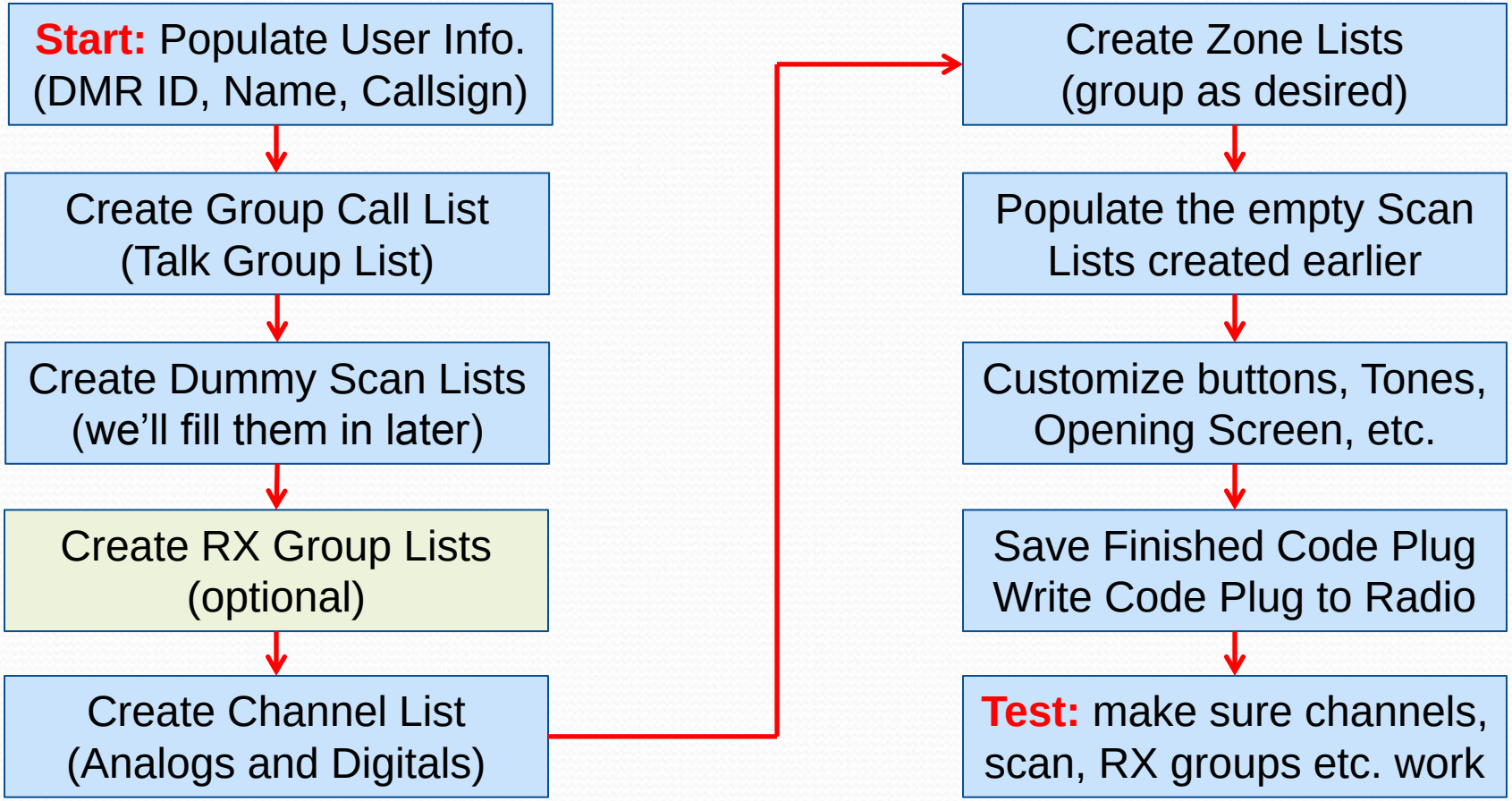
# Basic Concepts (3)

- Scan Groups:  Defines channels to scan
  - Each channel references a specific SG
  - There may be a max number of channels
  - Scan is usually focused on a specific Zone
- Contacts: DMR offers several types but only two are used in amateur radio:
  - Private Call: User ID / Call Sign
  - Group Call: Talk Group Name / TG ID #

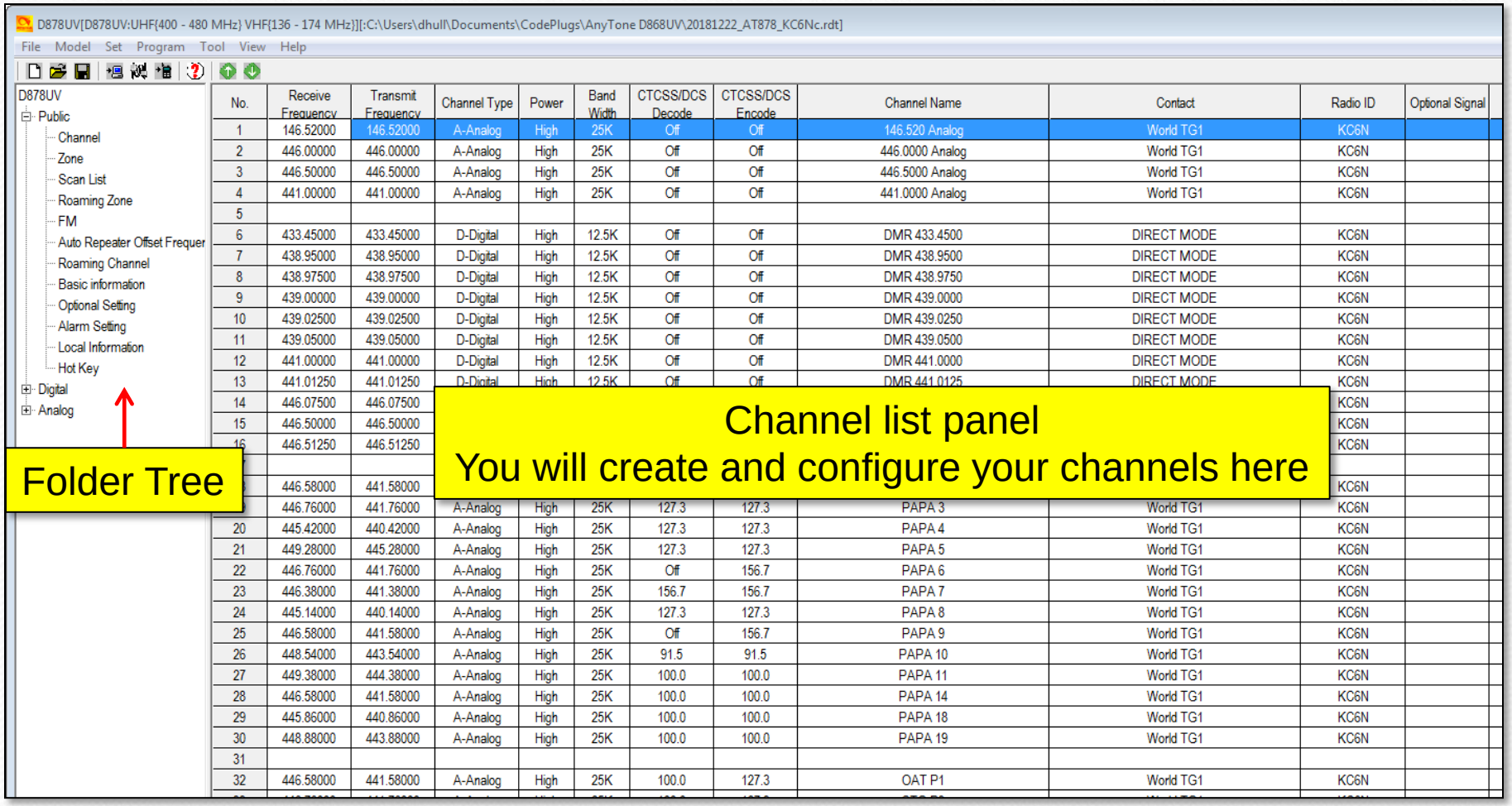
# Database relationships



# DMR Code Plug Workflow

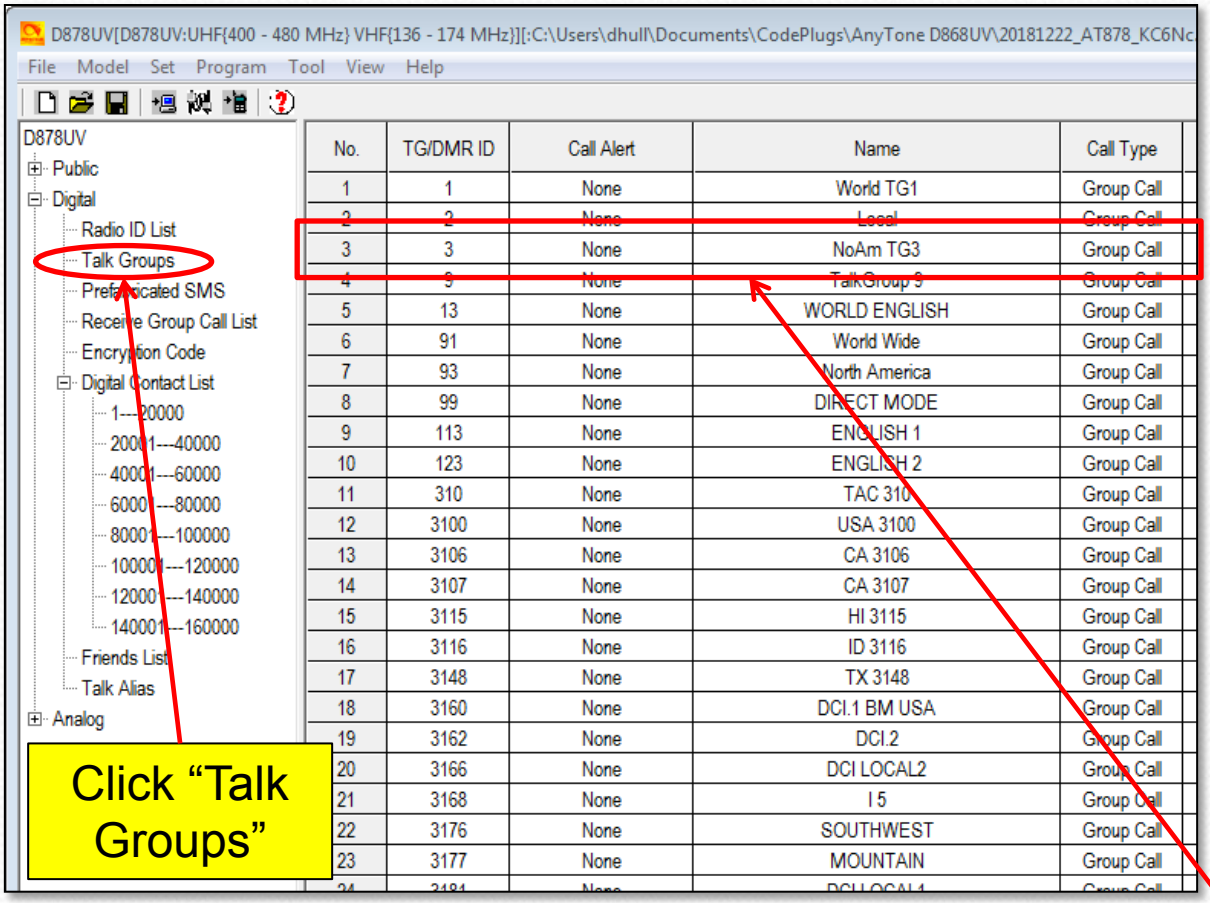


# AnyTone CPS opening Screen




| No. | Receive Frequency | Transmit Frequency | Channel Type | Power | Band Width | CTCSS/DCS Decode | CTCSS/DCS Encode | Channel Name | Contact | Radio ID | Optional Signal |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 146.52000 | 146.52000 | A-Analog | High | 25K | Off | Off | 146.520 Analog | World TG1 | KC6N | |
| 2 | 446.00000 | 446.00000 | A-Analog | High | 25K | Off | Off | 446.0000 Analog | World TG1 | KC6N | |
| 3 | 446.50000 | 446.50000 | A-Analog | High | 25K | Off | Off | 446.5000 Analog | World TG1 | KC6N | |
| 4 | 441.00000 | 441.00000 | A-Analog | High | 25K | Off | Off | 441.0000 Analog | World TG1 | KC6N | |
| 5 | | | | | | | | | | | |
| 6 | 433.45000 | 433.45000 | D-Digital | High | 12.5K | Off | Off | DMR 433.4500 | DIRECT MODE | KC6N | |
| 7 | 438.95000 | 438.95000 | D-Digital | High | 12.5K | Off | Off | DMR 438.9500 | DIRECT MODE | KC6N | |
| 8 | 438.97500 | 438.97500 | D-Digital | High | 12.5K | Off | Off | DMR 438.9750 | DIRECT MODE | KC6N | |
| 9 | 439.00000 | 439.00000 | D-Digital | High | 12.5K | Off | Off | DMR 439.0000 | DIRECT MODE | KC6N | |
| 10 | 439.02500 | 439.02500 | D-Digital | High | 12.5K | Off | Off | DMR 439.0250 | DIRECT MODE | KC6N | |
| 11 | 439.05000 | 439.05000 | D-Digital | High | 12.5K | Off | Off | DMR 439.0500 | DIRECT MODE | KC6N | |
| 12 | 441.00000 | 441.00000 | D-Digital | High | 12.5K | Off | Off | DMR 441.0000 | DIRECT MODE | KC6N | |
| 13 | 441.01250 | 441.01250 | D-Digital | High | 12.5K | Off | Off | DMR 441.0125 | DIRECT MODE | KC6N | |
| 14 | 446.07500 | 446.07500 | | | | | | | | KC6N | |
| 15 | 446.50000 | 446.50000 | | | | | | | | KC6N | |
| 16 | 446.51250 | 446.51250 | | | | | | | | KC6N | |
| | | | | | | | | | | | |
| | 446.58000 | 441.58000 | | | | | | | | KC6N | |
| | 446.76000 | 441.76000 | A-Analog | High | 25K | 127.3 | 127.3 | PAPA 3 | World TG1 | KC6N | |
| 20 | 445.42000 | 440.42000 | A-Analog | High | 25K | 127.3 | 127.3 | PAPA 4 | World TG1 | KC6N | |
| 21 | 449.28000 | 445.28000 | A-Analog | High | 25K | 127.3 | 127.3 | PAPA 5 | World TG1 | KC6N | |
| 22 | 446.76000 | 441.76000 | A-Analog | High | 25K | Off | 156.7 | PAPA 6 | World TG1 | KC6N | |
| 23 | 446.38000 | 441.38000 | A-Analog | High | 25K | 156.7 | 156.7 | PAPA 7 | World TG1 | KC6N | |
| 24 | 445.14000 | 440.14000 | A-Analog | High | 25K | 127.3 | 127.3 | PAPA 8 | World TG1 | KC6N | |
| 25 | 446.58000 | 441.58000 | A-Analog | High | 25K | Off | 156.7 | PAPA 9 | World TG1 | KC6N | |
| 26 | 448.54000 | 443.54000 | A-Analog | High | 25K | 91.5 | 91.5 | PAPA 10 | World TG1 | KC6N | |
| 27 | 449.38000 | 444.38000 | A-Analog | High | 25K | 100.0 | 100.0 | PAPA 11 | World TG1 | KC6N | |
| 28 | 446.58000 | 441.58000 | A-Analog | High | 25K | 100.0 | 100.0 | PAPA 14 | World TG1 | KC6N | |
| 29 | 445.86000 | 440.86000 | A-Analog | High | 25K | 100.0 | 100.0 | PAPA 18 | World TG1 | KC6N | |
| 30 | 448.88000 | 443.88000 | A-Analog | High | 25K | 100.0 | 100.0 | PAPA 19 | World TG1 | KC6N | |
| 31 | | | | | | | | | | | |
| 32 | 446.58000 | 441.58000 | A-Analog | High | 25K | 100.0 | 127.3 | OAT P1 | World TG1 | KC6N | |

# Talk Groups(group call list):




| No. | TG/DMR ID | Call Alert | Name | Call Type |
|---|---|---|---|---|
| 1 | 1 | None | World TG1 | Group Call |
| 2 | 2 | None | Local | Group Call |
| 3 | 3 | None | NoAm TG3 | Group Call |
| 4 | 9 | None | TalkGroup 9 | Group Call |
| 5 | 13 | None | WORLD ENGLISH | Group Call |
| 6 | 91 | None | World Wide | Group Call |
| 7 | 93 | None | North America | Group Call |
| 8 | 99 | None | DIRECT MODE | Group Call |
| 9 | 113 | None | ENGLISH 1 | Group Call |
| 10 | 123 | None | ENGLISH 2 | Group Call |
| 11 | 310 | None | TAC 310 | Group Call |
| 12 | 3100 | None | USA 3100 | Group Call |
| 13 | 3106 | None | CA 3106 | Group Call |
| 14 | 3107 | None | CA 3107 | Group Call |
| 15 | 3115 | None | HI 3115 | Group Call |
| 16 | 3116 | None | ID 3116 | Group Call |
| 17 | 3148 | None | TX 3148 | Group Call |
| 18 | 3160 | None | DCI.1 BM USA | Group Call |
| 19 | 3162 | None | DCI.2 | Group Call |
| 20 | 3166 | None | DCI LOCAL2 | Group Call |
| 21 | 3168 | None | I 5 | Group Call |
| 22 | 3176 | None | SOUTHWEST | Group Call |
| 23 | 3177 | None | MOUNTAIN | Group Call |

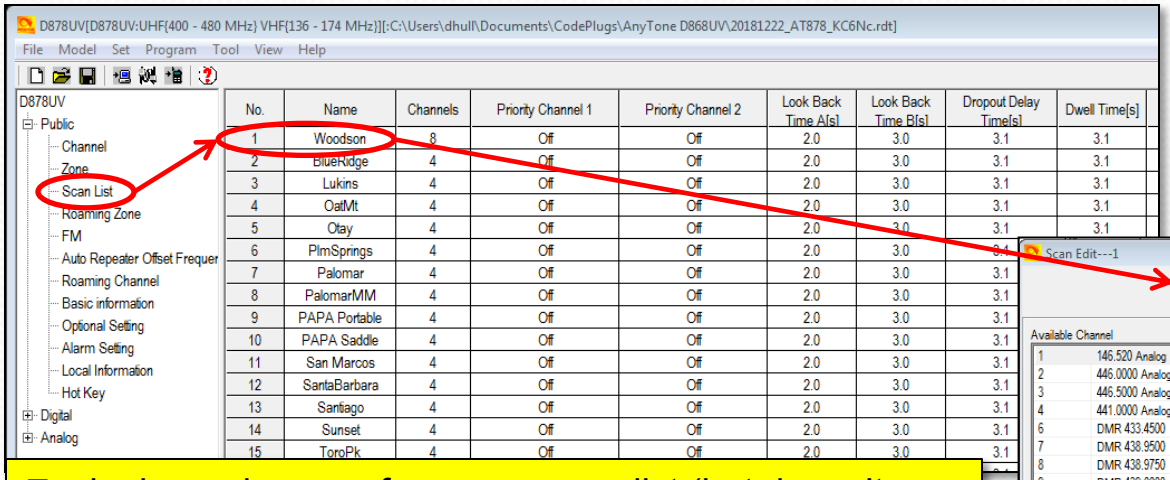
Click "Talk Groups" in the menu tree as shown and add your group call ID's as shown to the left. If your radio is un-programed you will need to add the ones you need. Otherwise it will have some entries as shown here. You will reference this list when you program your channels.

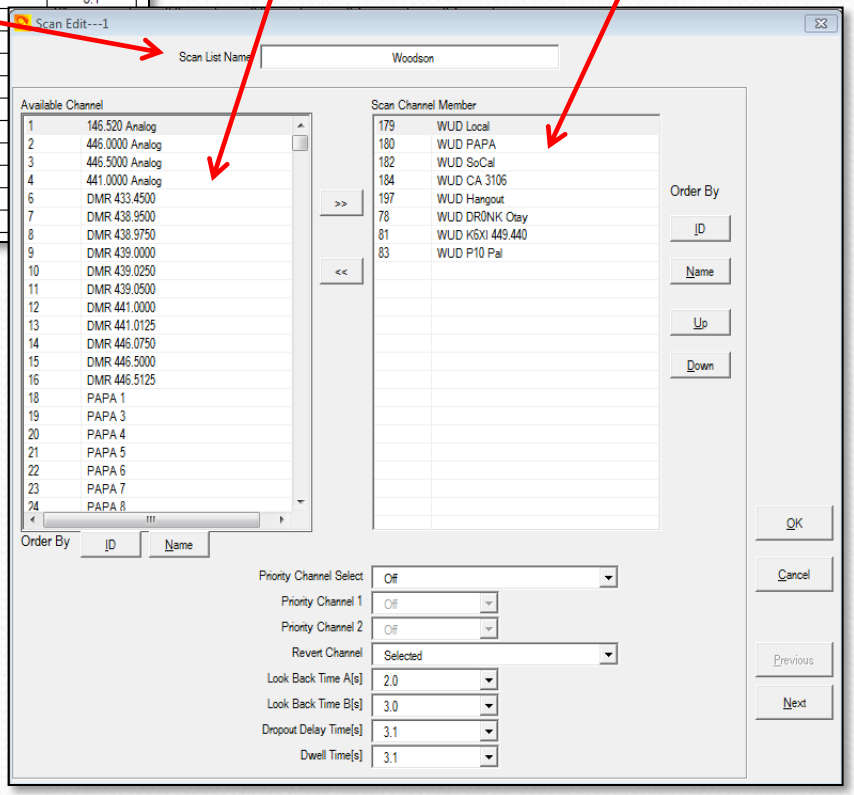
Example: Group Call North America, Call ID (TG)=3

# Scan Lists:

Available Channels

Included in Woodson "Scan Group"




Each channel ***may*** reference a scan list (but doesn't have to). A scan list is a list of channels that will be scanned when a channel referencing that list is selected (and "scan" is enabled).

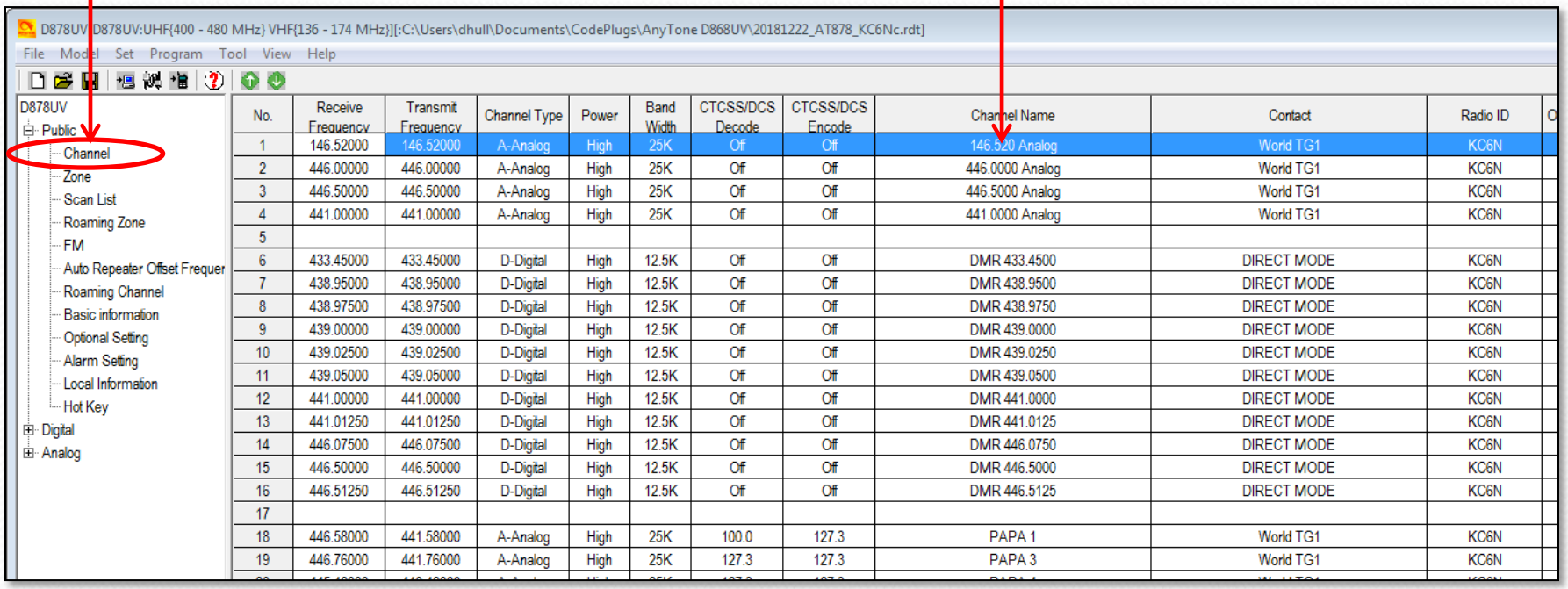
A scan list generally scans a collection of channels within a specific zone and can include both analog and digital channels and a mix of channels from different repeaters. Most of the time it will pick up channels from a given repeater as shown here for PAPA Woodson. There may be a limit to how many channels your radio can have in a given scan group (16 is not uncommon).

# Channels:

Channels are displayed in spreadsheet form in the AnyTone CPS. A channel definition pop-up will appear if you double click on a line in the channel table. If the line is blank, you may create a new channel, if it is populated, you may edit the information for that channel. This will be shown on the next two pages.

Click Channel

Double Click channel entry to open edit window




| No. | Receive Frequency | Transmit Frequency | Channel Type | Power | Band Width | CTCSS/DCS Decode | CTCSS/DCS Encode | Channel Name | Contact | Radio ID |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 146.52000 | 146.52000 | A-Analog | High | 25K | Off | Off | 146.520 Analog | World TG1 | KC6N |
| 2 | 446.00000 | 446.00000 | A-Analog | High | 25K | Off | Off | 446.0000 Analog | World TG1 | KC6N |
| 3 | 446.50000 | 446.50000 | A-Analog | High | 25K | Off | Off | 446.5000 Analog | World TG1 | KC6N |
| 4 | 441.00000 | 441.00000 | A-Analog | High | 25K | Off | Off | 441.0000 Analog | World TG1 | KC6N |
| 5 | | | | | | | | | | |
| 6 | 433.45000 | 433.45000 | D-Digital | High | 12.5K | Off | Off | DMR 433.4500 | DIRECT MODE | KC6N |
| 7 | 438.95000 | 438.95000 | D-Digital | High | 12.5K | Off | Off | DMR 438.9500 | DIRECT MODE | KC6N |
| 8 | 438.97500 | 438.97500 | D-Digital | High | 12.5K | Off | Off | DMR 438.9750 | DIRECT MODE | KC6N |
| 9 | 439.00000 | 439.00000 | D-Digital | High | 12.5K | Off | Off | DMR 439.0000 | DIRECT MODE | KC6N |
| 10 | 439.02500 | 439.02500 | D-Digital | High | 12.5K | Off | Off | DMR 439.0250 | DIRECT MODE | KC6N |
| 11 | 439.05000 | 439.05000 | D-Digital | High | 12.5K | Off | Off | DMR 439.0500 | DIRECT MODE | KC6N |
| 12 | 441.00000 | 441.00000 | D-Digital | High | 12.5K | Off | Off | DMR 441.0000 | DIRECT MODE | KC6N |
| 13 | 441.01250 | 441.01250 | D-Digital | High | 12.5K | Off | Off | DMR 441.0125 | DIRECT MODE | KC6N |
| 14 | 446.07500 | 446.07500 | D-Digital | High | 12.5K | Off | Off | DMR 446.0750 | DIRECT MODE | KC6N |
| 15 | 446.50000 | 446.50000 | D-Digital | High | 12.5K | Off | Off | DMR 446.5000 | DIRECT MODE | KC6N |
| 16 | 446.51250 | 446.51250 | D-Digital | High | 12.5K | Off | Off | DMR 446.5125 | DIRECT MODE | KC6N |
| 17 | | | | | | | | | | |
| 18 | 446.58000 | 441.58000 | A-Analog | High | 25K | 100.0 | 127.3 | PAPA 1 | World TG1 | KC6N |
| 19 | 446.76000 | 441.76000 | A-Analog | High | 25K | 127.3 | 127.3 | PAPA 3 | World TG1 | KC6N |

# Analog Channel detail:

RX Frequency

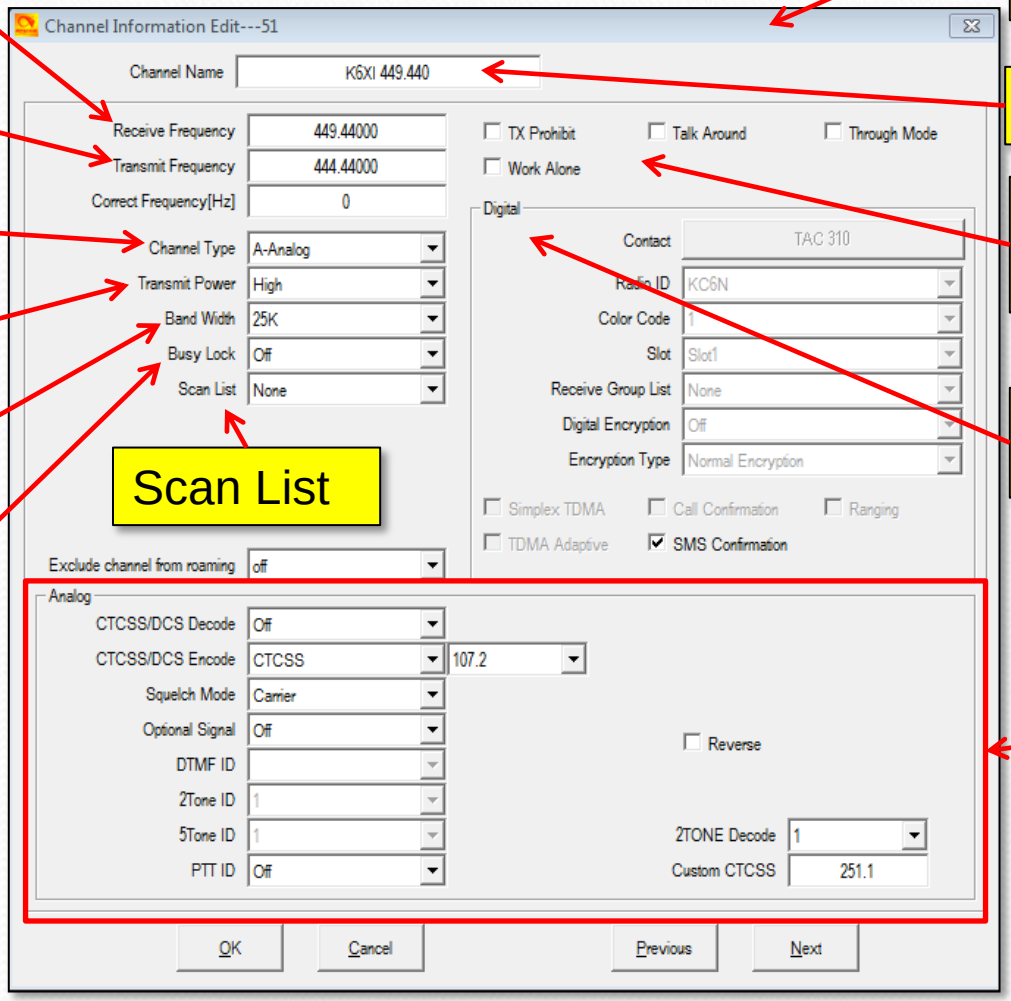
TX Frequency

Channel Type

TX Power Level

Channel BW

Admit Criteria




Scan List

Admit Criteria

Double click on a populated channel in the channel list and This dialog will appear.

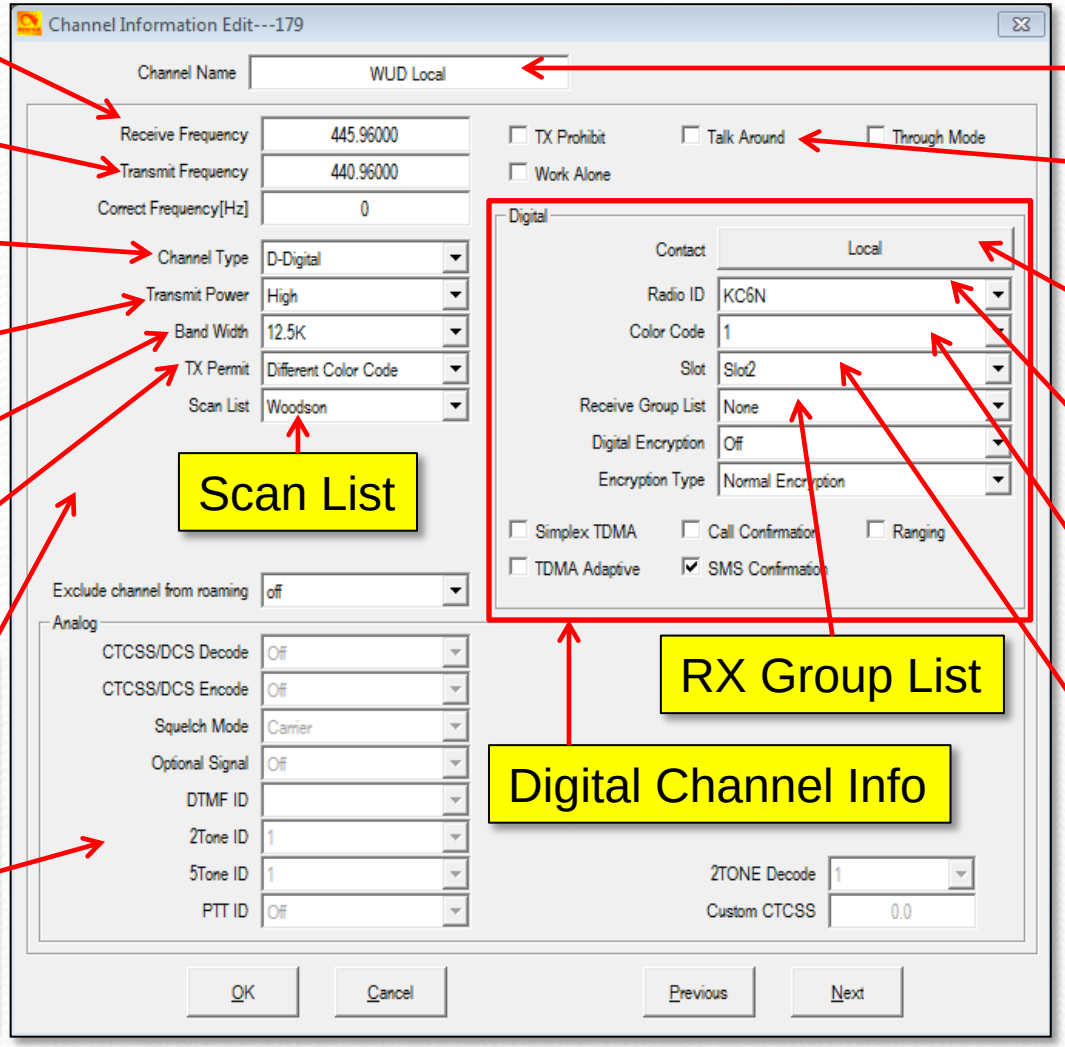
Channel Name

TX Prohibit, Talk-around, etc.

Area pertaining to digital channels is grayed out

CTCSS (PL) setup Info.

# Digital Channel detail:




RX Frequency

TX Frequency

Analog/Digital

TX Power Level

Bandwidth

Admit Criteria

Scan List

Channel Name

Talk Around

TX Contact (Talk Group)

DMR ID or User

Repeater Color Code

Channel Timeslot

RX Group List

Digital Channel Info

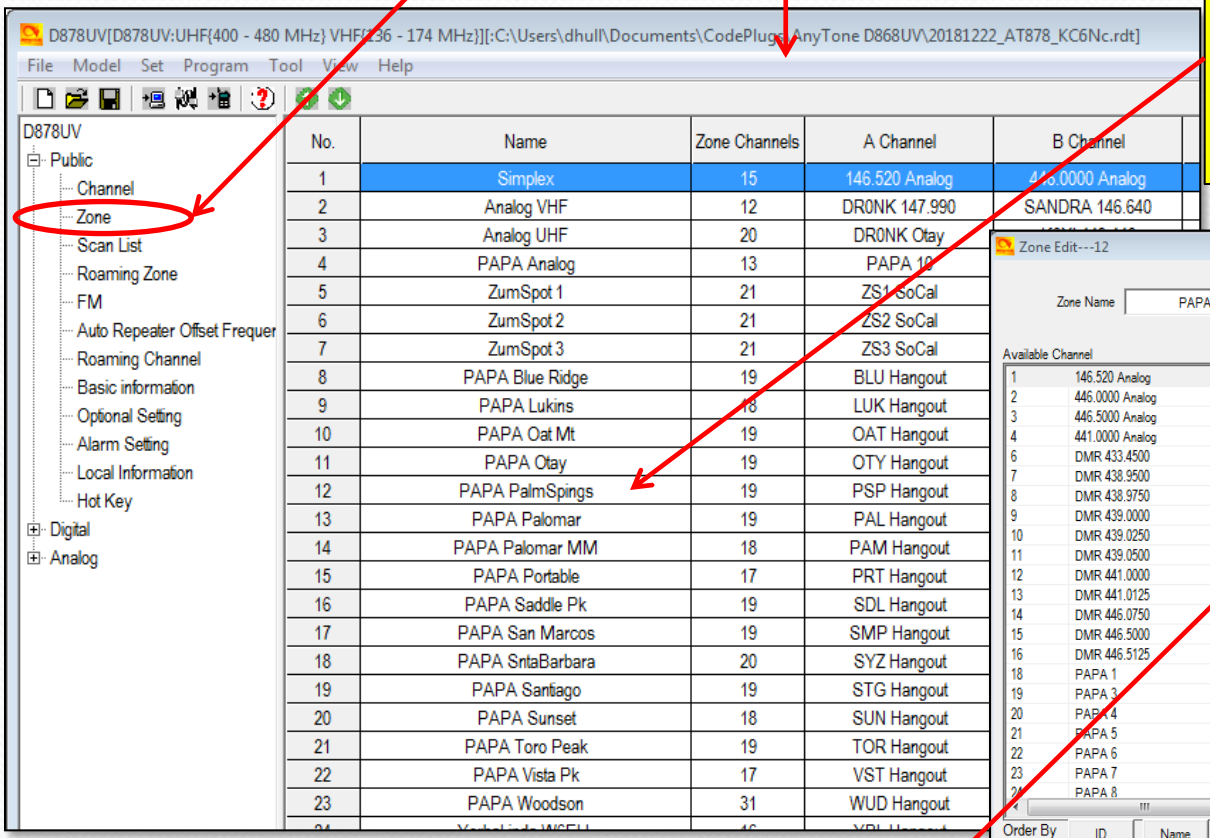
Double click on a digital channel to bring up this dialog.

Note that the Analog Channel Specifics are greyed out for digital Channels.

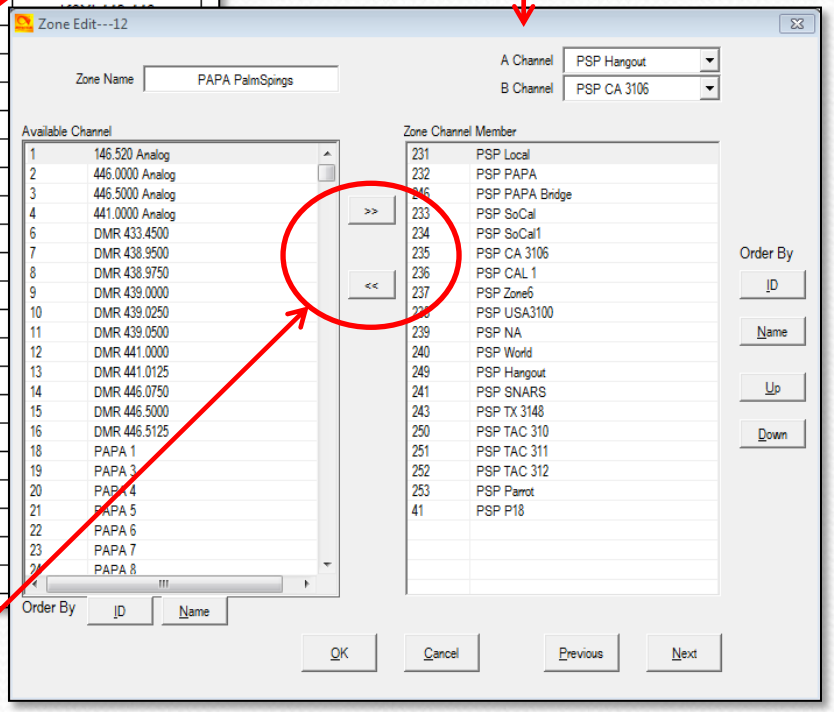
# Zones:

Click “Zone” in the folder tree to bring up the zone list as shown

Double click on a zone to bring up the “Zone Edit” dialog, PAPA Edom (Palm Springs) is shown below




| No. | Name | Zone Channels | A Channel | B Channel |
|---|---|---|---|---|
| 1 | Simplex | 15 | 146.520 Analog | 446.0000 Analog |
| 2 | Analog VHF | 12 | DR0NK 147.990 | SANDRA 146.640 |
| 3 | Analog UHF | 20 | DR0NK Otay | |
| 4 | PAPA Analog | 13 | PAPA 1 | |
| 5 | ZumSpot 1 | 21 | ZS1 SoCal | |
| 6 | ZumSpot 2 | 21 | ZS2 SoCal | |
| 7 | ZumSpot 3 | 21 | ZS3 SoCal | |
| 8 | PAPA Blue Ridge | 19 | BLU Hangout | |
| 9 | PAPA Lukins | 18 | LUK Hangout | |
| 10 | PAPA Oat Mt | 19 | OAT Hangout | |
| 11 | PAPA Otay | 19 | OTY Hangout | |
| 12 | PAPA PalmSpings | 19 | PSP Hangout | |
| 13 | PAPA Palomar | 19 | PAL Hangout | |
| 14 | PAPA Palomar MM | 18 | PAM Hangout | |
| 15 | PAPA Portable | 17 | PRT Hangout | |
| 16 | PAPA Saddle Pk | 19 | SDL Hangout | |
| 17 | PAPA San Marcos | 19 | SMP Hangout | |
| 18 | PAPA SntaBarbara | 20 | SYZ Hangout | |
| 19 | PAPA Santiago | 19 | STG Hangout | |
| 20 | PAPA Sunset | 18 | SUN Hangout | |
| 21 | PAPA Toro Peak | 19 | TOR Hangout | |
| 22 | PAPA Vista Pk | 17 | VST Hangout | |
| 23 | PAPA Woodson | 31 | WUD Hangout | |



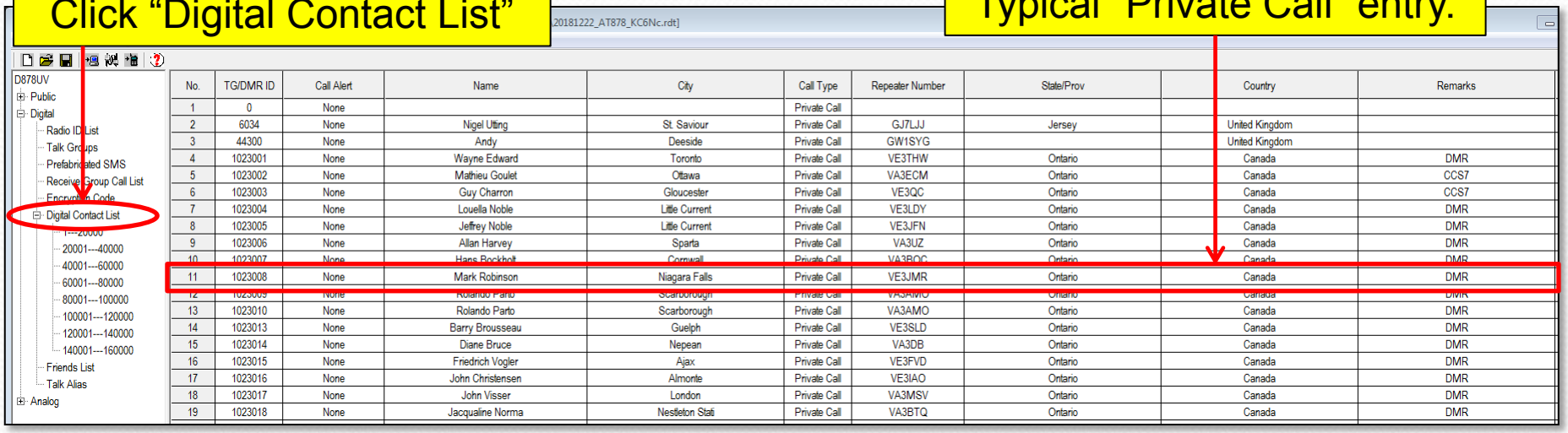

Highlight items in the available channels list on the right and use these arrows to move channels to the zone list and back

# Digital Contact List:

The AnyTone AT D878 is unique in that it separates Group Calls (Talk Groups) and Private Calls (Radio ID's) into separate databases. Private calls associate a radio ID with a call sign (and other information) as shown below. This radio can hold up to 160,000 private call ID's which is quite a lot. Obviously, you cannot enter all these by hand so an automated methodology is required (and exists). However, you can add, move and edit by hand if need be. Use of this list is optional. If you don't care to see caller ID info, you can leave it empty – many users do.

Click "Digital Contact List"

Typical "Private Call" entry.




| No. | TG/DMR ID | Call Alert | Name | City | Call Type | Repeater Number | State/Prov | | Country | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | None | | | Private Call | | | | | |
| 2 | 6034 | None | Nigel Utting | St. Saviour | Private Call | GJ7LJJ | Jersey | | United Kingdom | |
| 3 | 44300 | None | Andy | Deeside | Private Call | GW1SYG | | | United Kingdom | |
| 4 | 1023001 | None | Wayne Edward | Toronto | Private Call | VE3THW | Ontario | | Canada | DMR |
| 5 | 1023002 | None | Mathieu Goulet | Ottawa | Private Call | VA3ECM | Ontario | | Canada | CCS7 |
| 6 | 1023003 | None | Guy Charron | Gloucester | Private Call | VE3QC | Ontario | | Canada | CCS7 |
| 7 | 1023004 | None | Louella Noble | Little Current | Private Call | VE3LDY | Ontario | | Canada | DMR |
| 8 | 1023005 | None | Jeffrey Noble | Little Current | Private Call | VE3JFN | Ontario | | Canada | DMR |
| 9 | 1023006 | None | Allan Harvey | Sparta | Private Call | VA3UZ | Ontario | | Canada | DMR |
| 10 | 1023007 | None | Hans Bockholt | Cornwall | Private Call | VA3BQC | Ontario | | Canada | DMR |
| 11 | 1023008 | None | Mark Robinson | Niagara Falls | Private Call | VE3JMR | Ontario | | Canada | DMR |
| 12 | 1023009 | None | Rolando Parto | Scarborough | Private Call | VA3AMO | Ontario | | Canada | DMR |
| 13 | 1023010 | None | Rolando Parto | Scarborough | Private Call | VA3AMO | Ontario | | Canada | DMR |
| 14 | 1023013 | None | Barry Brousseau | Guelph | Private Call | VE3SLD | Ontario | | Canada | DMR |
| 15 | 1023014 | None | Diane Bruce | Nepean | Private Call | VA3DB | Ontario | | Canada | DMR |
| 16 | 1023015 | None | Friedrich Vogler | Ajax | Private Call | VE3FVD | Ontario | | Canada | DMR |
| 17 | 1023016 | None | John Christensen | Almonte | Private Call | VE3IAO | Ontario | | Canada | DMR |
| 18 | 1023017 | None | John Visser | London | Private Call | VA3MSV | Ontario | | Canada | DMR |
| 19 | 1023018 | None | Jacqualine Norma | Nestleton Stati | Private Call | VA3BTQ | Ontario | | Canada | DMR |

# AT D878 CodePlug 101

Part II

So, you got a new radio – now what?

(Saving your current code plug, loading a known good plug)

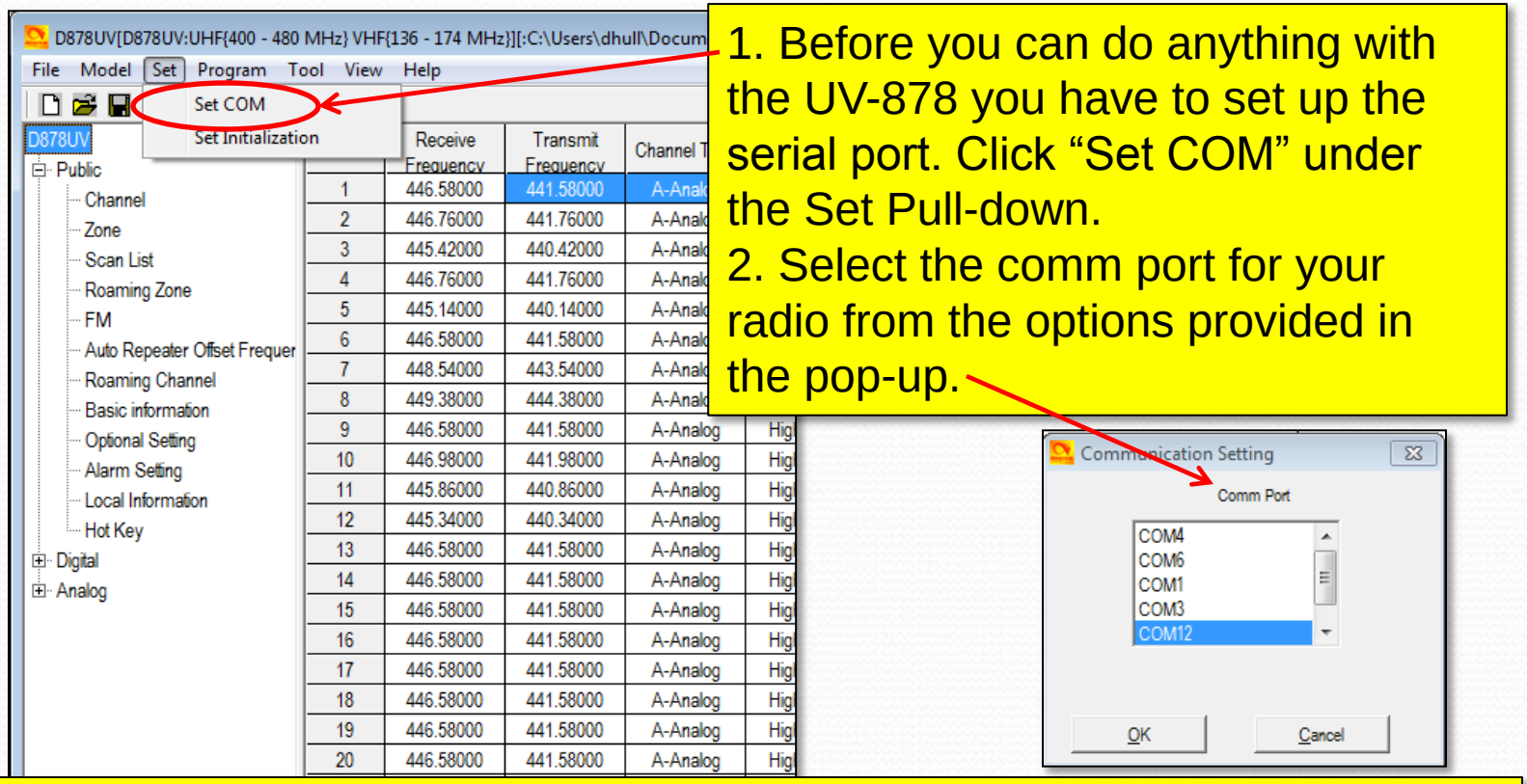
# New radio – first steps (1)

- Unpack radio and charge the battery
- Download and install the USB driver
- Download and install the CPS
- Connect the USB cable to your radio
- Connect the other end to your computer
- Turn on your radio, wait for the radio to connect.

# New radio – first steps (2)

- Launch the CPS
- Set your serial port.
- Read the radio and save the Virgin Code Plug.
- Load the new code plug
- Set your DMR ID
- Test the radio

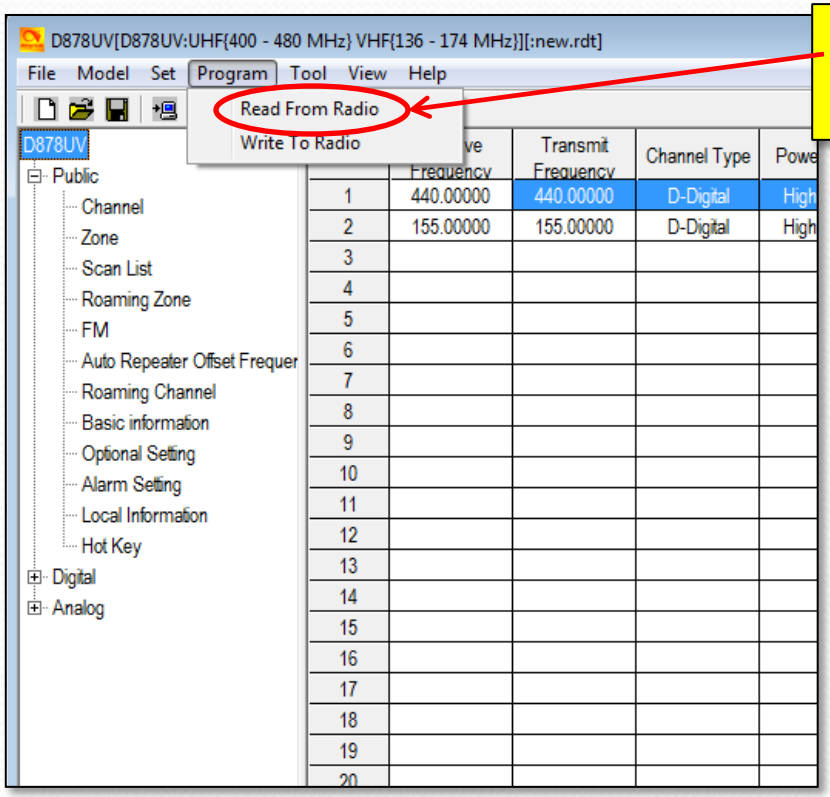
# Set your Comm Port:



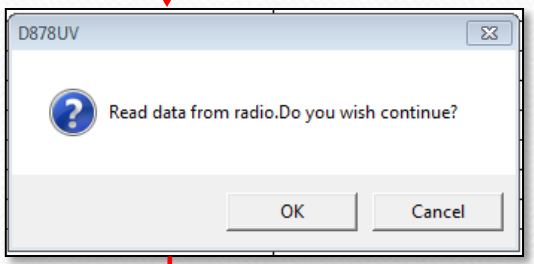

1. Before you can do anything with the UV-878 you have to set up the serial port. Click “Set COM” under the Set Pull-down.
2. Select the comm port for your radio from the options provided in the pop-up.

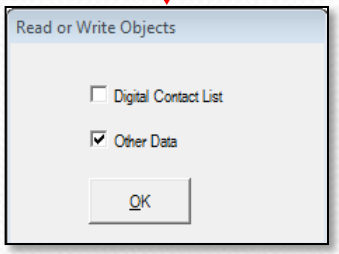
NOTE: Mine is usually COM12 but this will depend on your computer. You may want to try this with your radio off and note the com ports present. Then turn the radio on and do it again. The correct port should be the new one that showed up. You will need to have installed the driver.

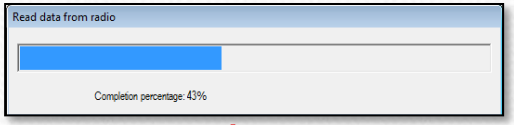
# Save your initial code plug:

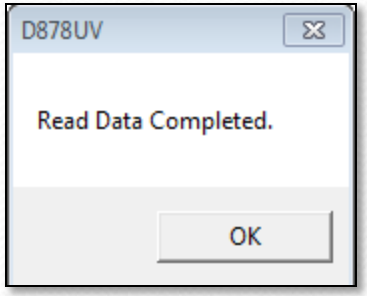



1. In CPS, Click “Read From Radio”
2. Click, OK, and follow the dialogs



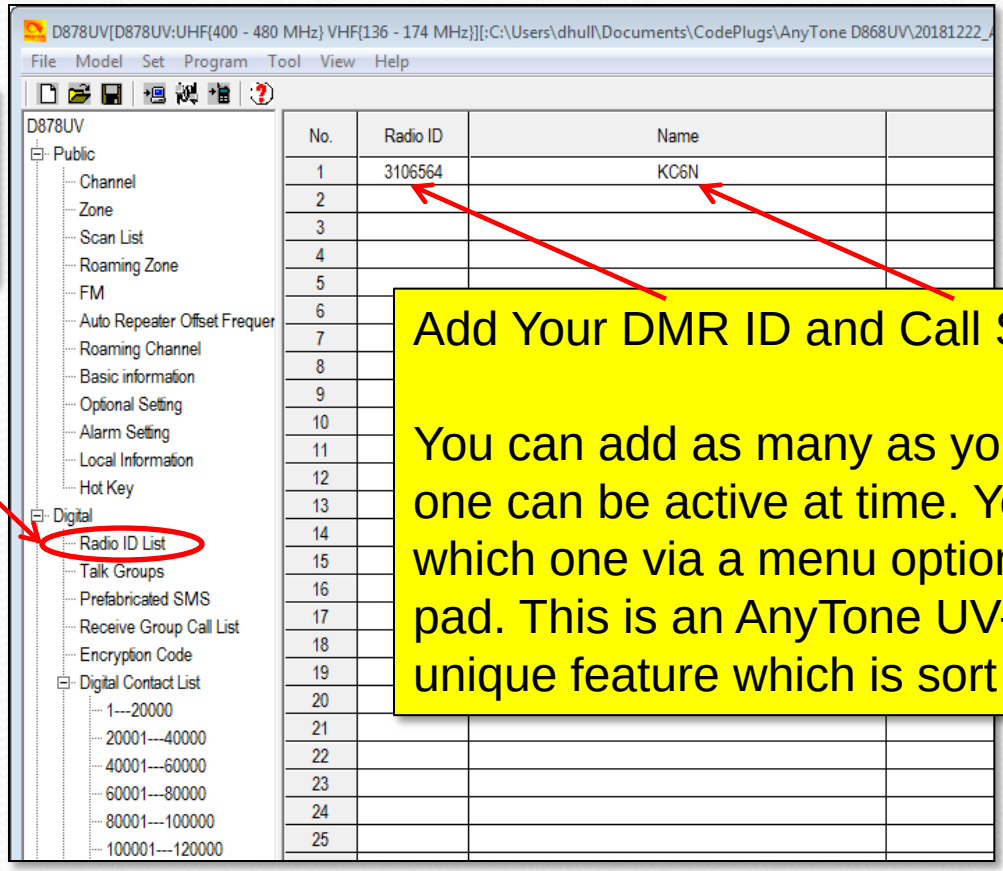

3. Click “File”, “Save As”, give it a name like “20190218_*YourCall*_AT-878_VirginCP”. Now you have a record of the un-programmed code plug for reference.

# Load your new code plug

- Locate a code plug that you like
  - Download from a web site
  - From a friends radio
  - Write from scratch
- Add your DMR ID
- Save your (now customized) code plug
- Flash the new code plug into the radio.

# Add *your* DMR User ID:

Select “Radio ID List” under “Digital” in the tree

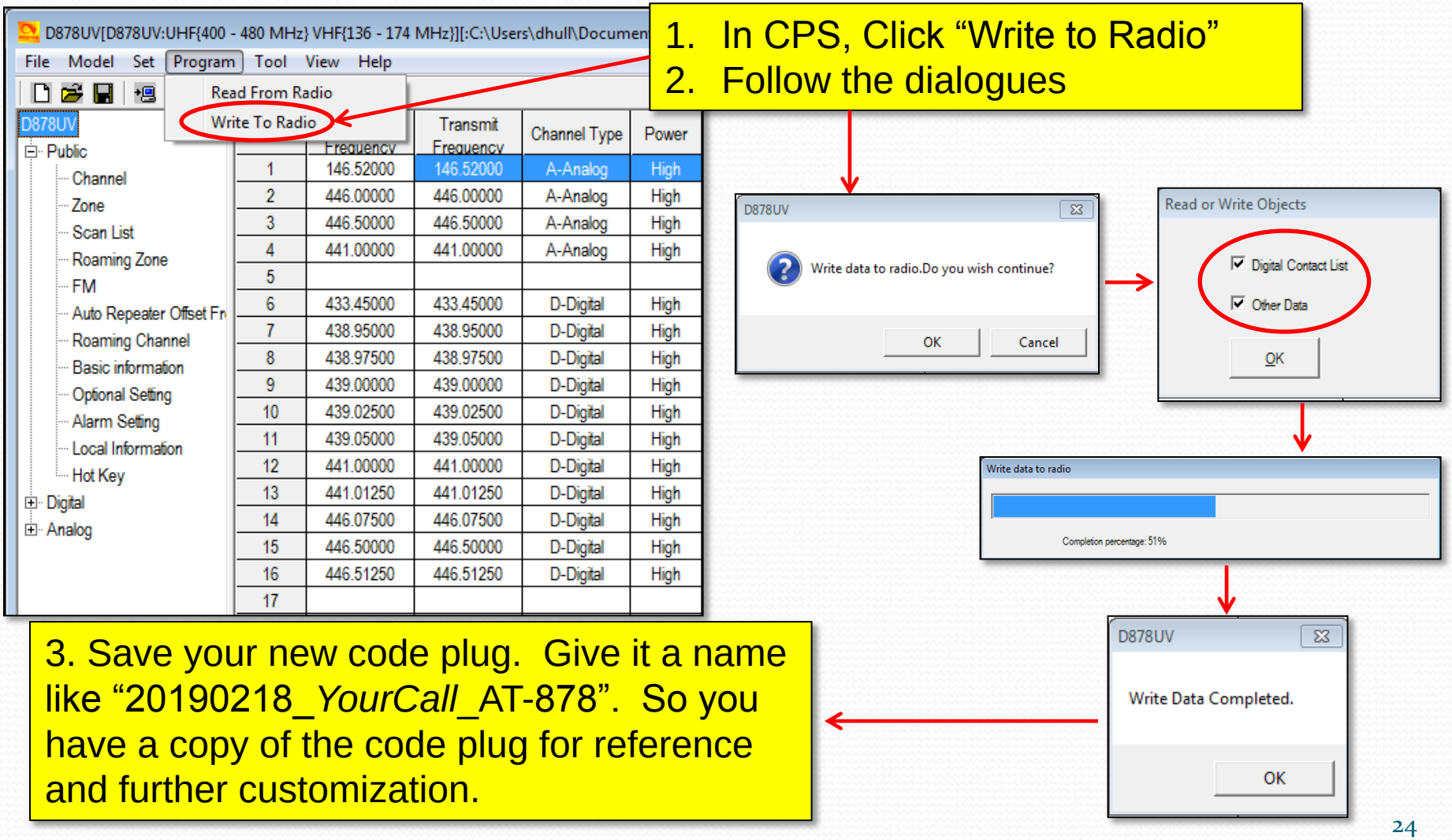



Add Your DMR ID and Call Sign to the list.

You can add as many as you like, but only one can be active at time. You will select which one via a menu option from the key pad. This is an AnyTone UV-8x8 series unique feature which is sort of nice.

Once you have done this, save your new code plug and write it to your radio as shown on the next slide.

# Load your new code plug:



# You should be good to go

- Make sure your analog channels work
- You can check the digital channels by looking at a “last heard” website such as Brandmeister.
- Pop onto California (or other active talk group) and ask for a radio check.
- If you have loaded a pre-built code plug, then you are done – enjoy your radio!

# AT D878 CodePlug 101

Part III

Code Plug management concepts

# Code Plug Creation

- The workflow for code plug creation is:
  - Enter your User ID (Section II)
  - Enter the contact data (specifically the talk-groups). Private calls are optional.
  - Create a blank Scan List and a blank Zone
  - Create the channels for the zone
  - Populate the Zone and Scan Lists
  - Configure the programmable buttons
  - *Remember to save periodically*

# AT D878 CodePlug 101

Part IIIa

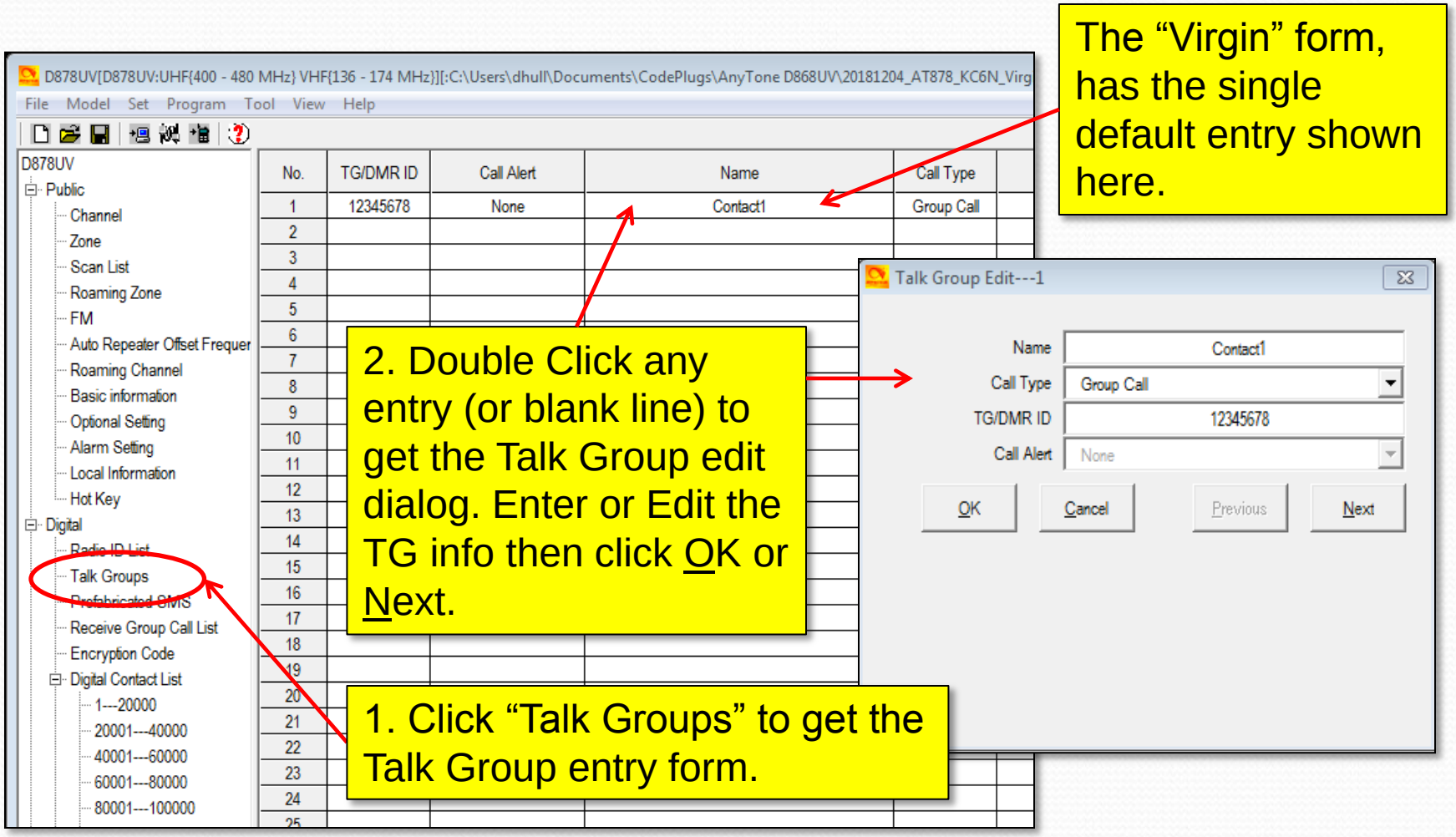
Code Plug Management Concepts

(Creating and Managing Group ID's)

# Contact Basics

- Contact information determines how your radio interacts with the DMR network
- Contacts come in four flavors:
  - **Private Call:** Calls to (or from) single radios (your “Contact List”)
  - **Group Call:** Calls to Groups of users (your selection of Talk Group ID’s)
  - **All Call:** Not *usually* used in Ham Radio
  - **Broadcast Call:** Not used in Ham Radio

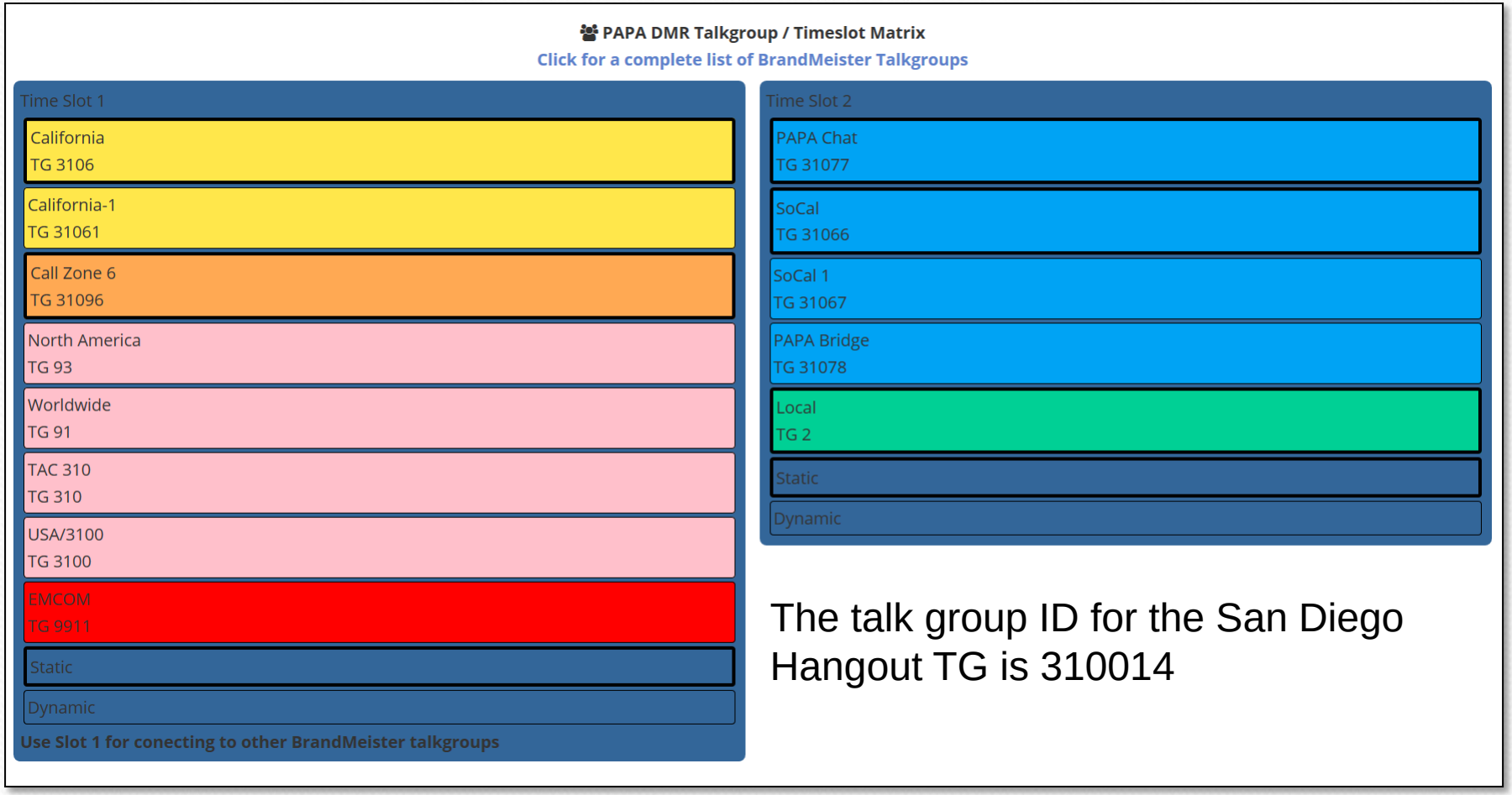
# Contacts (group/private Calls):



# Adding contacts

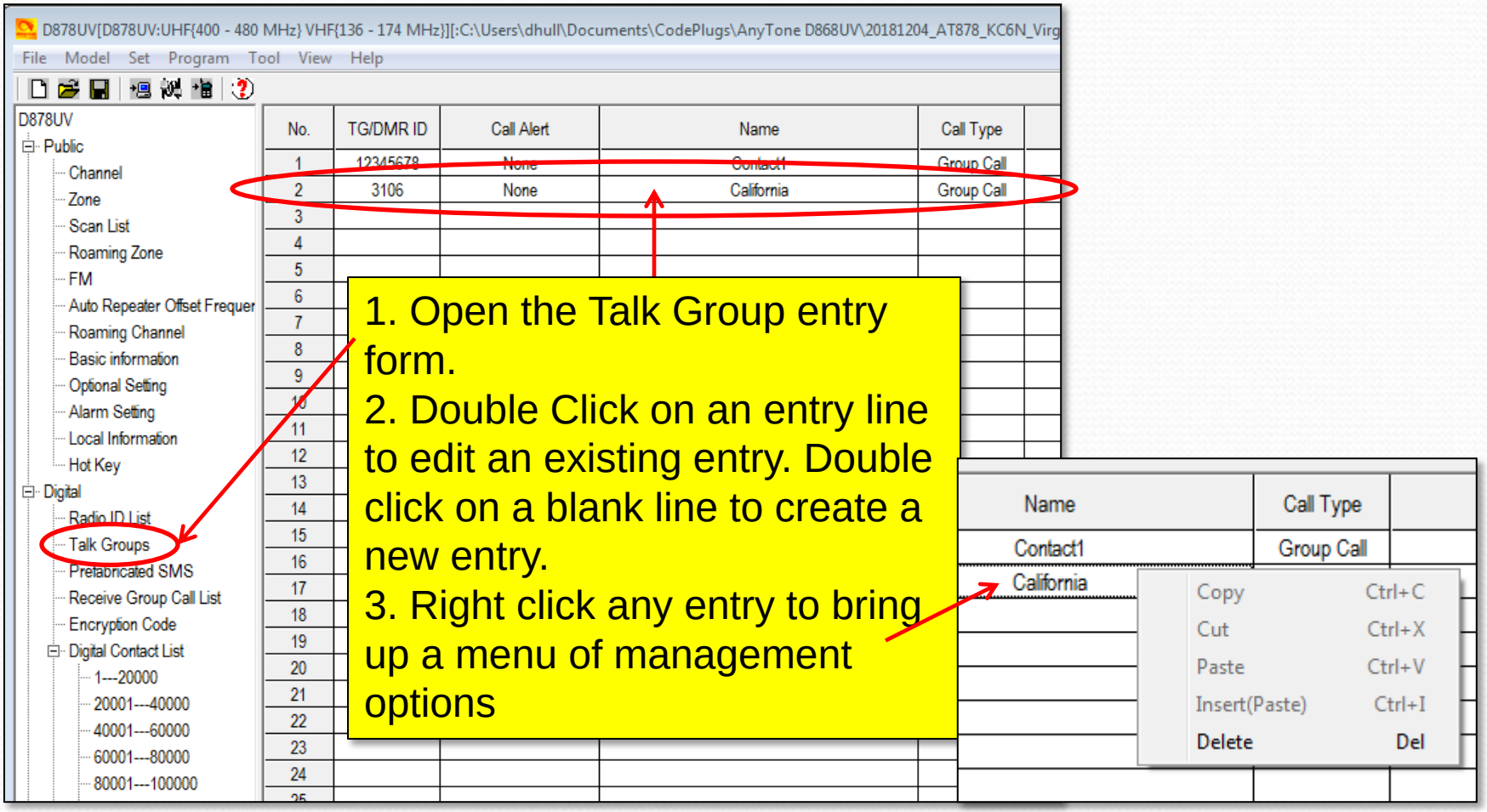
- We will add the following contacts to a “virgin” code plug:
  - Talk Groups: Local, PAPA,  SoCal, SoCal1, Cal 3106, CA 1, Zone6, Bridge, NoAmer, World, TAC310, BM Parrot GC, Direct 99 and San Diego Hangout.
- This will allow us to create Channels, as well as Scan and Zone Lists
- We will use the PAPA system TG profiles

# PAPA Group Lineup

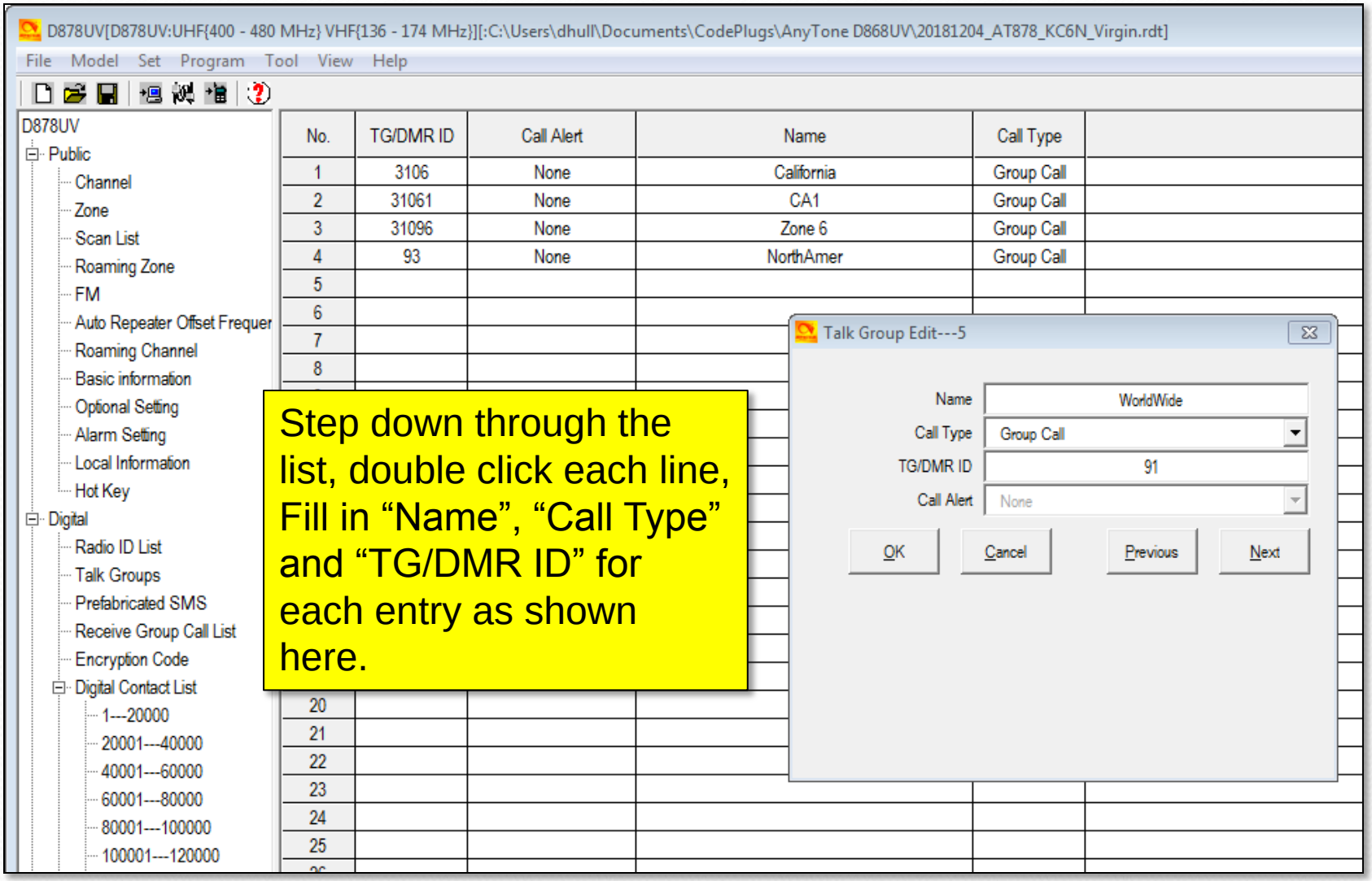



The talk group ID for the San Diego Hangout TG is 310014

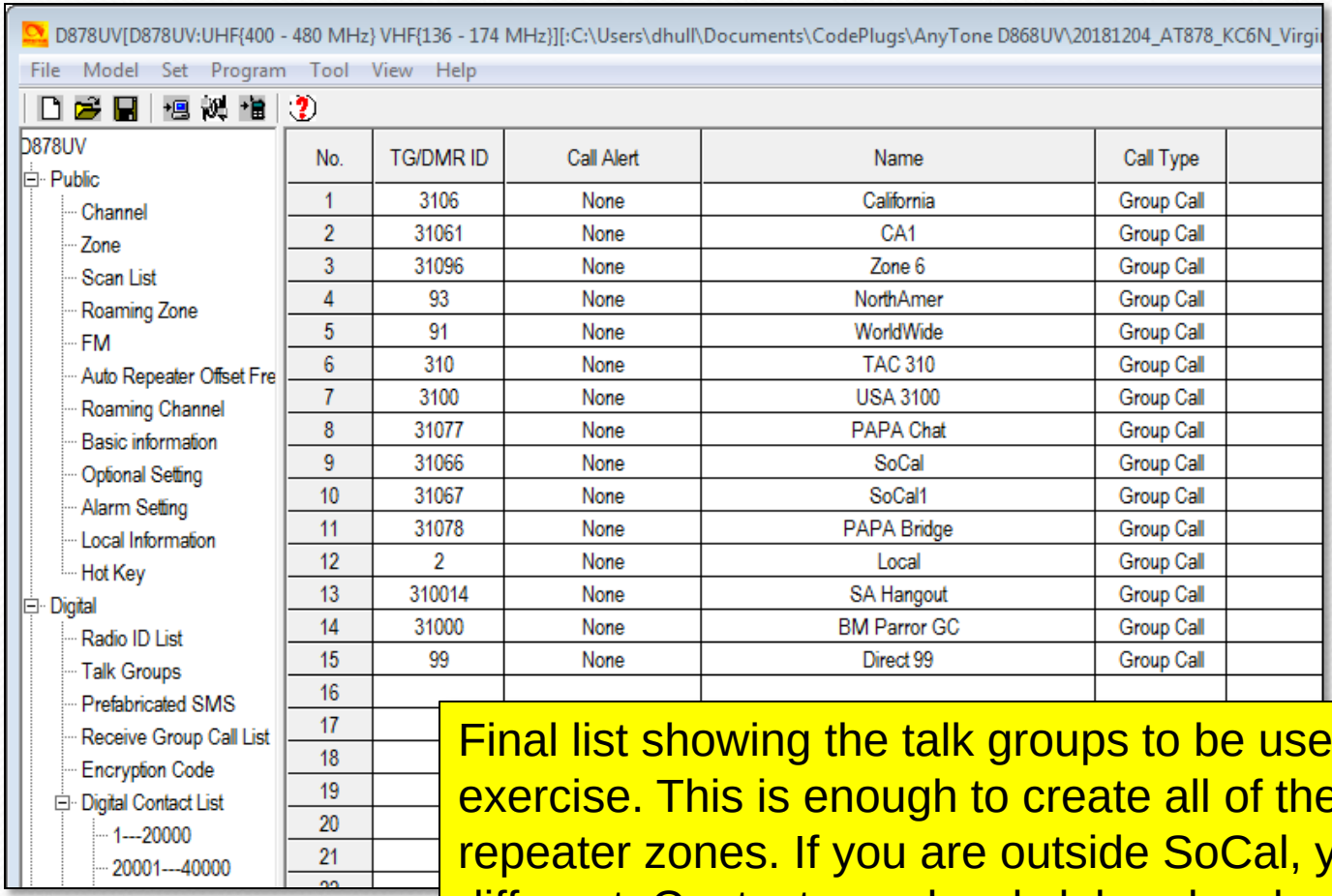
# Contacts (group Calls):



# Populate the Group Call List:



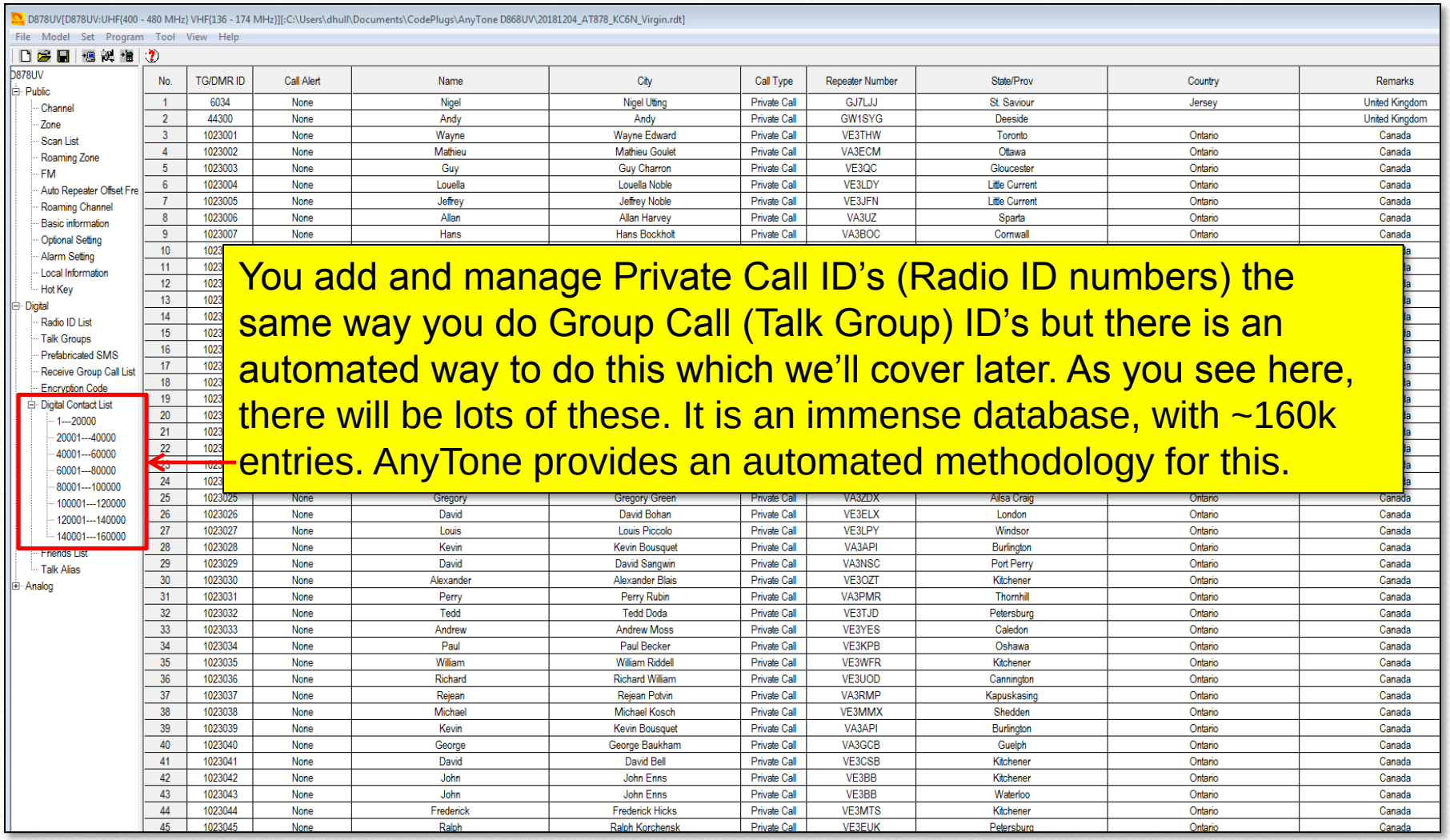
# Final Populated Group Call List:




| No. | TG/DMR ID | Call Alert | Name | Call Type |
|---|---|---|---|---|
| 1 | 3106 | None | California | Group Call |
| 2 | 31061 | None | CA1 | Group Call |
| 3 | 31096 | None | Zone 6 | Group Call |
| 4 | 93 | None | NorthAmer | Group Call |
| 5 | 91 | None | WorldWide | Group Call |
| 6 | 310 | None | TAC 310 | Group Call |
| 7 | 3100 | None | USA 3100 | Group Call |
| 8 | 31077 | None | PAPA Chat | Group Call |
| 9 | 31066 | None | SoCal | Group Call |
| 10 | 31067 | None | SoCal1 | Group Call |
| 11 | 31078 | None | PAPA Bridge | Group Call |
| 12 | 2 | None | Local | Group Call |
| 13 | 310014 | None | SA Hangout | Group Call |
| 14 | 31000 | None | BM Parror GC | Group Call |
| 15 | 99 | None | Direct 99 | Group Call |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |
| 19 | | | | |
| 20 | | | | |
| 21 | | | | |

Final list showing the talk groups to be used in this exercise. This is enough to create all of the PAPA repeater zones. If you are outside SoCal, your list will be different. Contact your local club or local repeater owners for the talk group profiles for repeaters in your local area.

# “Private Call” ID’s




| No. | TG/DMR ID | Call Alert | Name | City | Call Type | Repeater Number | State/Prov | Country | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 6034 | None | Nigel | Nigel Utting | Private Call | GJ7LJJ | St. Saviour | Jersey | United Kingdom |
| 2 | 44300 | None | Andy | Andy | Private Call | GW1SYG | Deeside | | United Kingdom |
| 3 | 1023001 | None | Wayne | Wayne Edward | Private Call | VE3THW | Toronto | Ontario | Canada |
| 4 | 1023002 | None | Mathieu | Mathieu Goulet | Private Call | VA3ECM | Ottawa | Ontario | Canada |
| 5 | 1023003 | None | Guy | Guy Charron | Private Call | VE3QC | Gloucester | Ontario | Canada |
| 6 | 1023004 | None | Louella | Louella Noble | Private Call | VE3LDY | Little Current | Ontario | Canada |
| 7 | 1023005 | None | Jeffrey | Jeffrey Noble | Private Call | VE3JFN | Little Current | Ontario | Canada |
| 8 | 1023006 | None | Allan | Allan Harvey | Private Call | VA3UZ | Sparta | Ontario | Canada |
| 9 | 1023007 | None | Hans | Hans Bockholt | Private Call | VA3BOC | Cornwall | Ontario | Canada |
| 10 | 1023 | | | | | | | | |
| 11 | 1023 | | | | | | | | |
| 12 | 1023 | | | | | | | | |
| 13 | 1023 | | | | | | | | |
| 14 | 1023 | | | | | | | | |
| 15 | 1023 | | | | | | | | |
| 16 | 1023 | | | | | | | | |
| 17 | 1023 | | | | | | | | |
| 18 | 1023 | | | | | | | | |
| 19 | 1023 | | | | | | | | |
| 20 | 1023 | | | | | | | | |
| 21 | 1023 | | | | | | | | |
| 22 | 1023 | | | | | | | | |
| 23 | 1023 | | | | | | | | |
| 24 | 1023 | | | | | | | | |
| 25 | 1023025 | None | Gregory | Gregory Green | Private Call | VA3ZDX | Ailsa Craig | Ontario | Canada |
| 26 | 1023026 | None | David | David Bohan | Private Call | VE3ELX | London | Ontario | Canada |
| 27 | 1023027 | None | Louis | Louis Piccolo | Private Call | VE3LPY | Windsor | Ontario | Canada |
| 28 | 1023028 | None | Kevin | Kevin Bousquet | Private Call | VA3API | Burlington | Ontario | Canada |
| 29 | 1023029 | None | David | David Sangwin | Private Call | VA3NSC | Port Perry | Ontario | Canada |
| 30 | 1023030 | None | Alexander | Alexander Blais | Private Call | VE3OZT | Kitchener | Ontario | Canada |
| 31 | 1023031 | None | Perry | Perry Rubin | Private Call | VA3PMR | Thornhill | Ontario | Canada |
| 32 | 1023032 | None | Tedd | Tedd Doda | Private Call | VE3TJD | Petersburg | Ontario | Canada |
| 33 | 1023033 | None | Andrew | Andrew Moss | Private Call | VE3YES | Caledon | Ontario | Canada |
| 34 | 1023034 | None | Paul | Paul Becker | Private Call | VE3KPB | Oshawa | Ontario | Canada |
| 35 | 1023035 | None | William | William Riddell | Private Call | VE3WFR | Kitchener | Ontario | Canada |
| 36 | 1023036 | None | Richard | Richard William | Private Call | VE3UOD | Cannington | Ontario | Canada |
| 37 | 1023037 | None | Rejean | Rejean Potvin | Private Call | VA3RMP | Kapuskasing | Ontario | Canada |
| 38 | 1023038 | None | Michael | Michael Kosch | Private Call | VE3MMX | Shedden | Ontario | Canada |
| 39 | 1023039 | None | Kevin | Kevin Bousquet | Private Call | VA3API | Burlington | Ontario | Canada |
| 40 | 1023040 | None | George | George Baukham | Private Call | VA3GCB | Guelph | Ontario | Canada |
| 41 | 1023041 | None | David | David Bell | Private Call | VE3CSB | Kitchener | Ontario | Canada |
| 42 | 1023042 | None | John | John Enns | Private Call | VE3BB | Kitchener | Ontario | Canada |
| 43 | 1023043 | None | John | John Enns | Private Call | VE3BB | Waterloo | Ontario | Canada |
| 44 | 1023044 | None | Frederick | Frederick Hicks | Private Call | VE3MTS | Kitchener | Ontario | Canada |
| 45 | 1023045 | None | Ralph | Ralph Korchensk | Private Call | VE3EUK | Petersburg | Ontario | Canada |

You add and manage Private Call ID’s (Radio ID numbers) the same way you do Group Call (Talk Group) ID’s but there is an automated way to do this which we’ll cover later. As you see here, there will be lots of these. It is an immense database, with ~160k entries. AnyTone provides an automated methodology for this.

# AT D878 CodePlug 101

Part IIIb

Code Plug management Concepts

(Adding Channels)

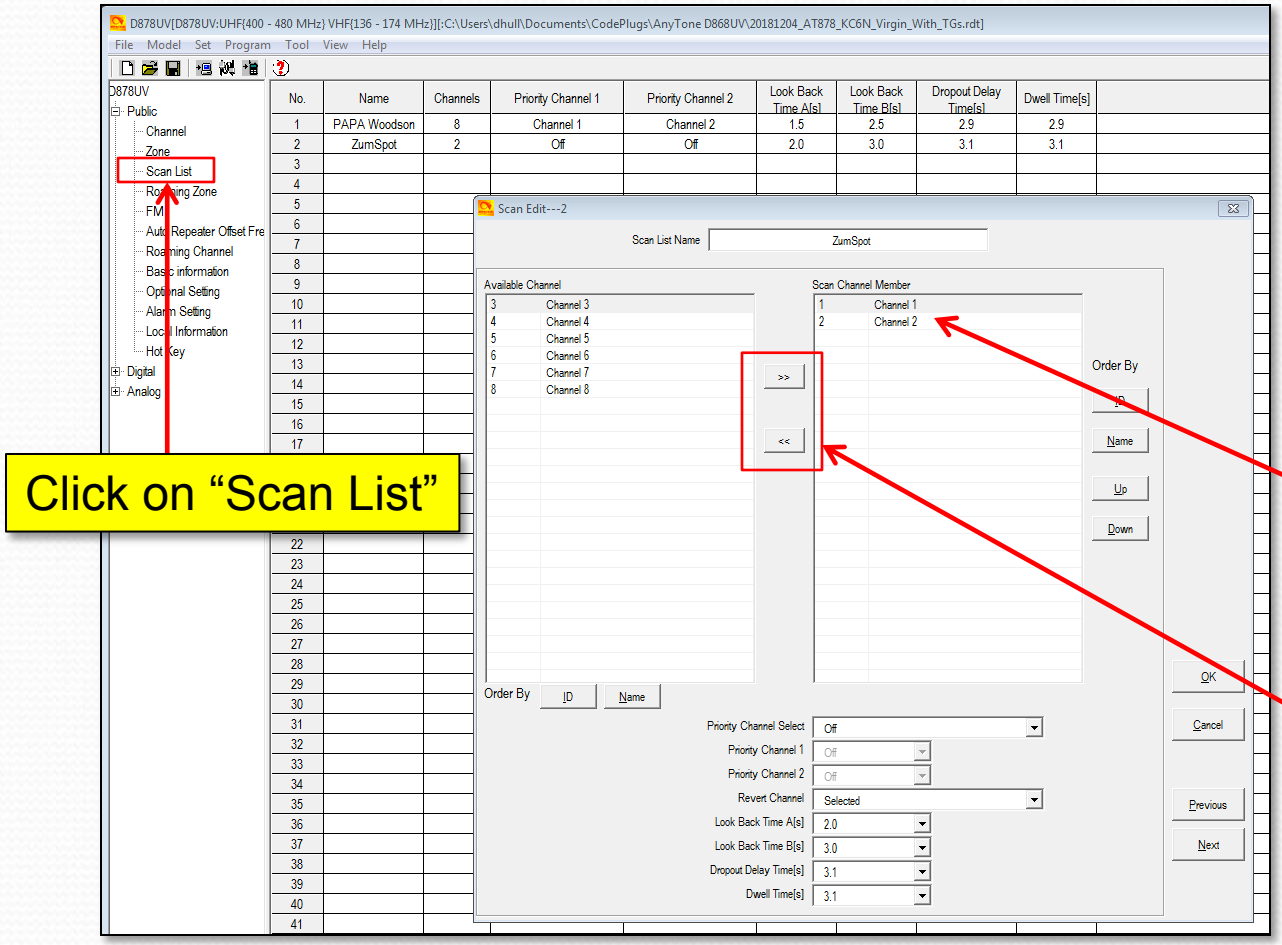
# Adding Channels

- We did Group Calls first since we need these for the digital channel definitions
- We do the channels next since they have to be in place in order to define the Zone and to finalize the Scan lists.
- We will create:
  - The PAPA Woodson zone,
  - A Hot Spot zone, and
  - Analog and Simplex Channels

# Scan List Place holders

- Before we create the channels, we need to create a placeholder for their scan lists
- We will create the following two scan lists to be populated later:
  - PAPA Woodson
  - ZumSpot
- At this point you should enter your DMR ID as described in Section II

# Create two scan groups

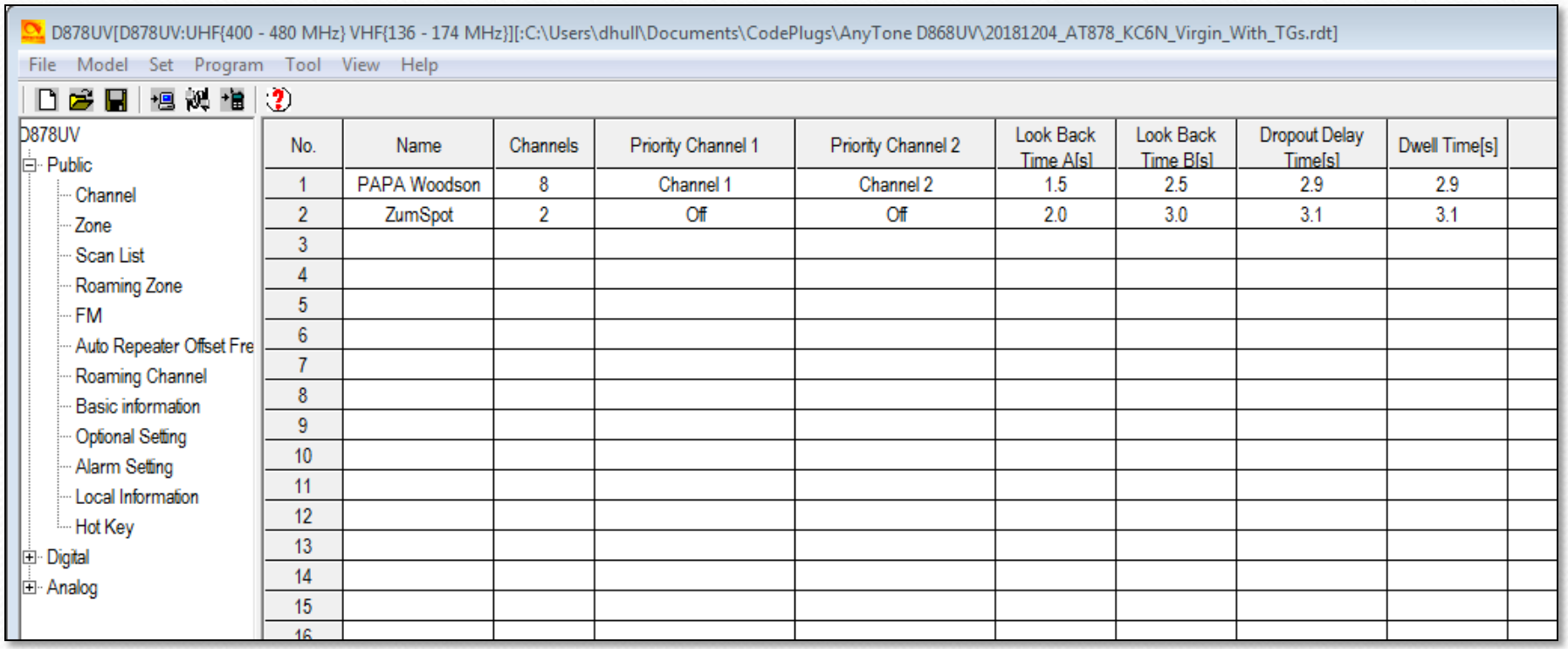



1. Double Click on the default entry and rename it PAPA Woodson
2. Add a second entry and call it ZumSpot

Make sure that there are a couple channels in there (or it won’t save)

Move channels into the “membership list” (and out) using these buttons. It doesn’t matter which at this point.

# Create two scan groups




| No. | Name | Channels | Priority Channel 1 | Priority Channel 2 | Look Back Time A[s] | Look Back Time B[s] | Dropout Delay Time[s] | Dwell Time[s] |
|---|---|---|---|---|---|---|---|---|
| 1 | PAPA Woodson | 8 | Channel 1 | Channel 2 | 1.5 | 2.5 | 2.9 | 2.9 |
| 2 | ZumSpot | 2 | Off | Off | 2.0 | 3.0 | 3.1 | 3.1 |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |

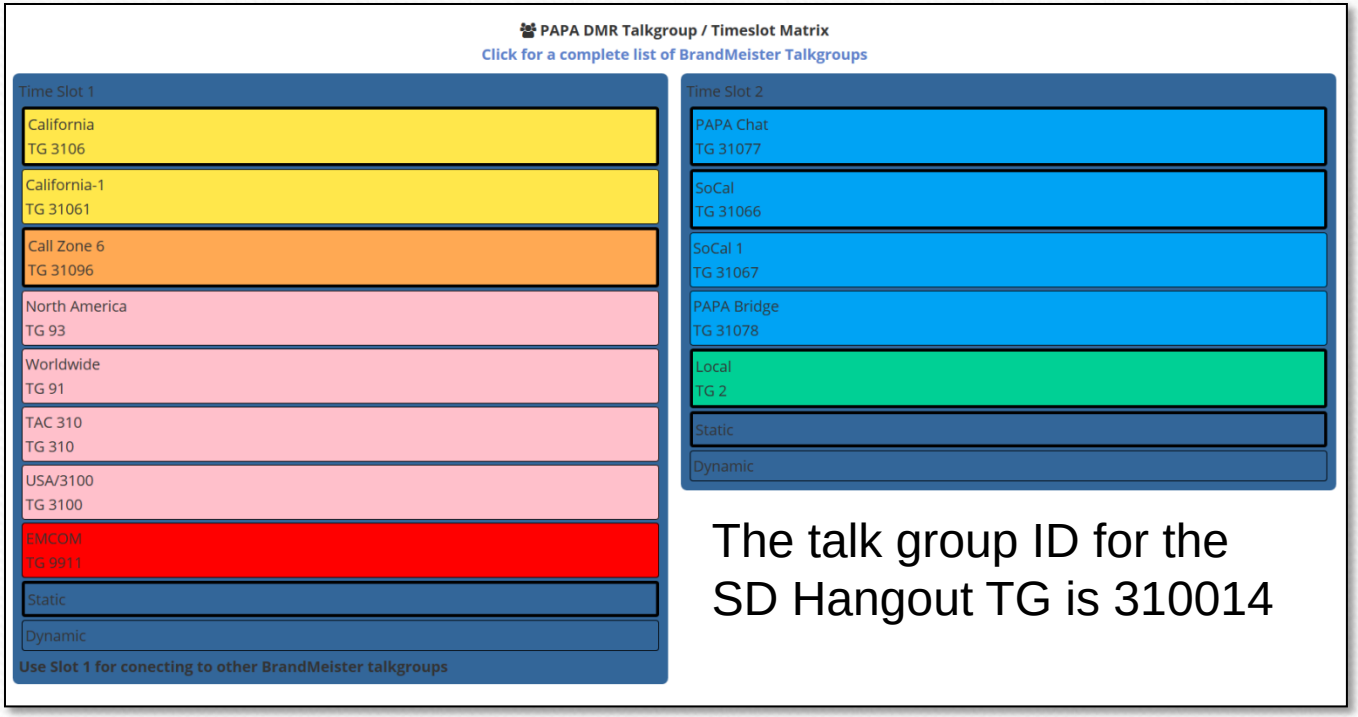
Your scan should now look like this, with two “dummy” scan groups as shown. We will reference these when we create channels and populate them later.

# Digital Channels

- We now have a dummy scan list for each zone (but haven't  populated them yet)
- We will create channels for two Zones
  - PAPA Woodson (448.520 (-) Color Code 1)
  - HotSpot (438.250 (Simplex) Color Code 1)
- We will then proceed to build the Zone lists and populate the Scan lists that we just created.

# Building PAPA Woodson

- The TG Setup for PAPA Woodson is shown in the table below:



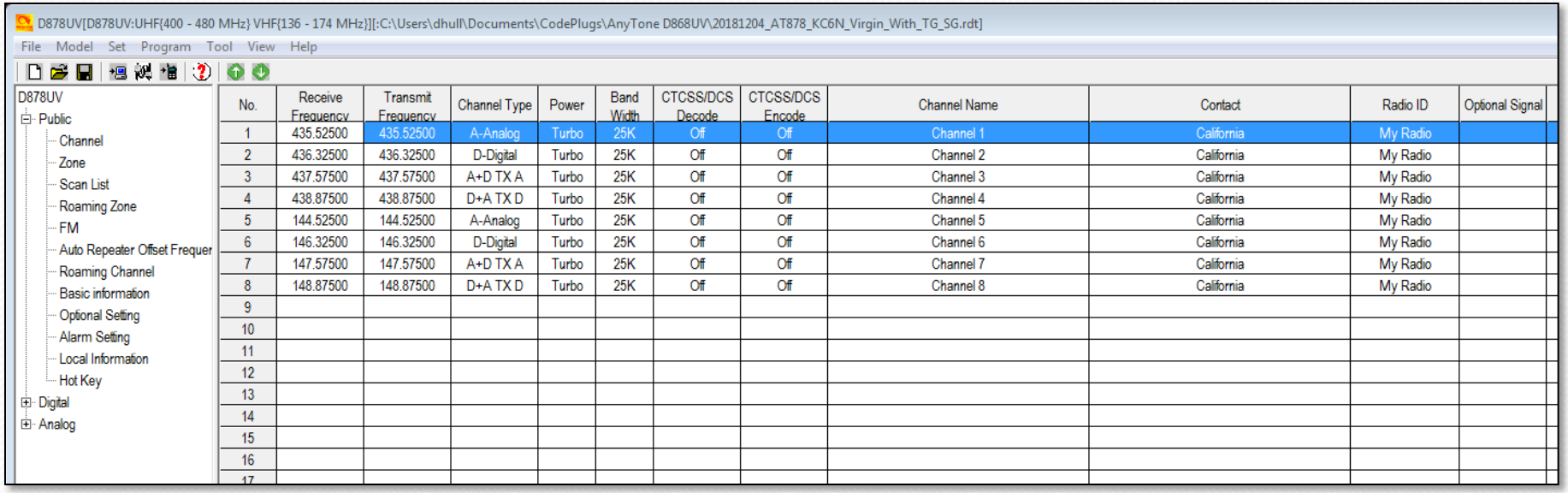

The talk group ID for the SD Hangout TG is 310014

# Digital Channel Creation

- We are going to create 14 digital channels for the PAPA Woodson Zone as follows:
  - We will make one master channel which will have the pair Frequencies, Color Code, Scan Group, Power level etc.
  - We will then replicate this “template channel” 13 more times
  - We will then edit each of these channels, to add the Name, Time Slot and TG ID

# PAPA Woodson Channels

- The blank channel form is shown below


D878UV[D878UV:UHF{400 - 480 MHz} VHF{136 - 174 MHz}][:C:\Users\dhull\Documents\CodePlugs\AnyTone D868UV\20181204_AT878_KC6N_Virgin_With_TG_SG.rdt]

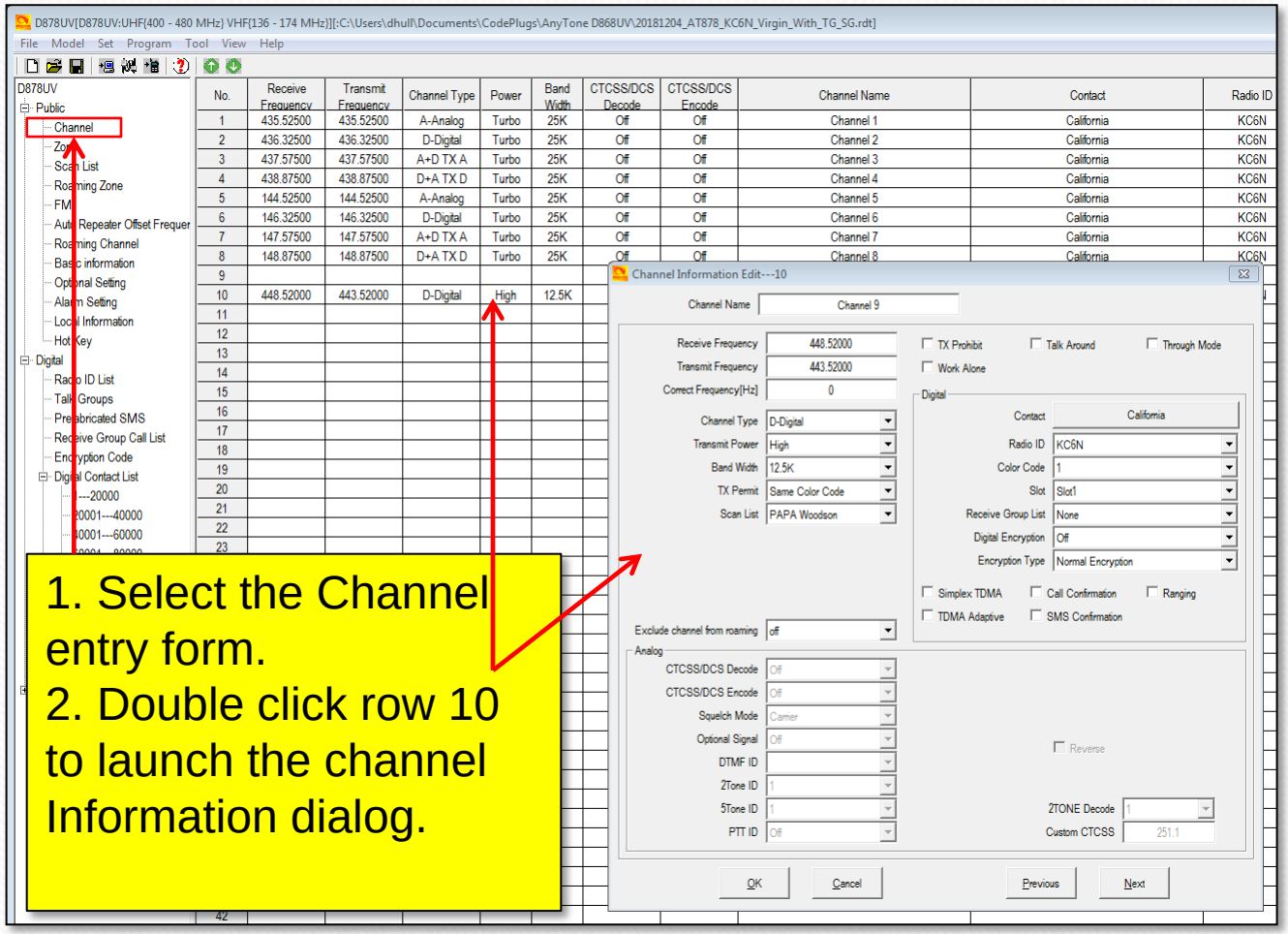
File Model Set Program Tool View Help

D878UV
- Public
  - Channel
  - Zone
  - Scan List
  - Roaming Zone
  - FM
  - Auto Repeater Offset Frequer
  - Roaming Channel
  - Basic information
  - Optional Setting
  - Alarm Setting
  - Local Information
  - Hot Key
- Digital
- Analog

| No. | Receive Frequency | Transmit Frequency | Channel Type | Power | Band Width | CTCSS/DCS Decode | CTCSS/DCS Encode | Channel Name | Contact | Radio ID | Optional Signal |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 435.52500 | 435.52500 | A-Analog | Turbo | 25K | Off | Off | Channel 1 | California | My Radio | |
| 2 | 436.32500 | 436.32500 | D-Digital | Turbo | 25K | Off | Off | Channel 2 | California | My Radio | |
| 3 | 437.57500 | 437.57500 | A+D TX A | Turbo | 25K | Off | Off | Channel 3 | California | My Radio | |
| 4 | 438.87500 | 438.87500 | D+A TX D | Turbo | 25K | Off | Off | Channel 4 | California | My Radio | |
| 5 | 144.52500 | 144.52500 | A-Analog | Turbo | 25K | Off | Off | Channel 5 | California | My Radio | |
| 6 | 146.32500 | 146.32500 | D-Digital | Turbo | 25K | Off | Off | Channel 6 | California | My Radio | |
| 7 | 147.57500 | 147.57500 | A+D TX A | Turbo | 25K | Off | Off | Channel 7 | California | My Radio | |
| 8 | 148.87500 | 148.87500 | D+A TX D | Turbo | 25K | Off | Off | Channel 8 | California | My Radio | |
| 9 | | | | | | | | | | | |
| 10 | | | | | | | | | | | |
| 11 | | | | | | | | | | | |
| 12 | | | | | | | | | | | |
| 13 | | | | | | | | | | | |
| 14 | | | | | | | | | | | |
| 15 | | | | | | | | | | | |
| 16 | | | | | | | | | | | |
| 17 | | | | | | | | | | | |

My “virgin” radio already had a few channels populated as shown above. These are examples. You can copy and paste from these or create your own. For the purposes of this discussion we will leave these and create 14 new ones of our own, starting at line 10.

# Build Woodson Template

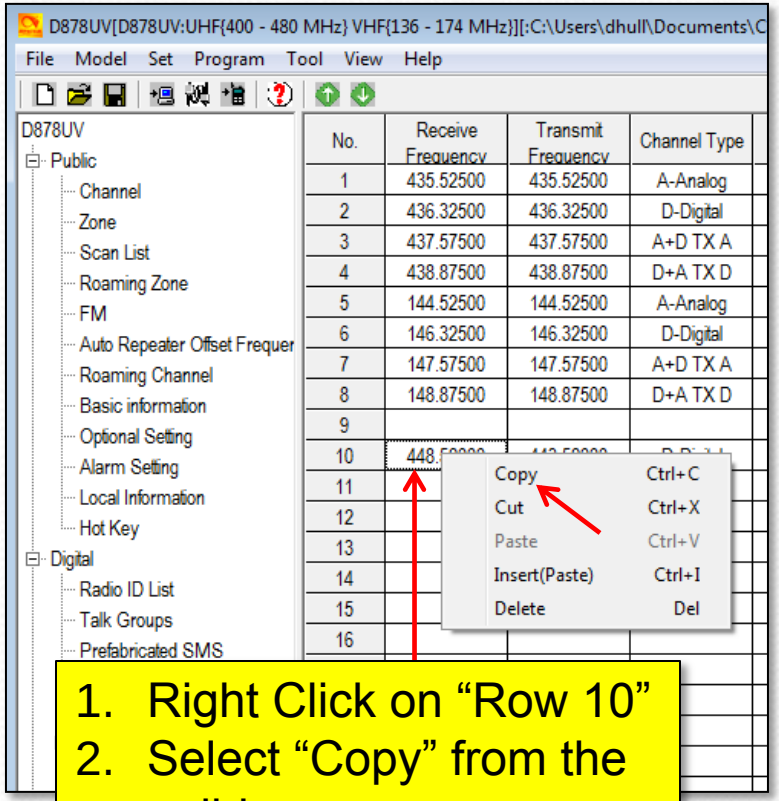



3. Edit the page as shown:

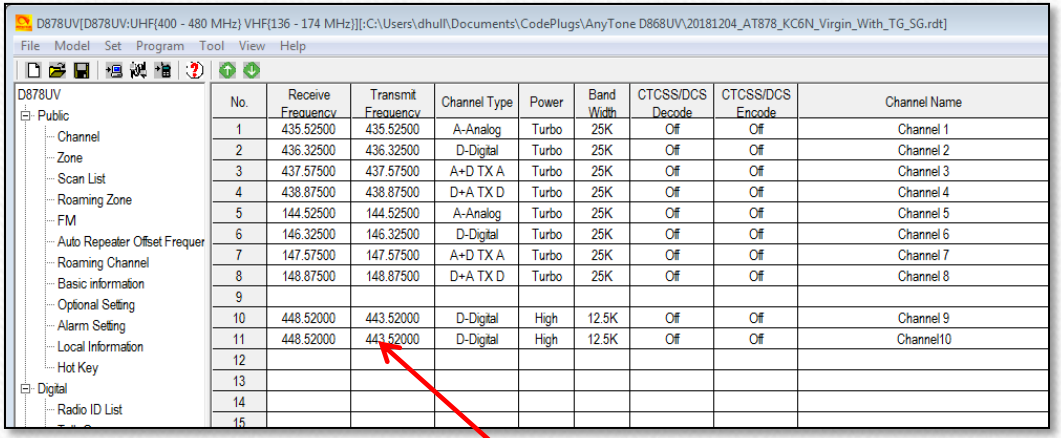
- Color code = 1
- Scan List=PAPA WUD
- RX = 448.520
- TX = 443.520
- Power Level = High
- TX Admit=Color Code
- Time Out=180 sec
- Parameters should match here
- Click “OK”

# Replicate the Template

- Add Placeholders for the 14 channels

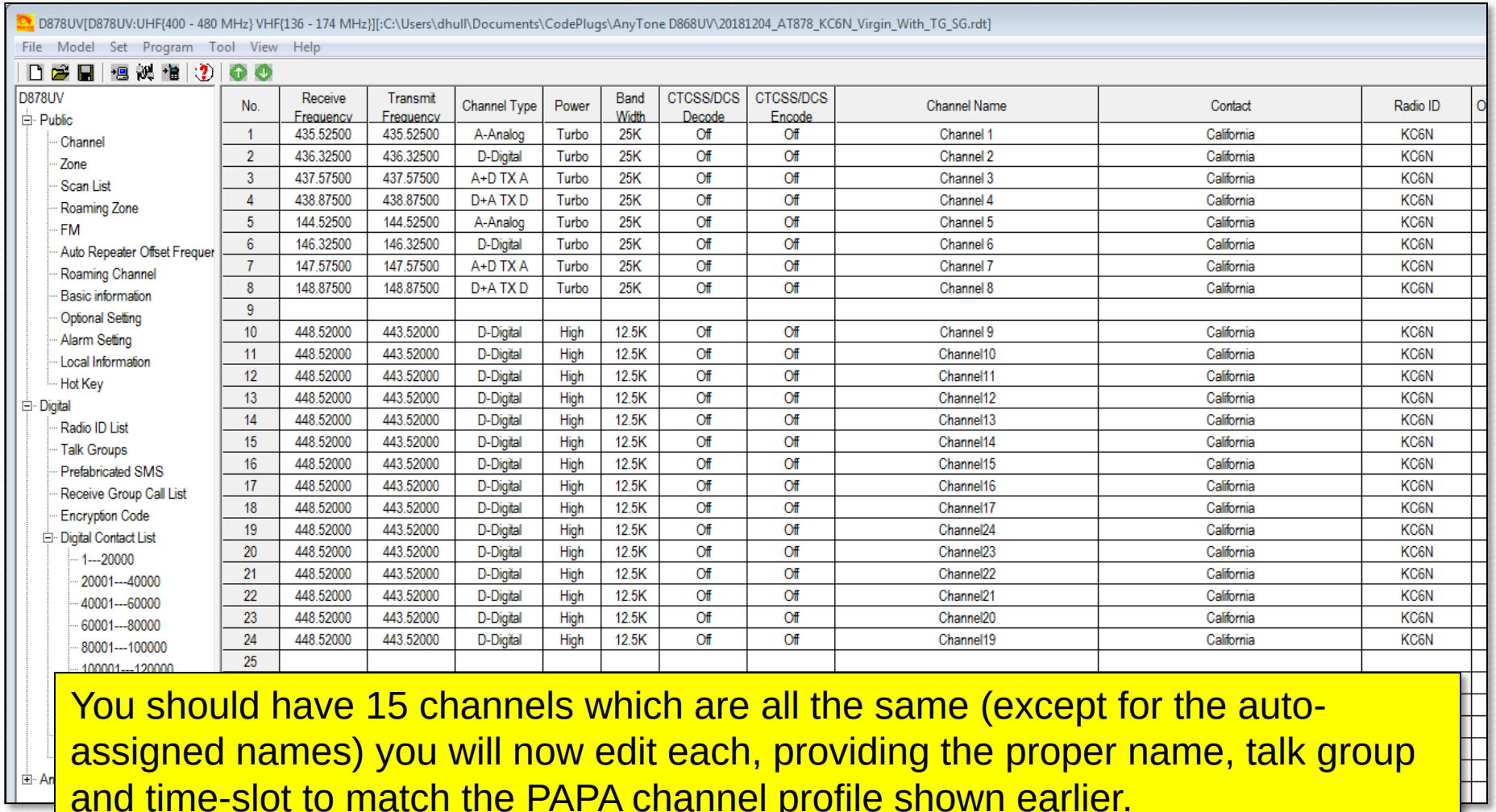



1. Right Click on “Row 10”
2. Select “Copy” from the pulldown




3. Right Click on “Row 11”
4. Click “Insert” to insert a copy of the Row 11 information (the Woodson template)
5. Repeat this until you have 14 rows created as shown on the next page. I added an extra one just in case.

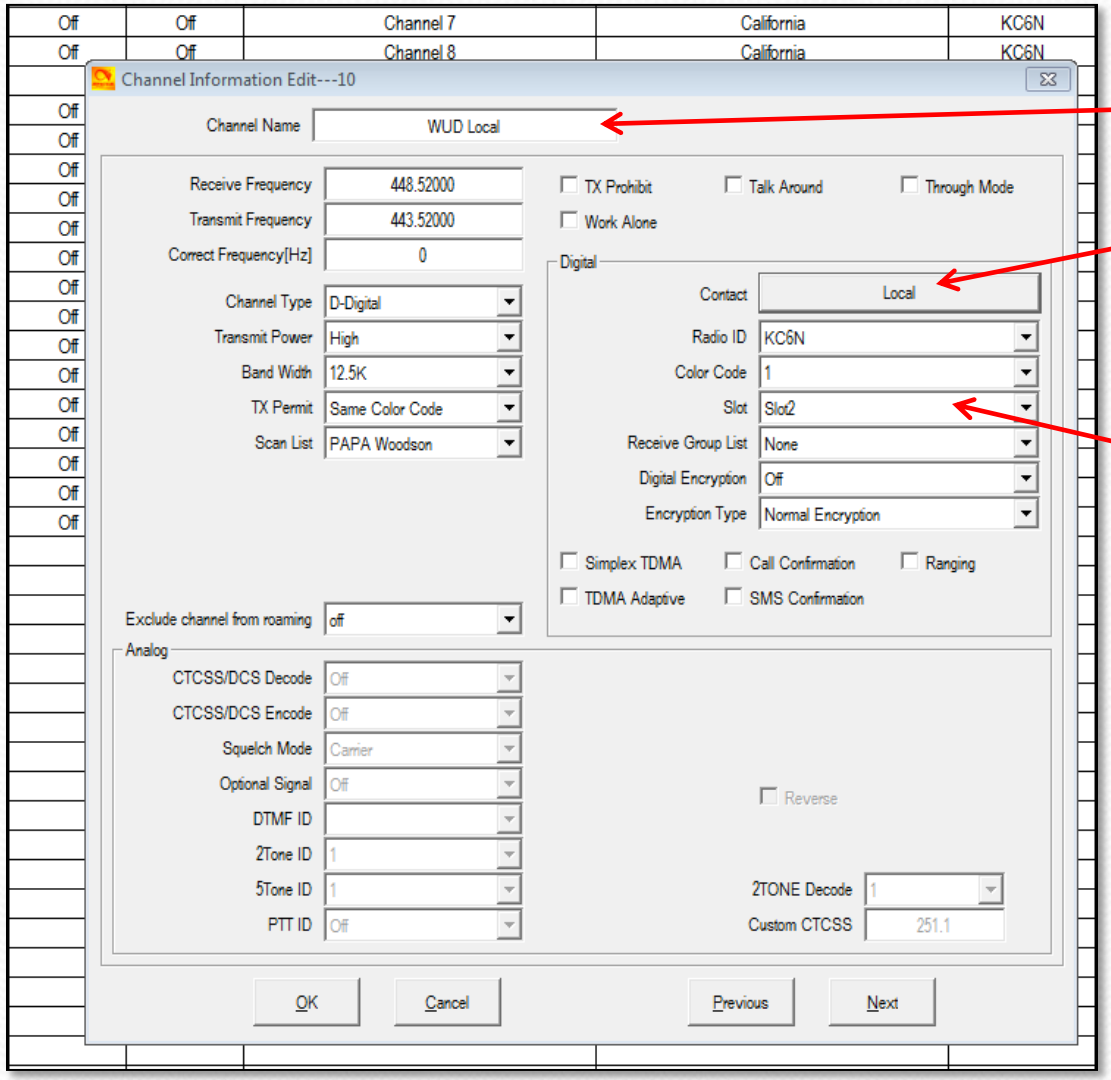
# Woodson CH Templates




| No. | Receive Frequency | Transmit Frequency | Channel Type | Power | Band Width | CTCSS/DCS Decode | CTCSS/DCS Encode | Channel Name | Contact | Radio ID |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 435.52500 | 435.52500 | A-Analog | Turbo | 25K | Off | Off | Channel 1 | California | KC6N |
| 2 | 436.32500 | 436.32500 | D-Digital | Turbo | 25K | Off | Off | Channel 2 | California | KC6N |
| 3 | 437.57500 | 437.57500 | A+D TX A | Turbo | 25K | Off | Off | Channel 3 | California | KC6N |
| 4 | 438.87500 | 438.87500 | D+A TX D | Turbo | 25K | Off | Off | Channel 4 | California | KC6N |
| 5 | 144.52500 | 144.52500 | A-Analog | Turbo | 25K | Off | Off | Channel 5 | California | KC6N |
| 6 | 146.32500 | 146.32500 | D-Digital | Turbo | 25K | Off | Off | Channel 6 | California | KC6N |
| 7 | 147.57500 | 147.57500 | A+D TX A | Turbo | 25K | Off | Off | Channel 7 | California | KC6N |
| 8 | 148.87500 | 148.87500 | D+A TX D | Turbo | 25K | Off | Off | Channel 8 | California | KC6N |
| 9 | | | | | | | | | | |
| 10 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | Channel 9 | California | KC6N |
| 11 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | Channel10 | California | KC6N |
| 12 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | Channel11 | California | KC6N |
| 13 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | Channel12 | California | KC6N |
| 14 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | Channel13 | California | KC6N |
| 15 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | Channel14 | California | KC6N |
| 16 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | Channel15 | California | KC6N |
| 17 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | Channel16 | California | KC6N |
| 18 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | Channel17 | California | KC6N |
| 19 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | Channel24 | California | KC6N |
| 20 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | Channel23 | California | KC6N |
| 21 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | Channel22 | California | KC6N |
| 22 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | Channel21 | California | KC6N |
| 23 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | Channel20 | California | KC6N |
| 24 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | Channel19 | California | KC6N |
| 25 | | | | | | | | | | |

You should have 15 channels which are all the same (except for the auto-assigned names) you will now edit each, providing the proper name, talk group and time-slot to match the PAPA channel profile shown earlier.

# PAPA Woodson Channels

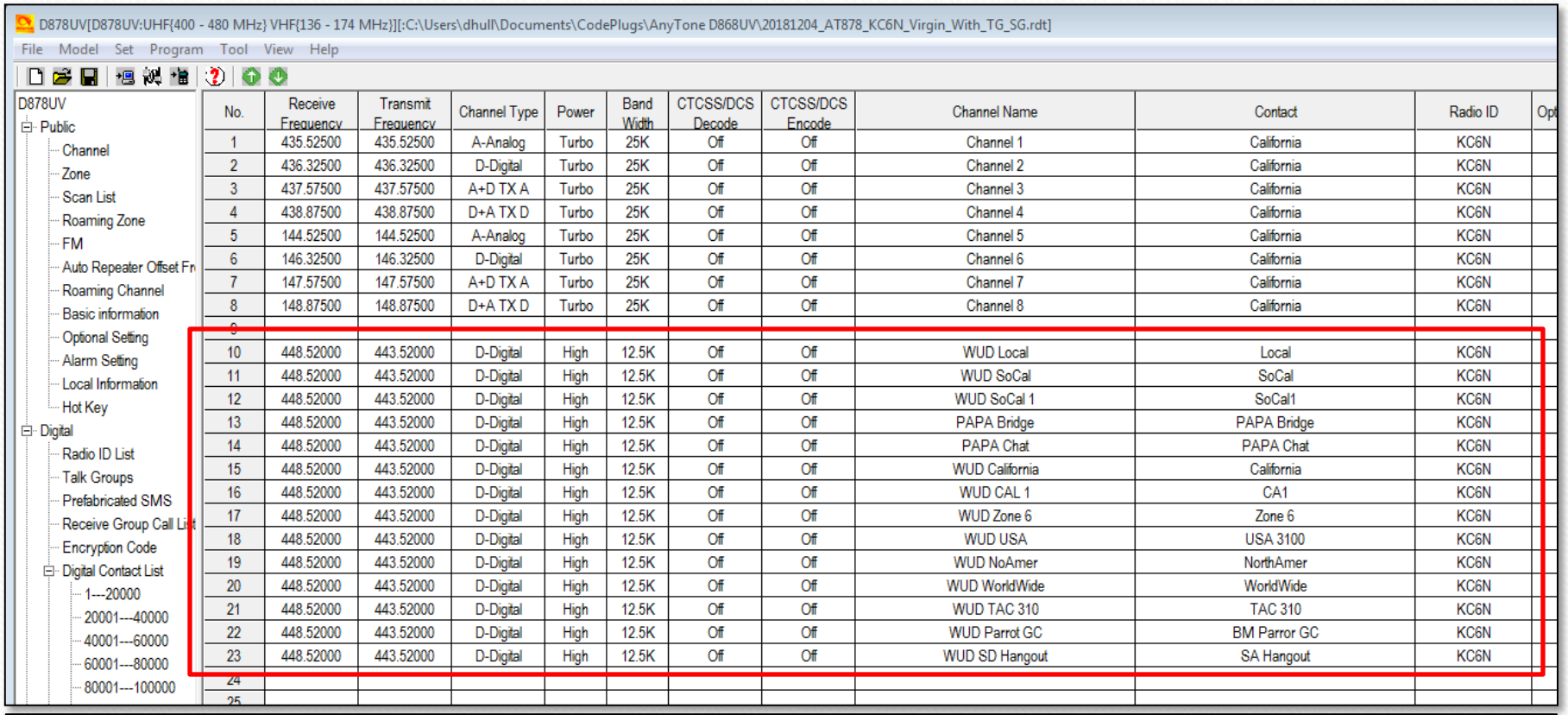



Make Woodson Local:

- Set Channel Name = “Local WUD”
- Set Contact = “Local” (click the button then double click the correct TGID from selections)
- Set Repeater/Time slot = “Slot 2”

Do this for all 15 of the channel place-holders that you created So that each channel has a unique name, references the proper talk group and correct TDMA time slot.

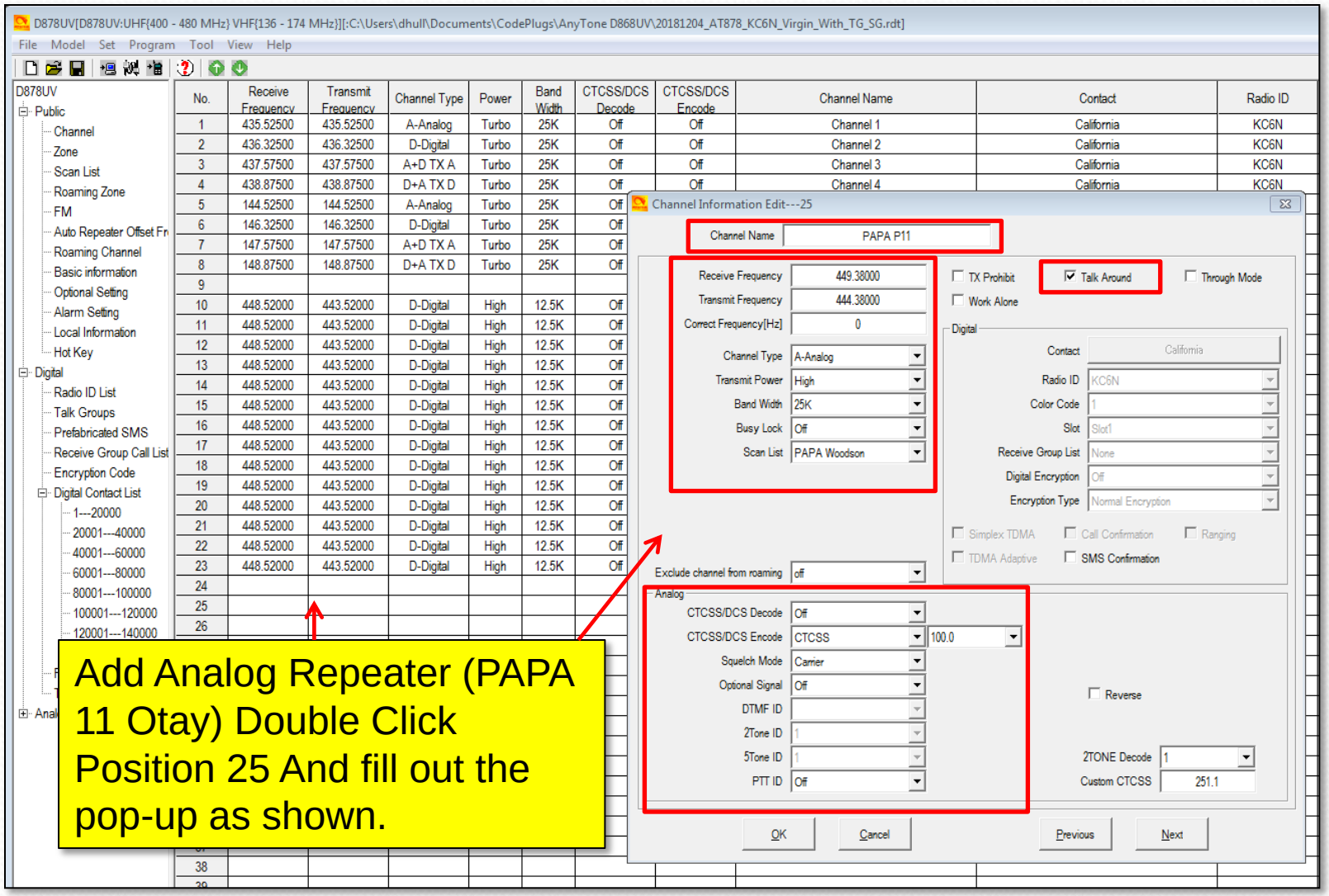
# Enter remaining channels



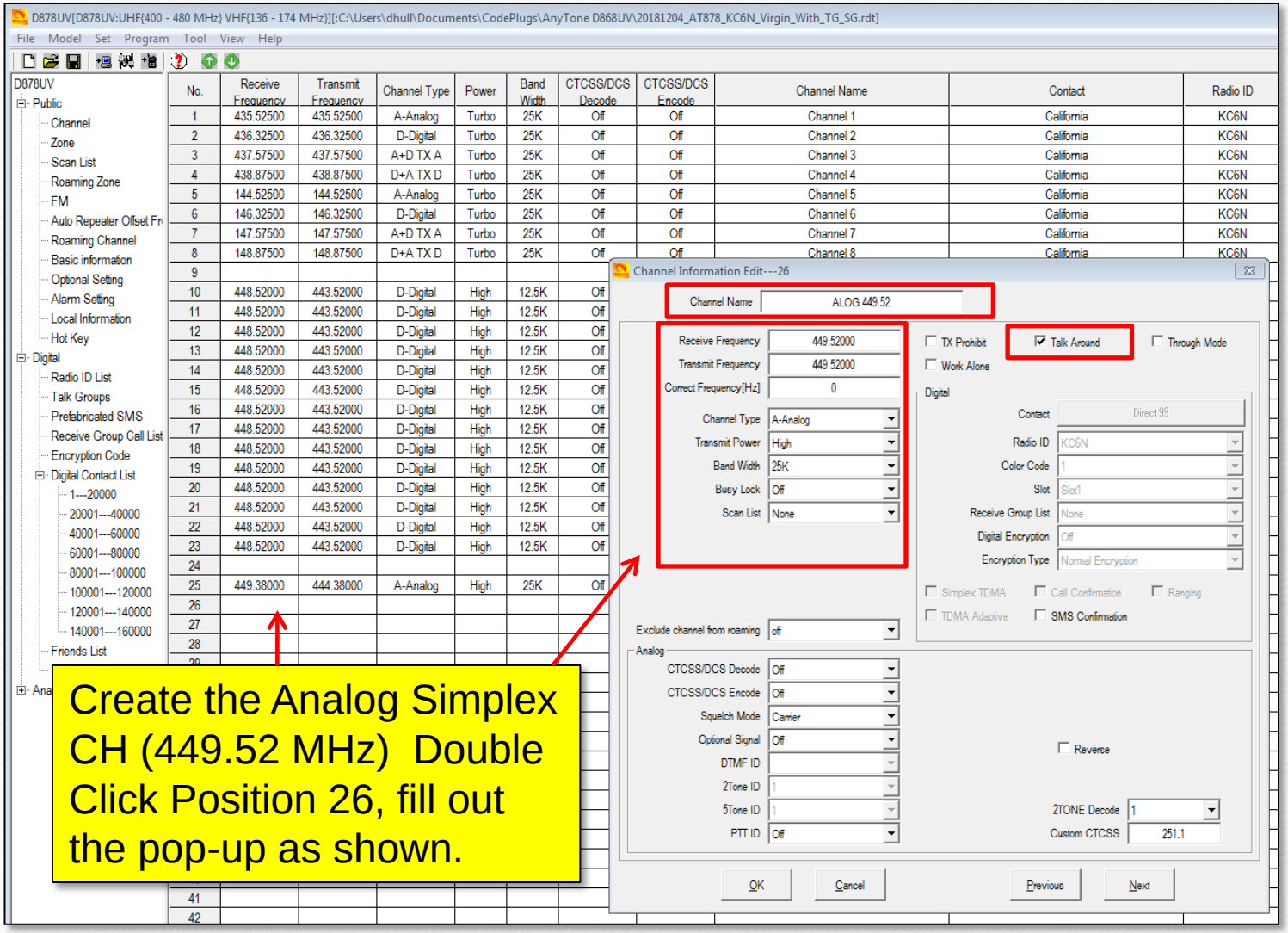

| No. | Receive Frequency | Transmit Frequency | Channel Type | Power | Band Width | CTCSS/DCS Decode | CTCSS/DCS Encode | Channel Name | Contact | Radio ID | Opt |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 435.52500 | 435.52500 | A-Analog | Turbo | 25K | Off | Off | Channel 1 | California | KC6N | |
| 2 | 436.32500 | 436.32500 | D-Digital | Turbo | 25K | Off | Off | Channel 2 | California | KC6N | |
| 3 | 437.57500 | 437.57500 | A+D TX A | Turbo | 25K | Off | Off | Channel 3 | California | KC6N | |
| 4 | 438.87500 | 438.87500 | D+A TX D | Turbo | 25K | Off | Off | Channel 4 | California | KC6N | |
| 5 | 144.52500 | 144.52500 | A-Analog | Turbo | 25K | Off | Off | Channel 5 | California | KC6N | |
| 6 | 146.32500 | 146.32500 | D-Digital | Turbo | 25K | Off | Off | Channel 6 | California | KC6N | |
| 7 | 147.57500 | 147.57500 | A+D TX A | Turbo | 25K | Off | Off | Channel 7 | California | KC6N | |
| 8 | 148.87500 | 148.87500 | D+A TX D | Turbo | 25K | Off | Off | Channel 8 | California | KC6N | |
| 9 | | | | | | | | | | | |
| 10 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | WUD Local | Local | KC6N | |
| 11 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | WUD SoCal | SoCal | KC6N | |
| 12 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | WUD SoCal 1 | SoCal1 | KC6N | |
| 13 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | PAPA Bridge | PAPA Bridge | KC6N | |
| 14 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | PAPA Chat | PAPA Chat | KC6N | |
| 15 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | WUD California | California | KC6N | |
| 16 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | WUD CAL 1 | CA1 | KC6N | |
| 17 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | WUD Zone 6 | Zone 6 | KC6N | |
| 18 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | WUD USA | USA 3100 | KC6N | |
| 19 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | WUD NoAmer | NorthAmer | KC6N | |
| 20 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | WUD WorldWide | WorldWide | KC6N | |
| 21 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | WUD TAC 310 | TAC 310 | KC6N | |
| 22 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | WUD Parrot GC | BM Parror GC | KC6N | |
| 23 | 448.52000 | 443.52000 | D-Digital | High | 12.5K | Off | Off | WUD SD Hangout | SA Hangout | KC6N | |
| 24 | | | | | | | | | | | |
| 25 | | | | | | | | | | | |

Your final channel list should look like this. Double check all the channels. Name, TS, TG should be correct. This would be a really good time to *Save your file*

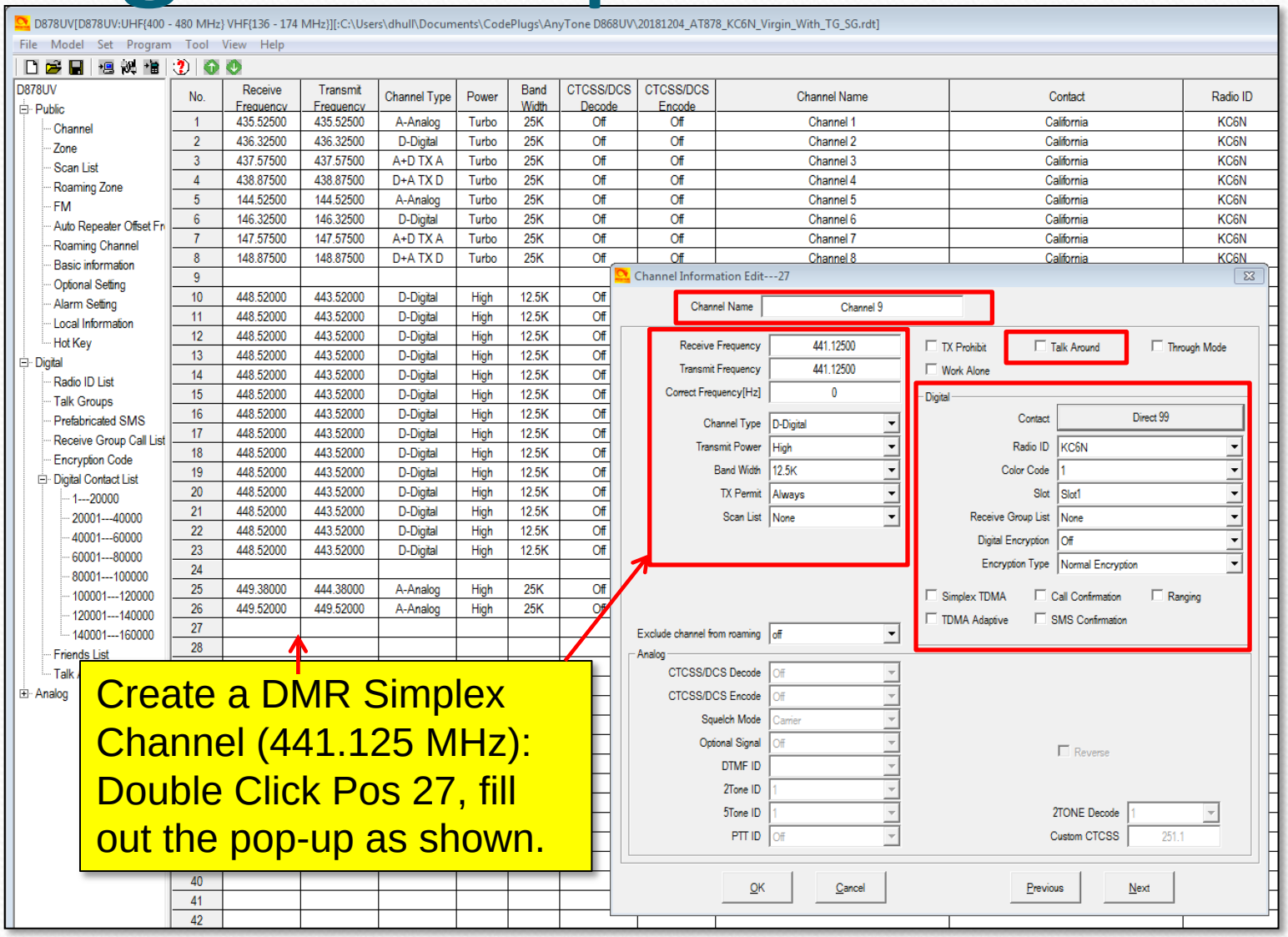
# Analog Repeater



# Analog Simplex Channel



# Digital Simplex Channel



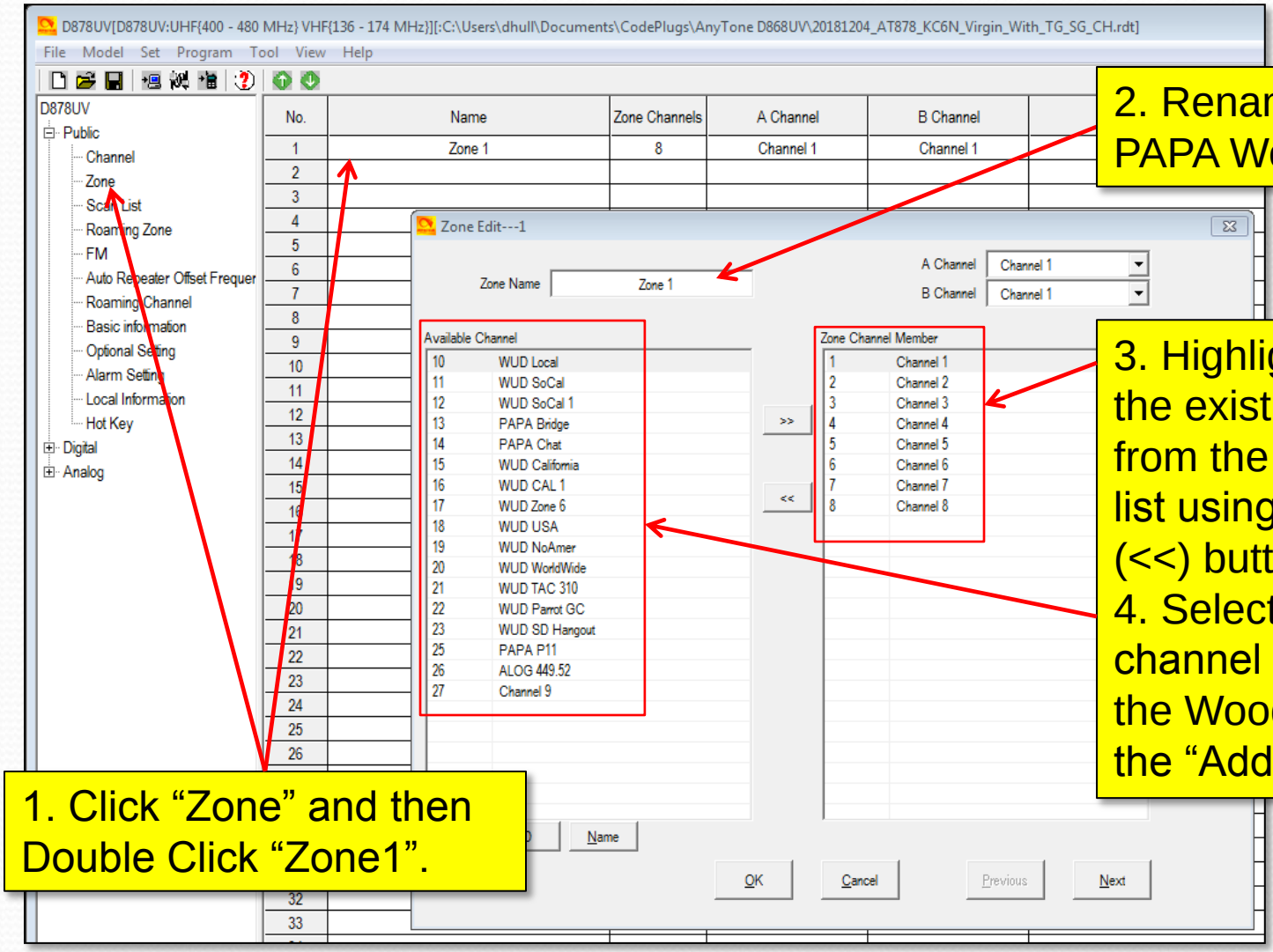
# AT D878 CodePlug 101

Part IIIc

Code Plug management Concepts

(Populate the zone and scan lists)

# Create Woodson Zone



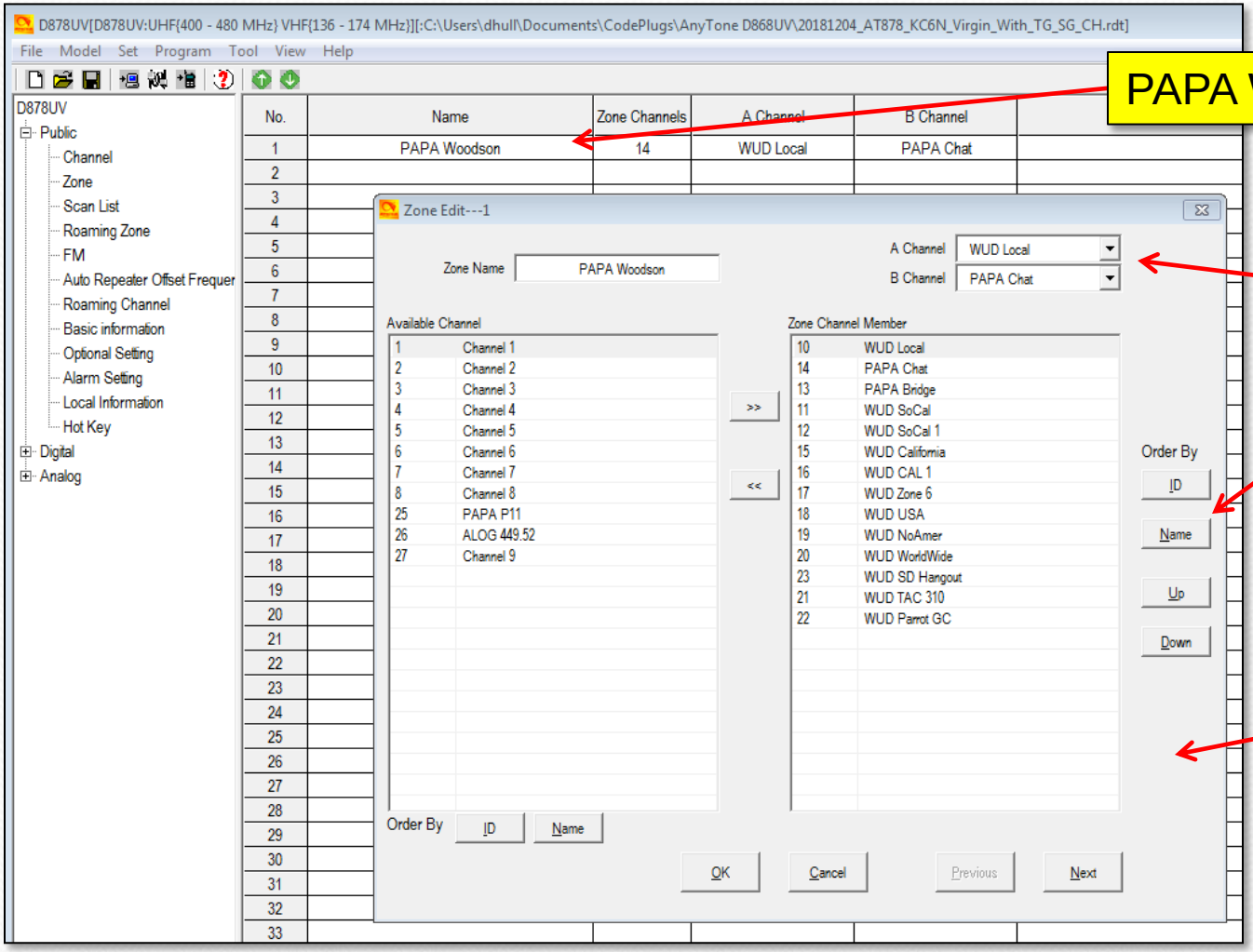

1. Click “Zone” and then Double Click “Zone1”.

2. Rename Zone 1 to PAPA Woodson

3. Highlight and remove the existing channels from the current member list using the “remove” (<<) button.

4. Select each WUD channel and “Add” it to the Woodson Zone using the “Add” (>>) button.

# Final Woodson Zone



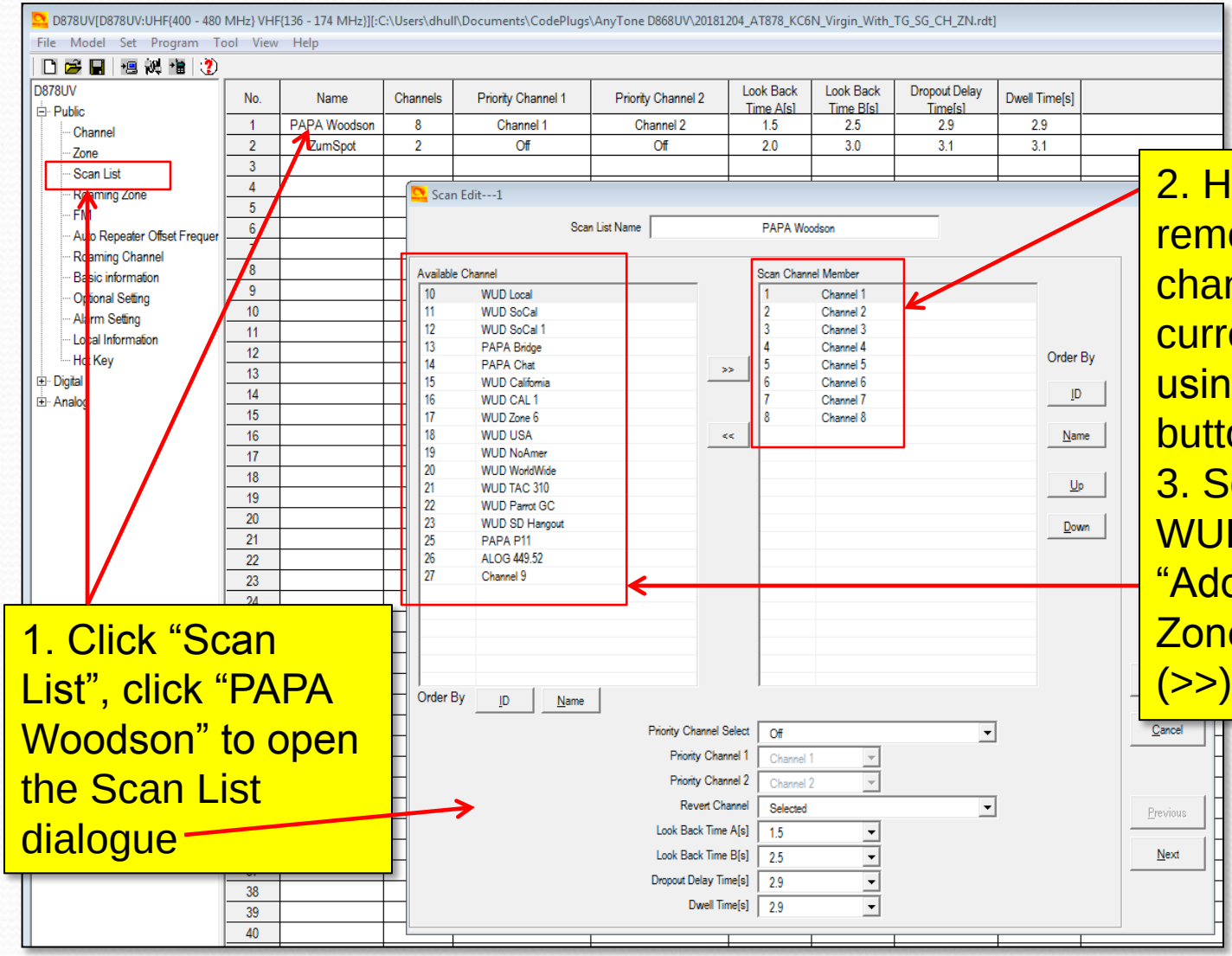

PAPA Woodson Zone

Channel A and B will appear in the main display when the zone is selected

Zone editing tools

Zone Editor showing the final contents of the PAPA Woodson Zone

# Create Woodson Scan List

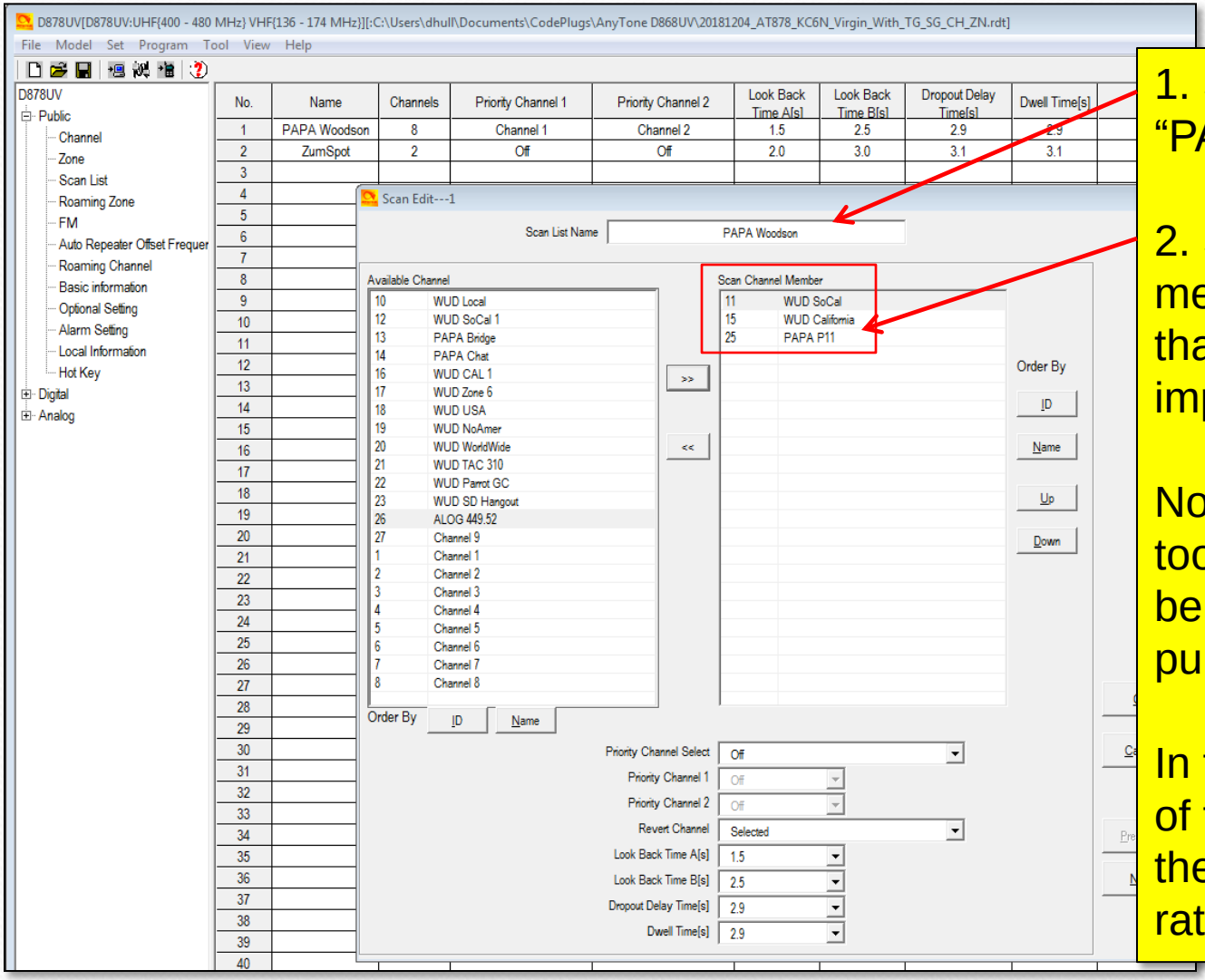



1. Click “Scan List”, click “PAPA Woodson” to open the Scan List dialogue

2. Highlight and remove the existing channels from the current member list using the “remove” (<<) button.

3. Select the desired WUD channels and “Add” it to the Woodson Zone using the “Add” (>>) button.

# Final Woodson Scan List




1. Scan List name: "PAPA Woodson"

2. Scan Group members here. Note that the order is not important for scan.

Note that there are not too many channels to be scanned – this is on purpose to make it fast.

In the AT UV-878, most of the time you will use the monitor functions rather than scan (IMO).

# AT D878 CodePlug 101

Part IIId

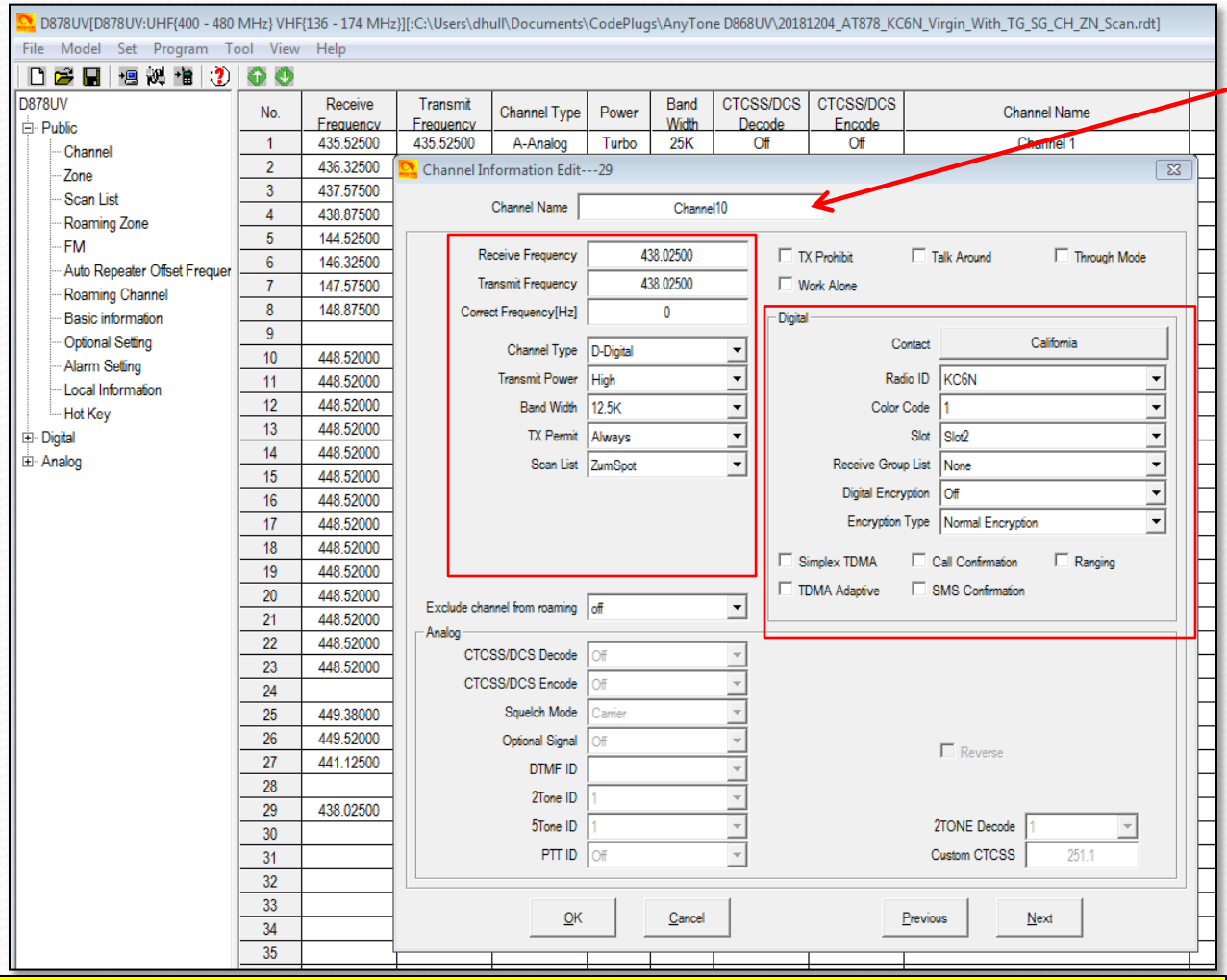
Code Plug management Concepts

(Overview:  Adding a hotspot zone)

# Creating a HotSpot Zone

- The steps to create a HotSpot zone are the same as for any other zone except:
  - The TX and RX Frequencies are the same.
  - The CC is 1 and the Time slot is “2”
  - You don’t program “Local”
  - You may not want to program “PAPA”
  - You can scan your hot spot zone and have analogs if you like.
- We’ll just show the completed screens

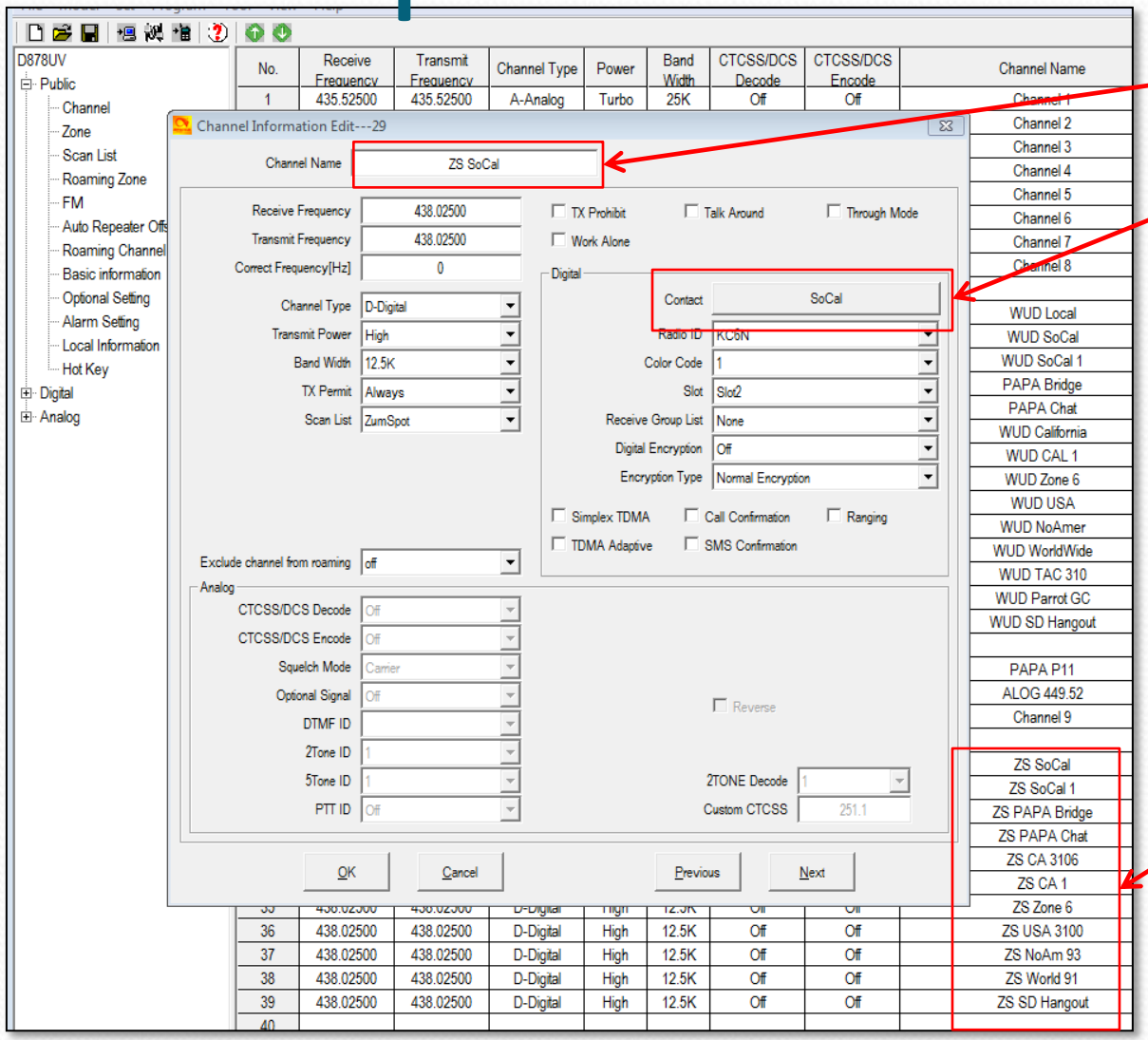
# HotSpot CH Template




1. Create a digital channel
2. Set Scan List to “ZumSpot”
3. Power=Low
4. RX and TX Freq to your choice (I chose 438.250)
5. Admit=CC Free
6. Un-check “Talkaround”
7. Set CC=1
8. Set TS=1 or 2*
9. Replicate this as before.

* Note: Check which is best for your brand of HotSpot

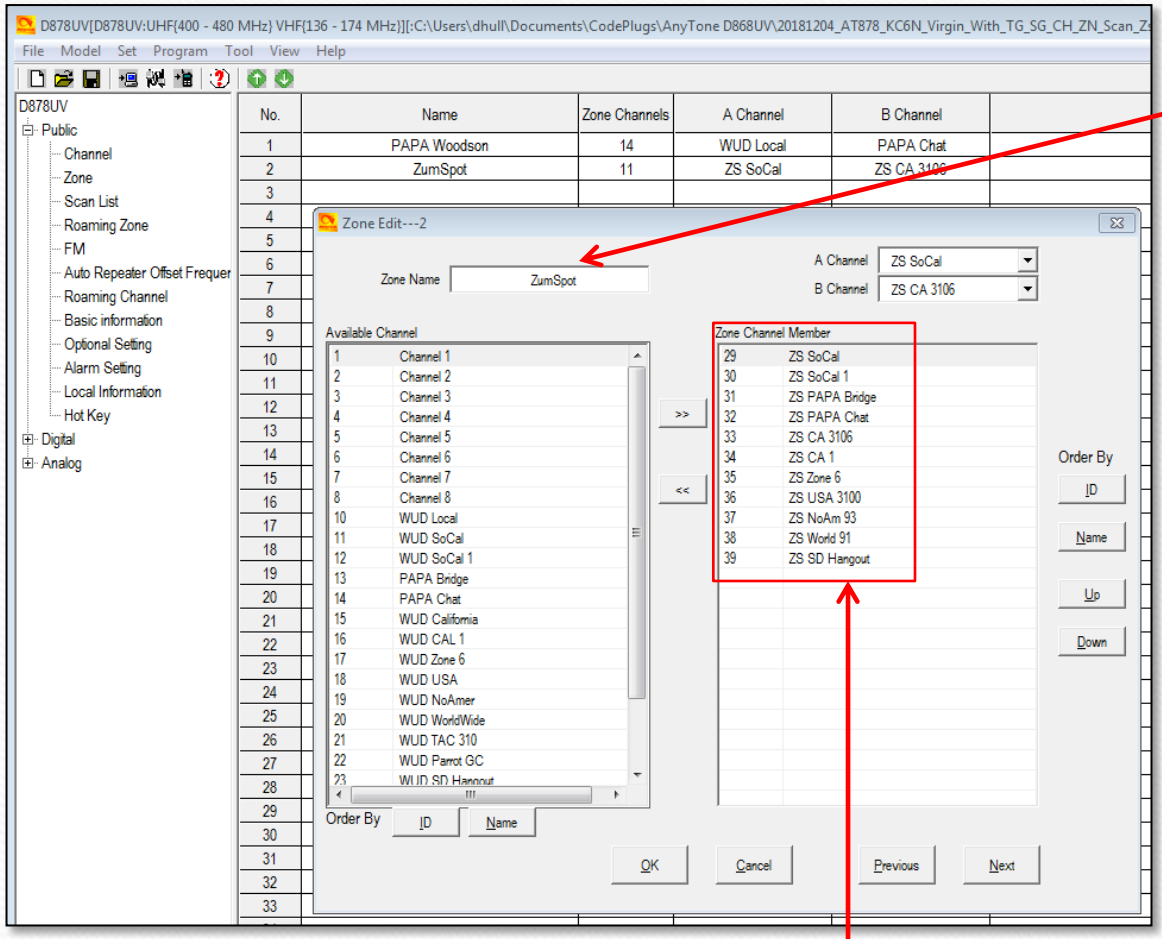
# HotSpot SoCal Channel




1. Edit Name: “HS SoCal”
2. Edit TX Contact to: “SNARS”

3. Repeat for all 12 channels with correct name and TG ID

# HotSpot Zone List



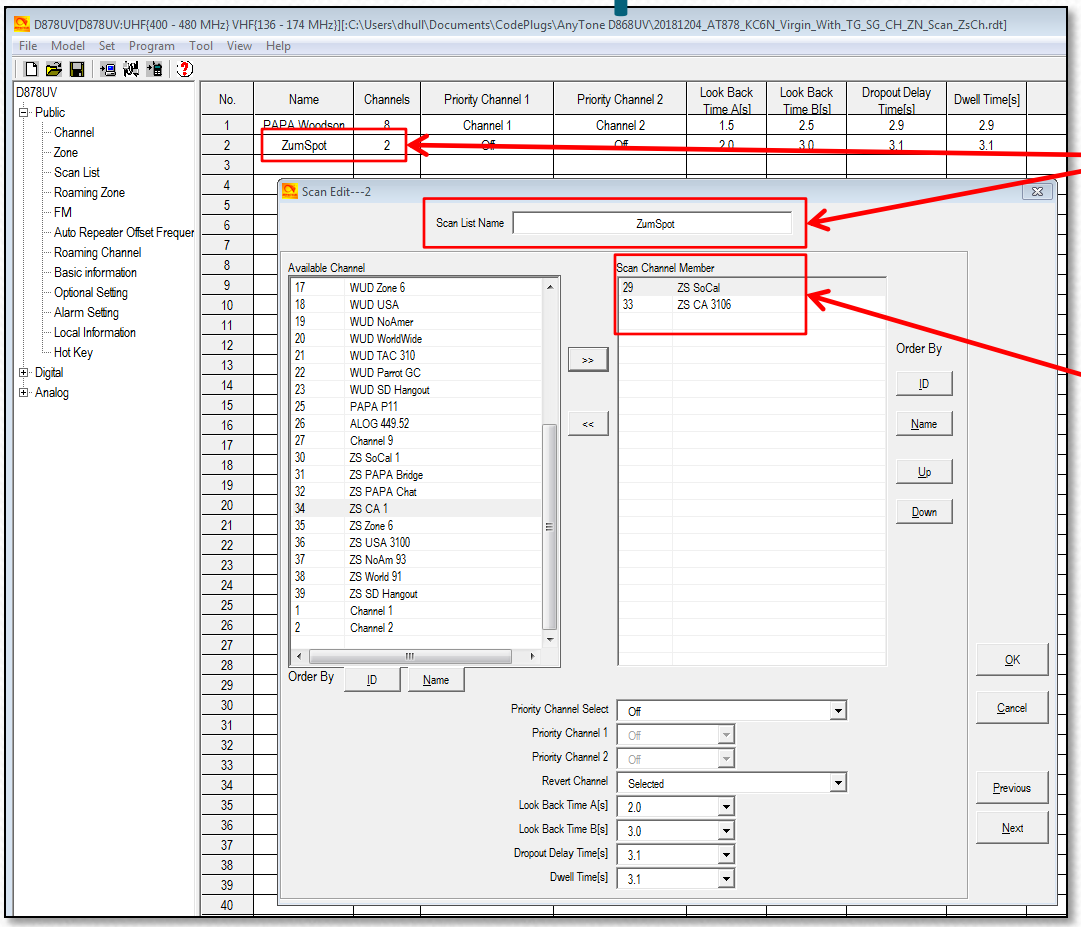

Zone Name: "ZumSpot" appears here

Create and populate a zone for your ZumSpot the same way we did for the woodson zone.

Select the channels to include from the panel on the left and use ">>" to move them over to the member panel on the left. Use the up/down buttons to adjust the order.

Populated Zone List

# HotSpot Scan List




Scan List Name: "ZumSpot" appears here (Remember, we created it previously).

Populate the scan list as previously shown. Order isn't important. I usually scan static TG's only (and not very many at that).

Scanning is something that these radios don't really do that well and the monitor function is a very effective alternative.

# AT D868 CodePlug 101

Part IIIe

Code Plug management Concepts

(Contact List Maintinence)

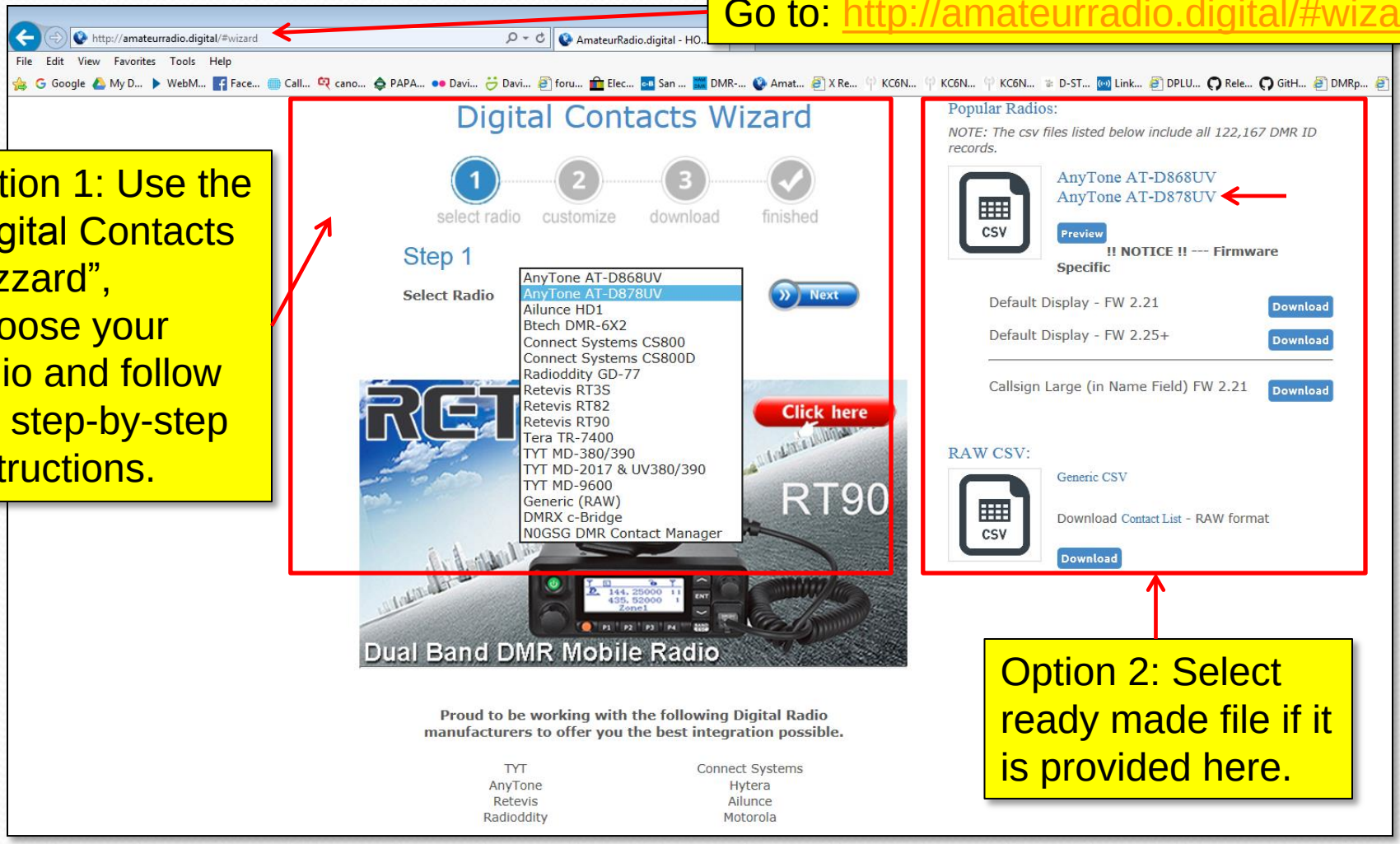
# Contact List Operations (1)

- We will populate the Private Call “Contact List” as follows:
  - Go to: http://amateurradio.digital/#wizard
  - Follow the instructions on the site (next page) to generate .csv file You may need to open an account.
  - Import the .csv file into your radio using the tools provided in the CPS.

# Contact List Operations (2)

Go to: http://amateurradio.digital/#wizard

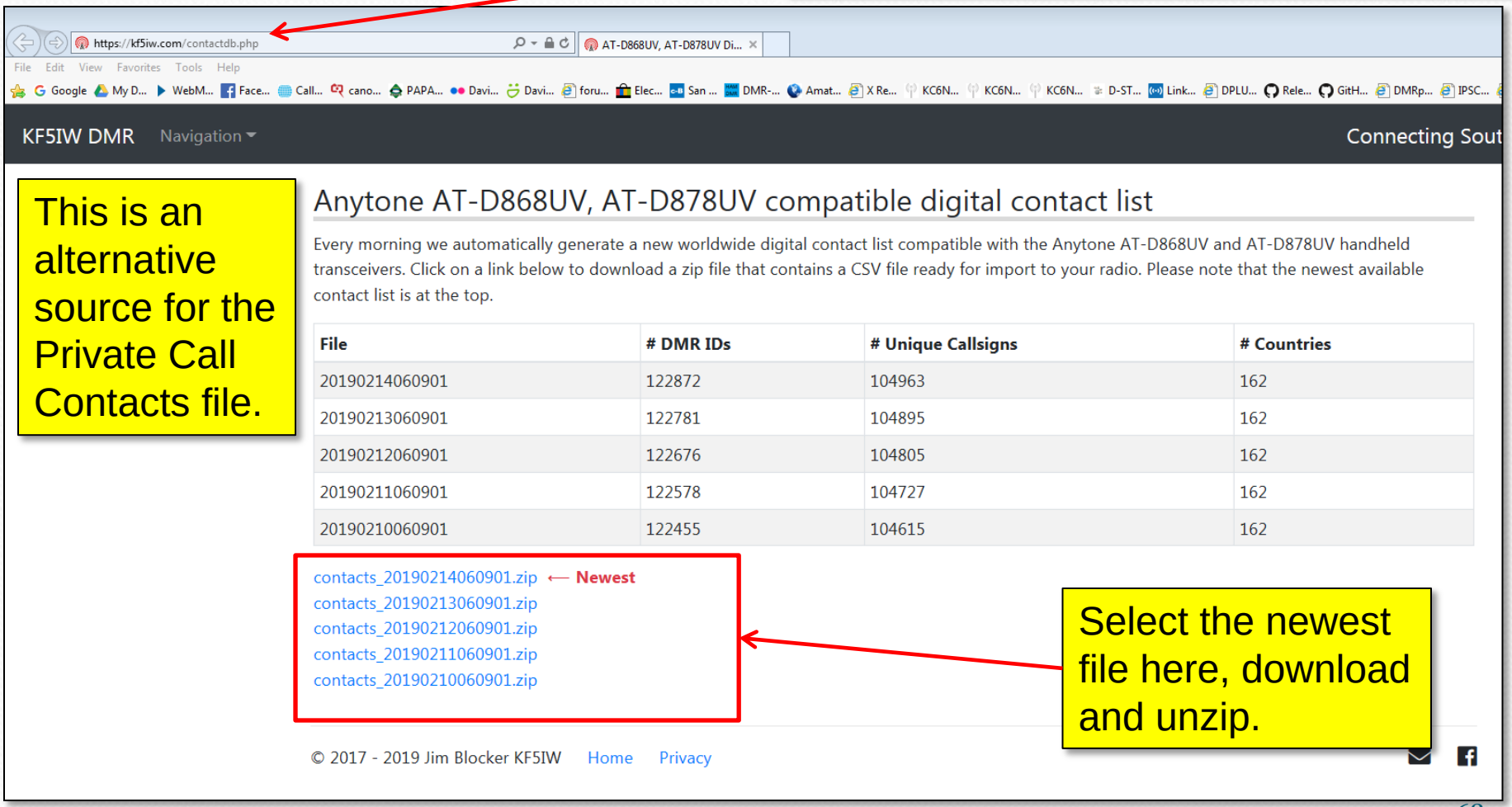
Option 1: Use the "Digital Contacts Wizzard", Choose your radio and follow the step-by-step instructions.




Option 2: Select ready made file if it is provided here.

# Alternate database source

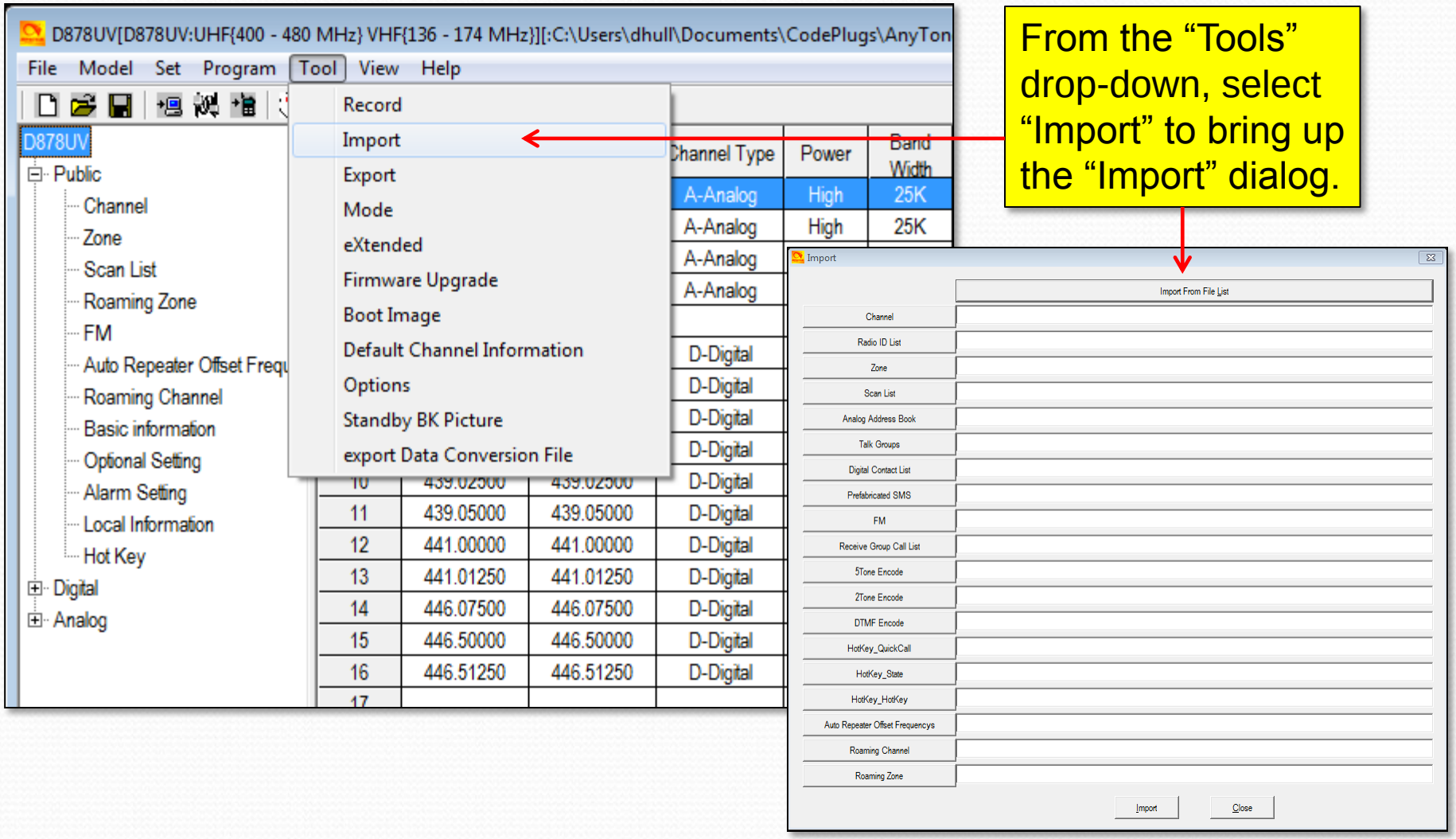
Go to: https://kf5iw.com/contactdb.php




This is an alternative source for the Private Call Contacts file.

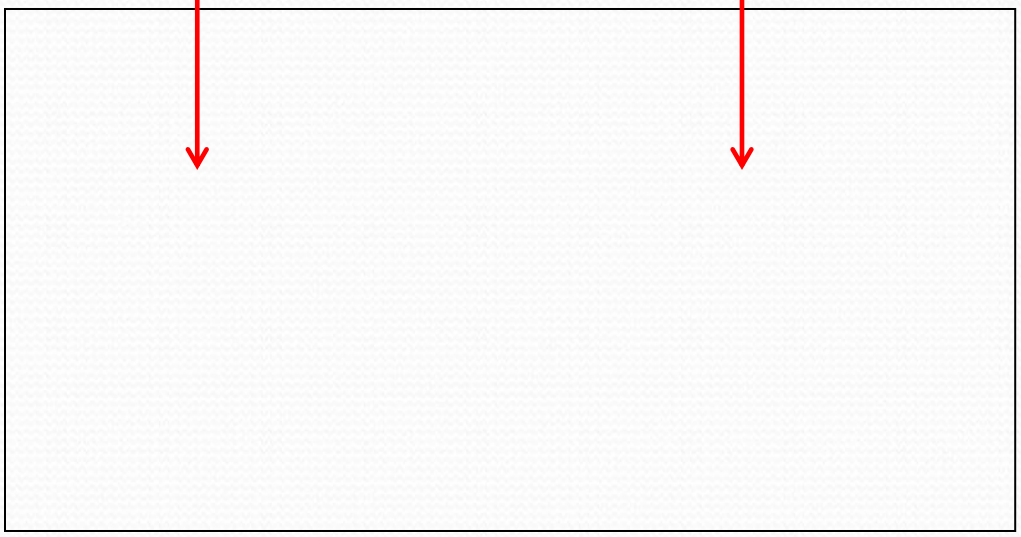
Select the newest file here, download and unzip.

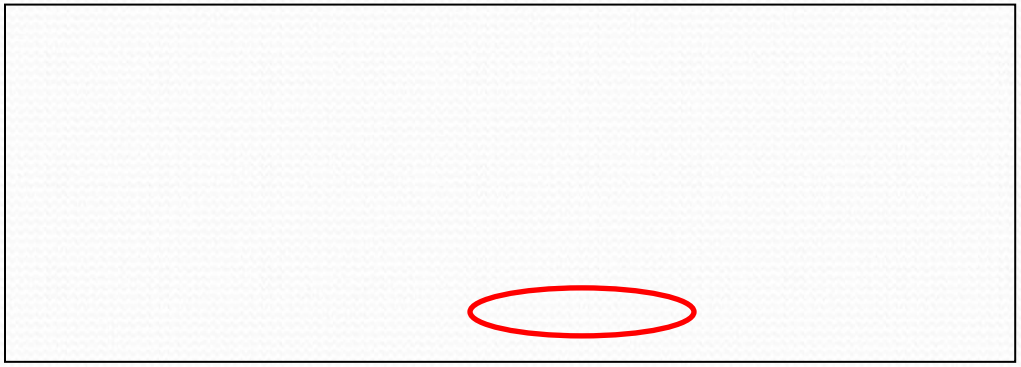
# Contact List Operations (3)



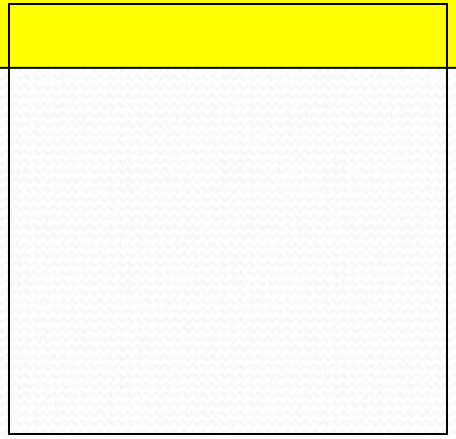
# Contact List Operations (4)

Click “Radio ID List and navigate to the newly created CSV file. It should have a name something like: “custom_contacts_d868uv-d878uv.csv”





Click the “Import” button at the bottom of the dialog box. And wait for the “Import Complete” pop-up. At which point you are done. You can check the contacts section in the cps to make sure that they are there, if you like. Save your code plug.



# AT D868 CodePlug 101

Part IV

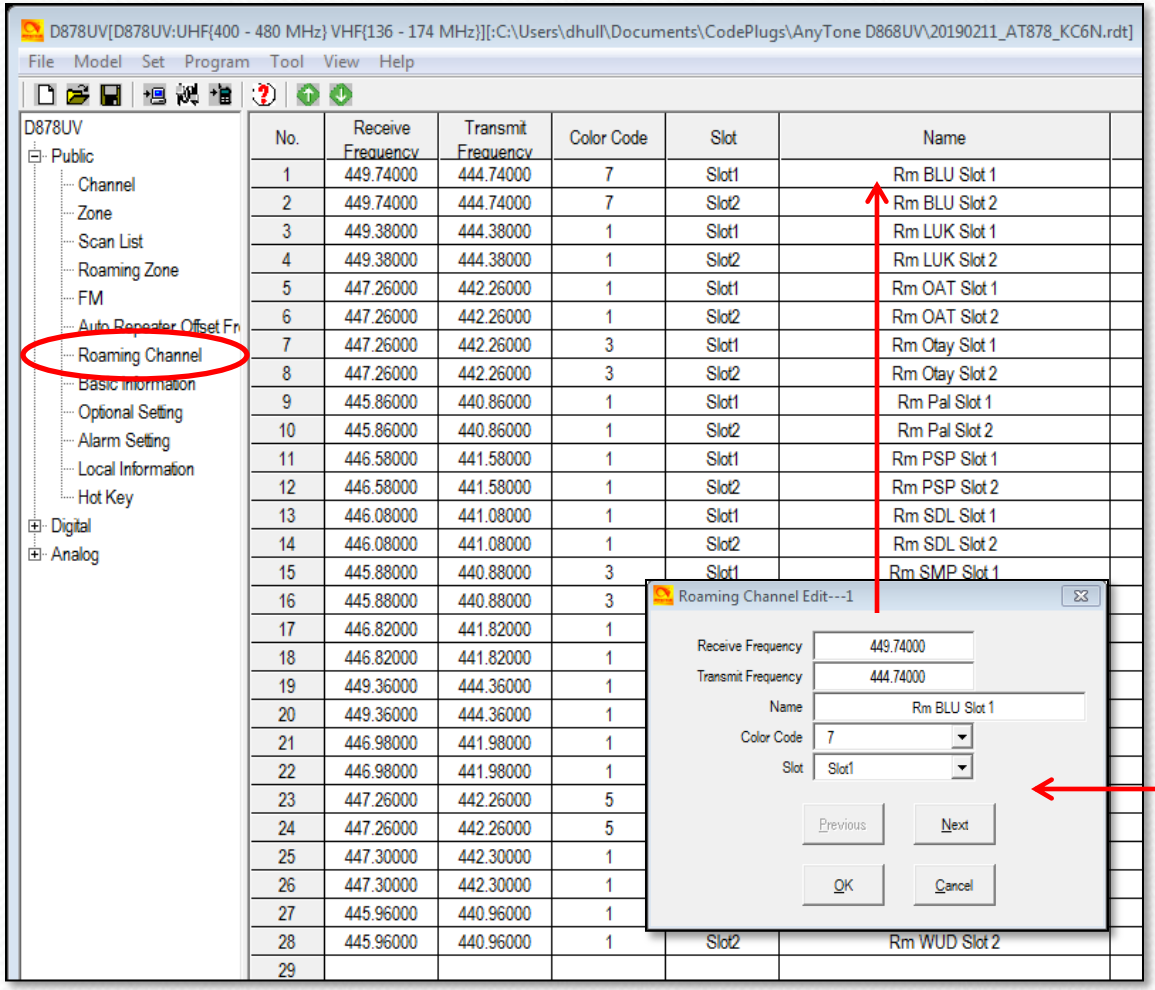
Code Plug management Concepts

(Setting up Roaming)

# Setting up Roaming

- Roaming allows your radio to find a usable repeater as you travel
- To set up Roaming on the AT-UV878:
  - Decide what you want to roam and set up “Roaming Channels”
  - Set up “Roaming Zones”
  - Go to “Options Settings” and select the “Auto Repeater” tab to configure roaming.

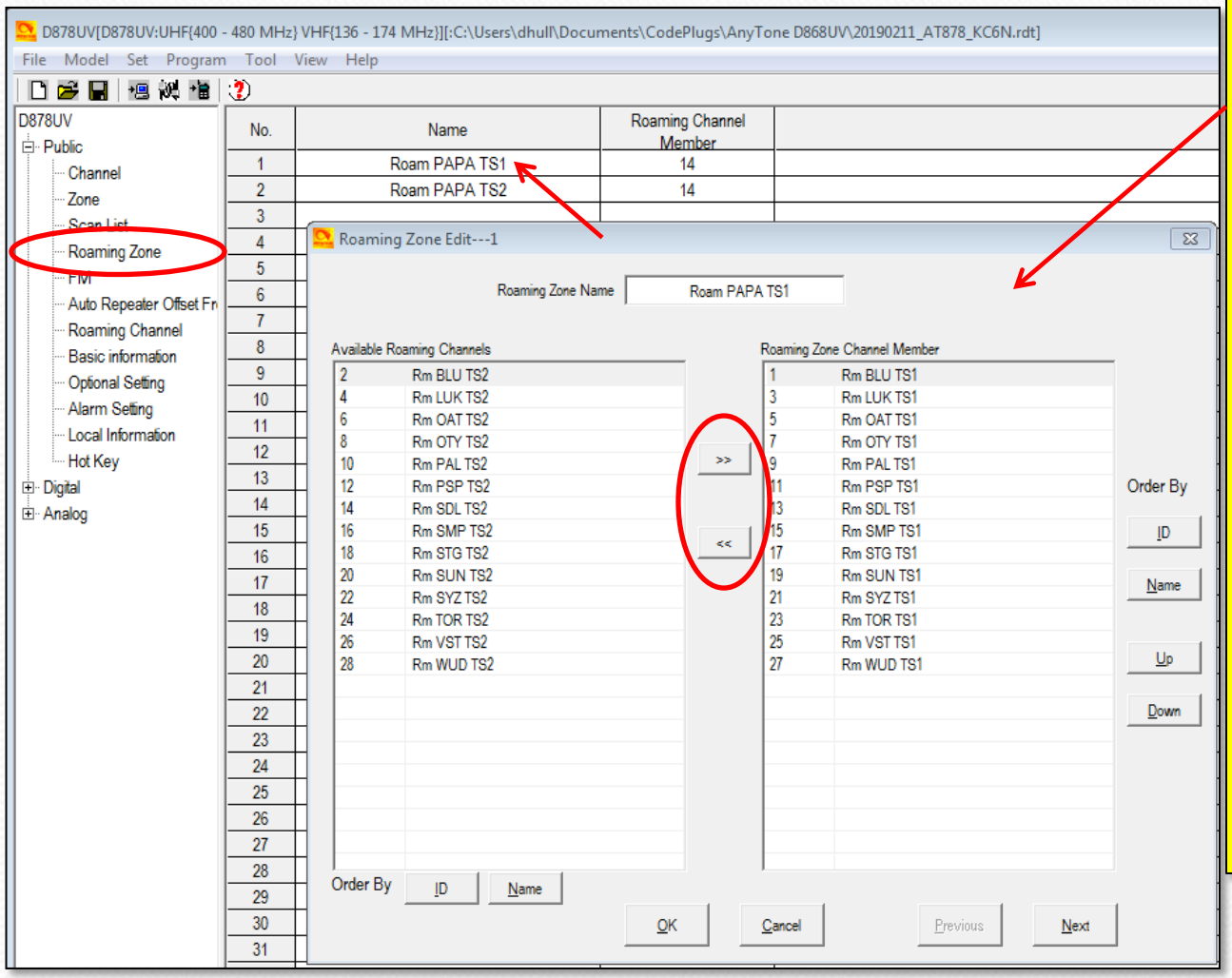
# Set up Roaming Channels




Set up your roaming channels as shown on the left. You will enter the Frequencies, Color Code and Time Slot for a block of repeaters that you want to roam over. Here I have set up the entire PAPA DMR network. Two channels for each repeater one for each time slot.

Double click an entry row to bring up the entry dialog shown. Right click any entry row for the copy, paste, insert, delete drop-down.

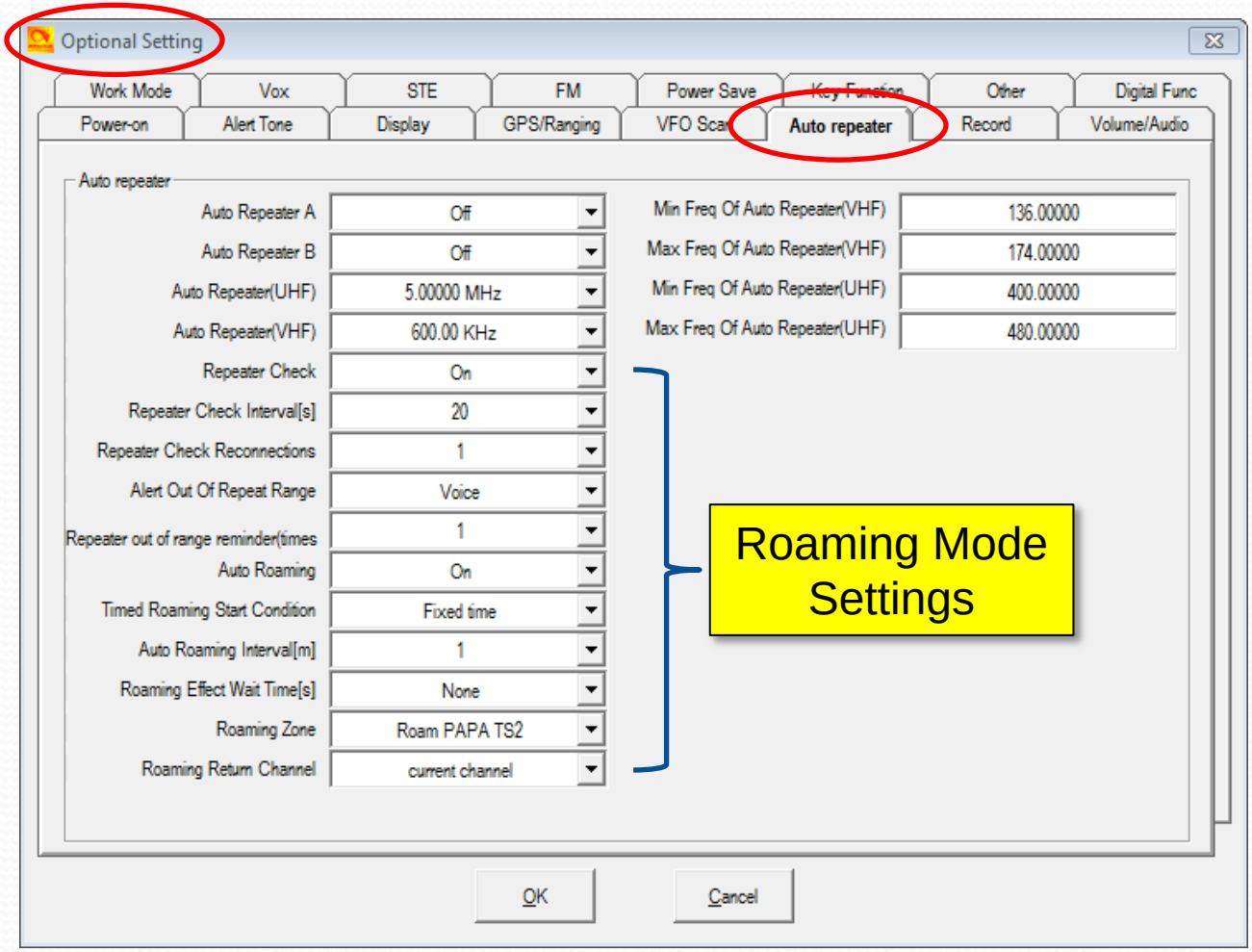
# Set up Roaming Zone(s)




Set up your roaming zones as shown. Double click on a row to launch the entry edit dialog.

Highlight desired roaming channels from the list of desired channels on the left and move them into the right hand channel membership list using the “>>” key. If you make a mistake use the “<<“ key

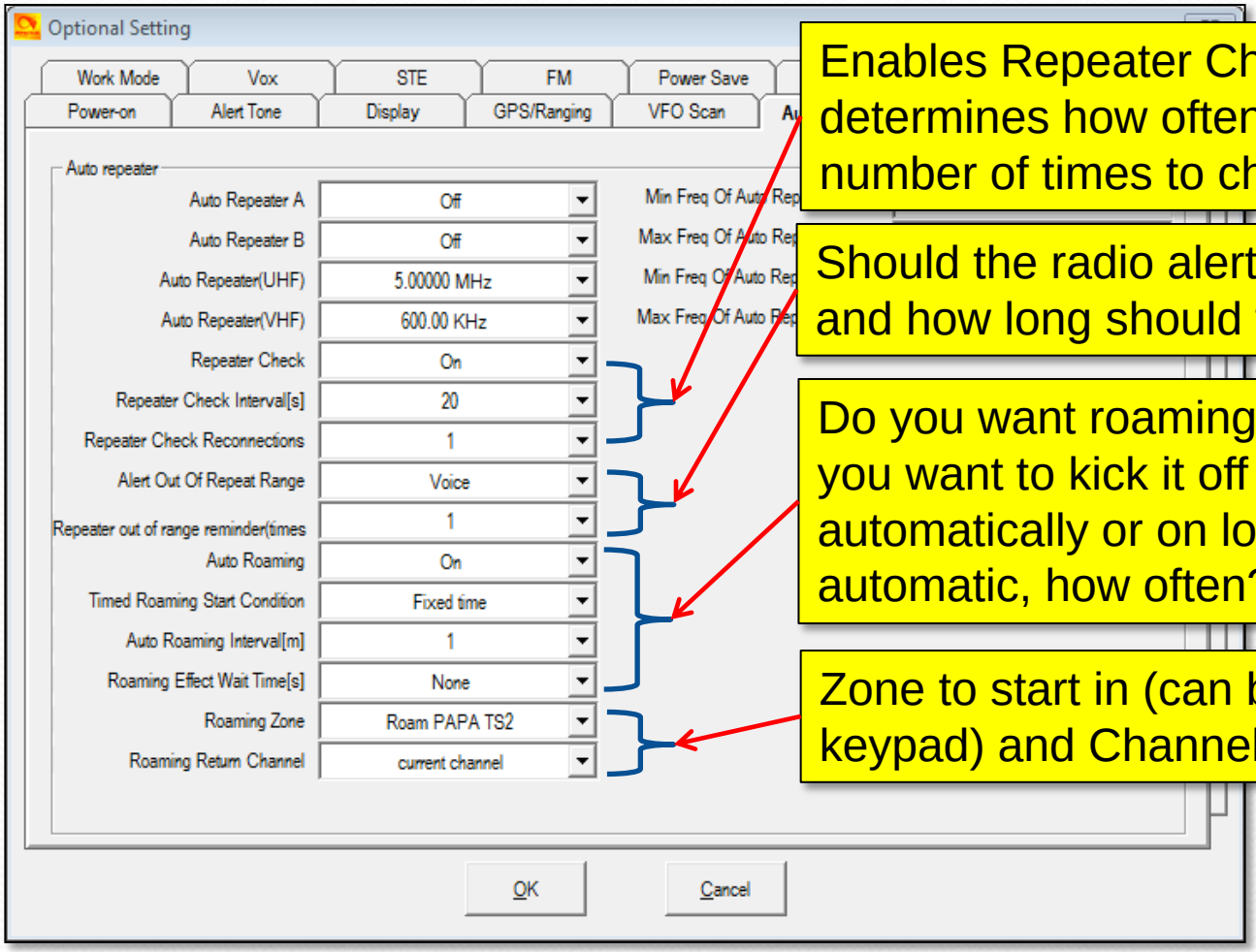
# Configure Roaming (1)




The roaming mode settings are found in “Optional Settings” on the “Auto Repeater” tab.

This page shows my recommended settings. You can control most of these from the radio keypad and adjust them to your taste.

# Configure Roaming (2)




Enables Repeater Check (must be on), determines how often to check and the number of times to check before moving on.

Should the radio alert you when scan starts and how long should the alert be.

Do you want roaming to be continuous or do you want to kick it off manually? Kick off automatically or on loss of connection?. If automatic, how often? Should it wait to start?

Zone to start in (can be changed from keypad) and Channel to return to.

# How Roaming Works

- The radio periodically (based on the “Repeater Check Interval”) “pings” the chosen repeater, assuming “Repeater Check” is “ON”
- If the “ping” fails, or if the “auto Roaming Interval” expires (depending on the roaming start condition setting), the radio will step through “Roam Zone” channels, pinging each one until it gets a response.

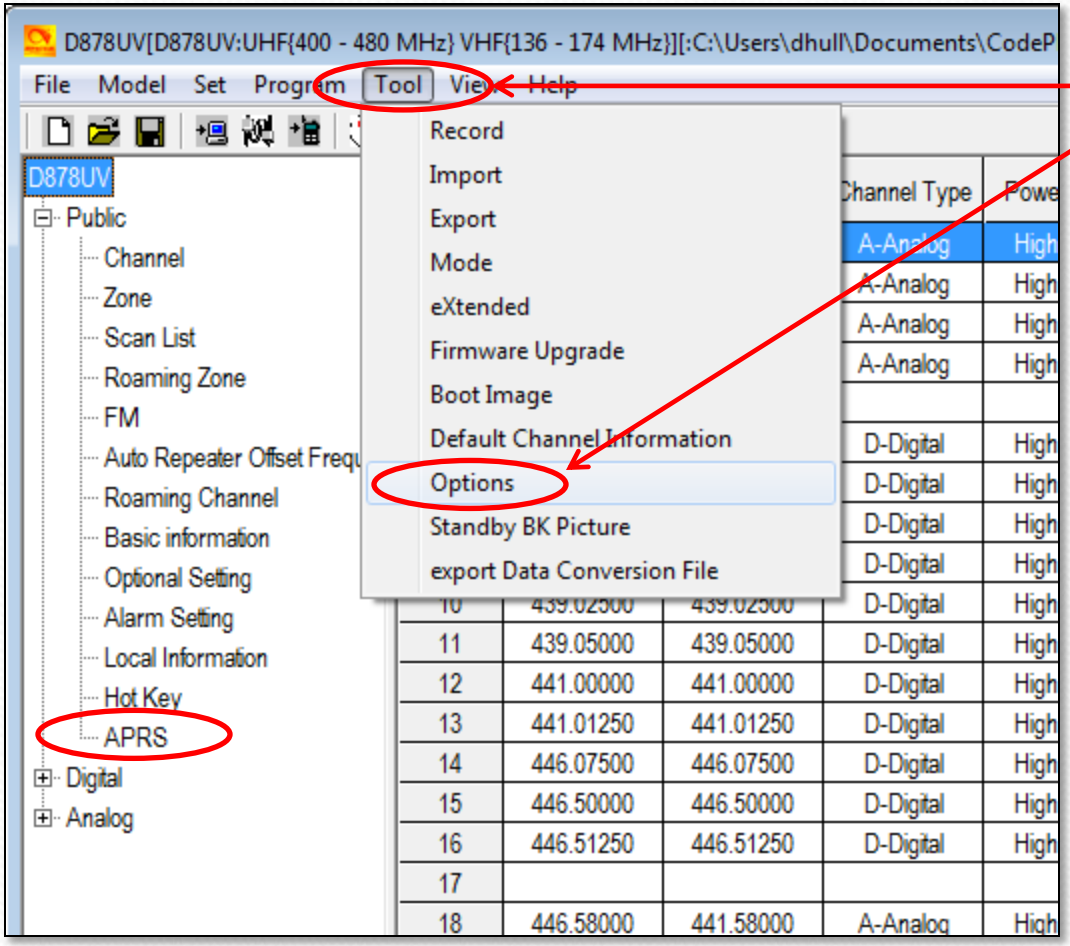
# AT D868 CodePlug 101

Part V

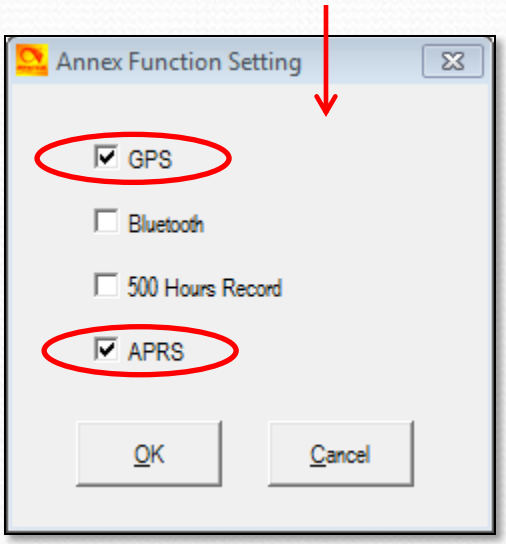
Code Plug management Concepts

(Setting up Digital APRS)

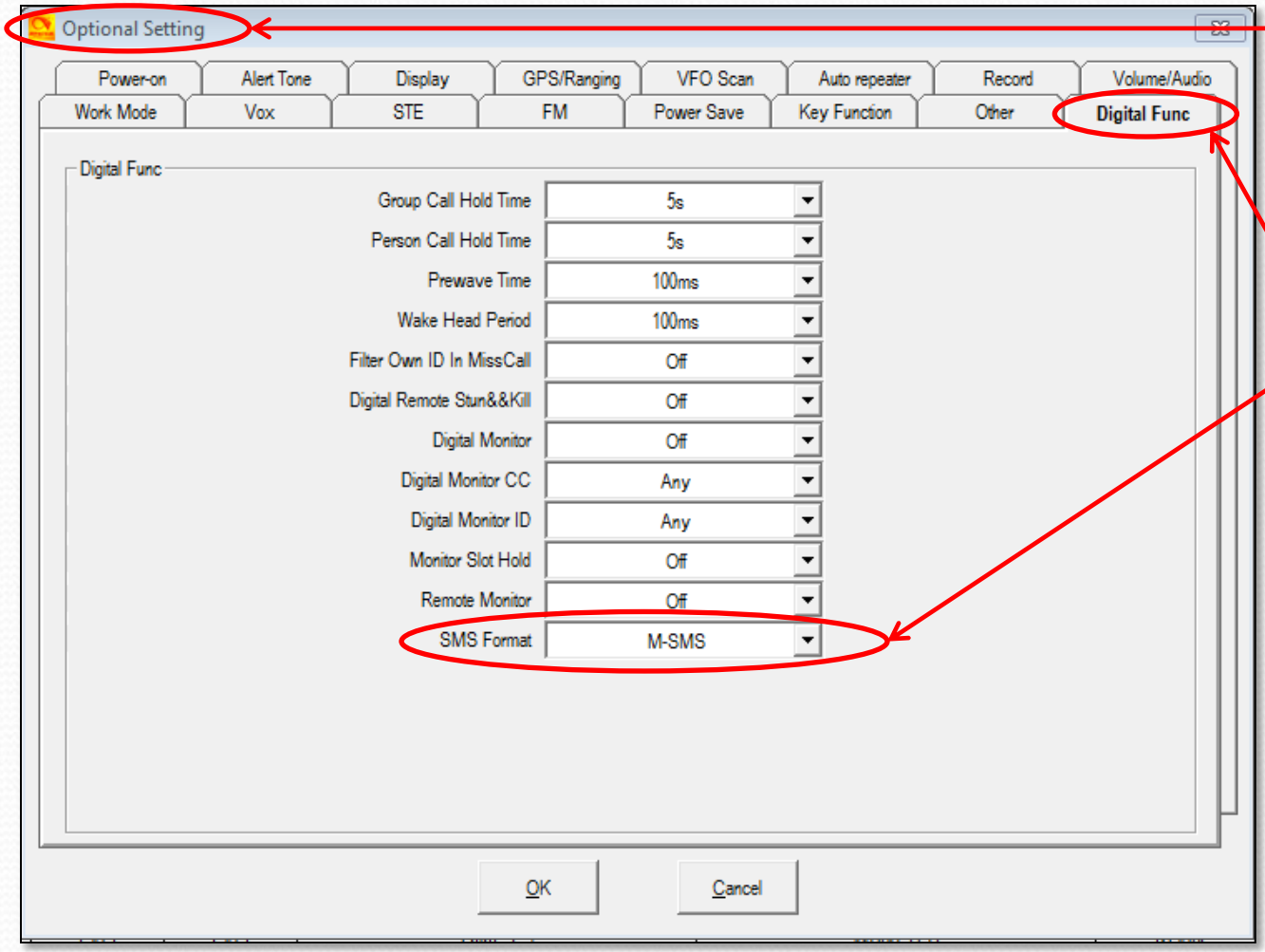
# Enable GPS and APRS




1. From the “Tool” pull-down, Click “Options”
2. In the resulting pop-up, make sure that the GPS and APRS boxes are ticked as shown below.
3. Click “OK”. This will add the APRS option to the option tree

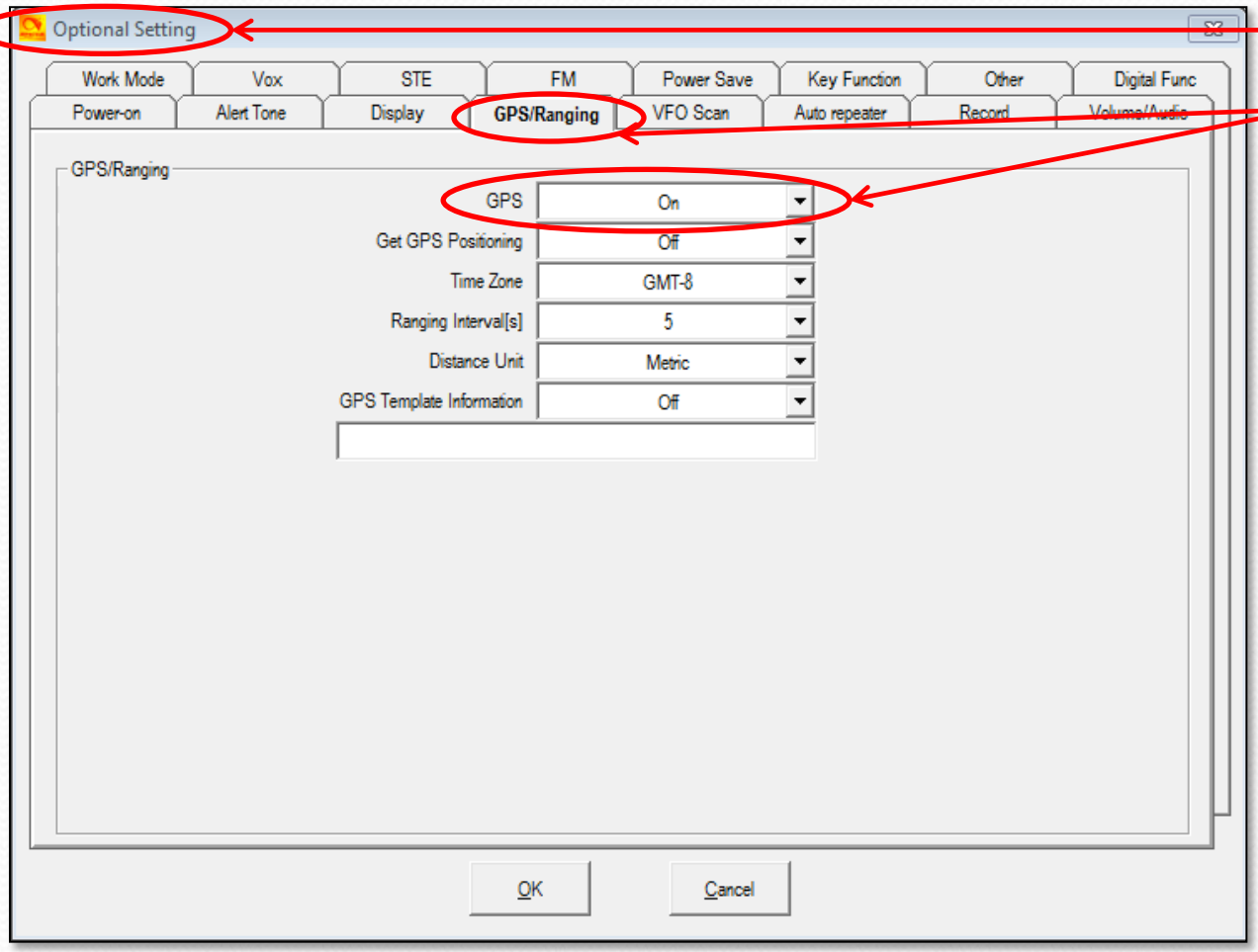


# Enable Motorola SMS



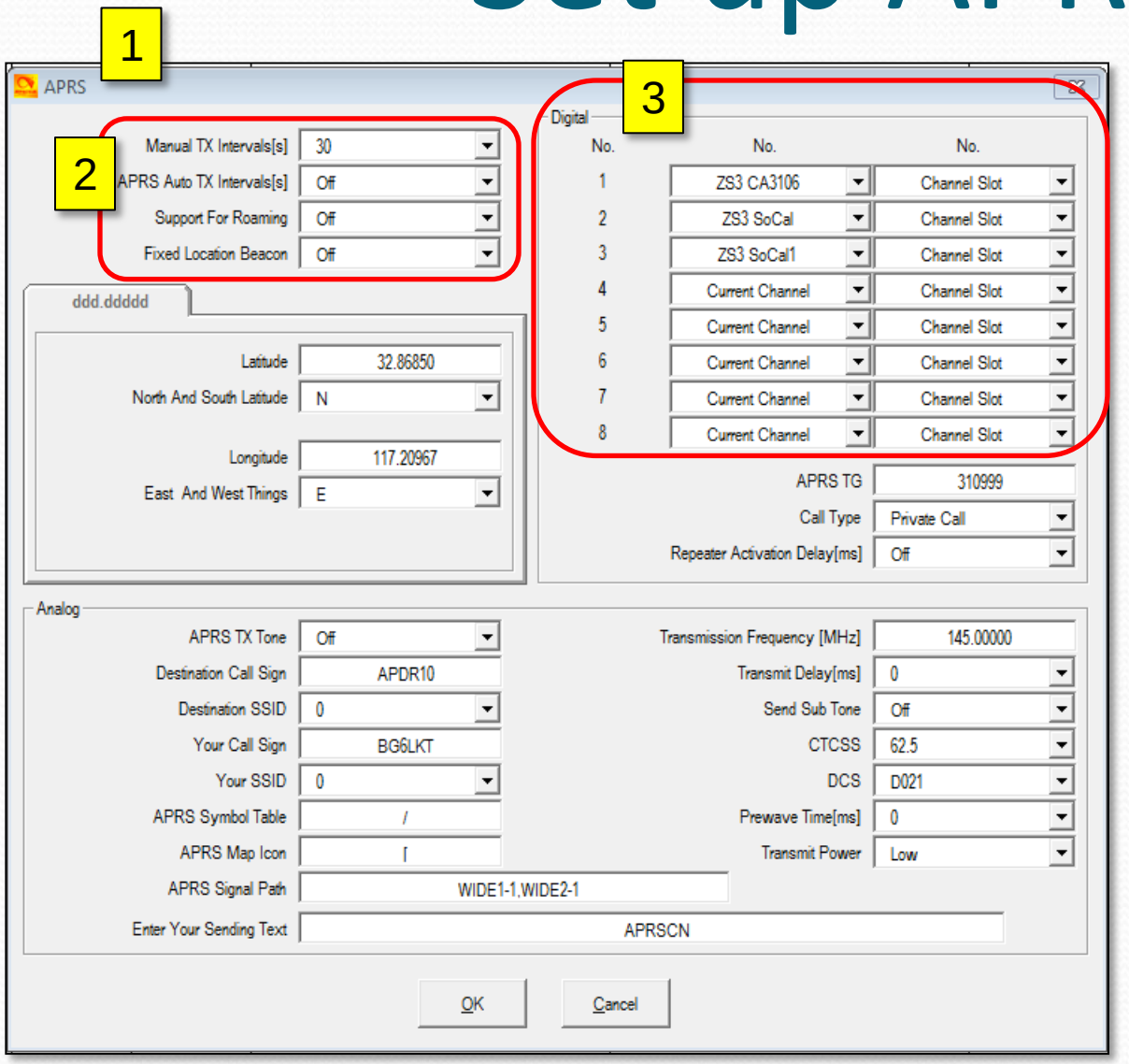

1. Select “Optional Settings” from the tree on the left hand menu tree.
2. Select the “Digital Func” tab.
3. At the bottom of this tab, make sure that SMS Format is set to M-SMS

# Turn on the GPS



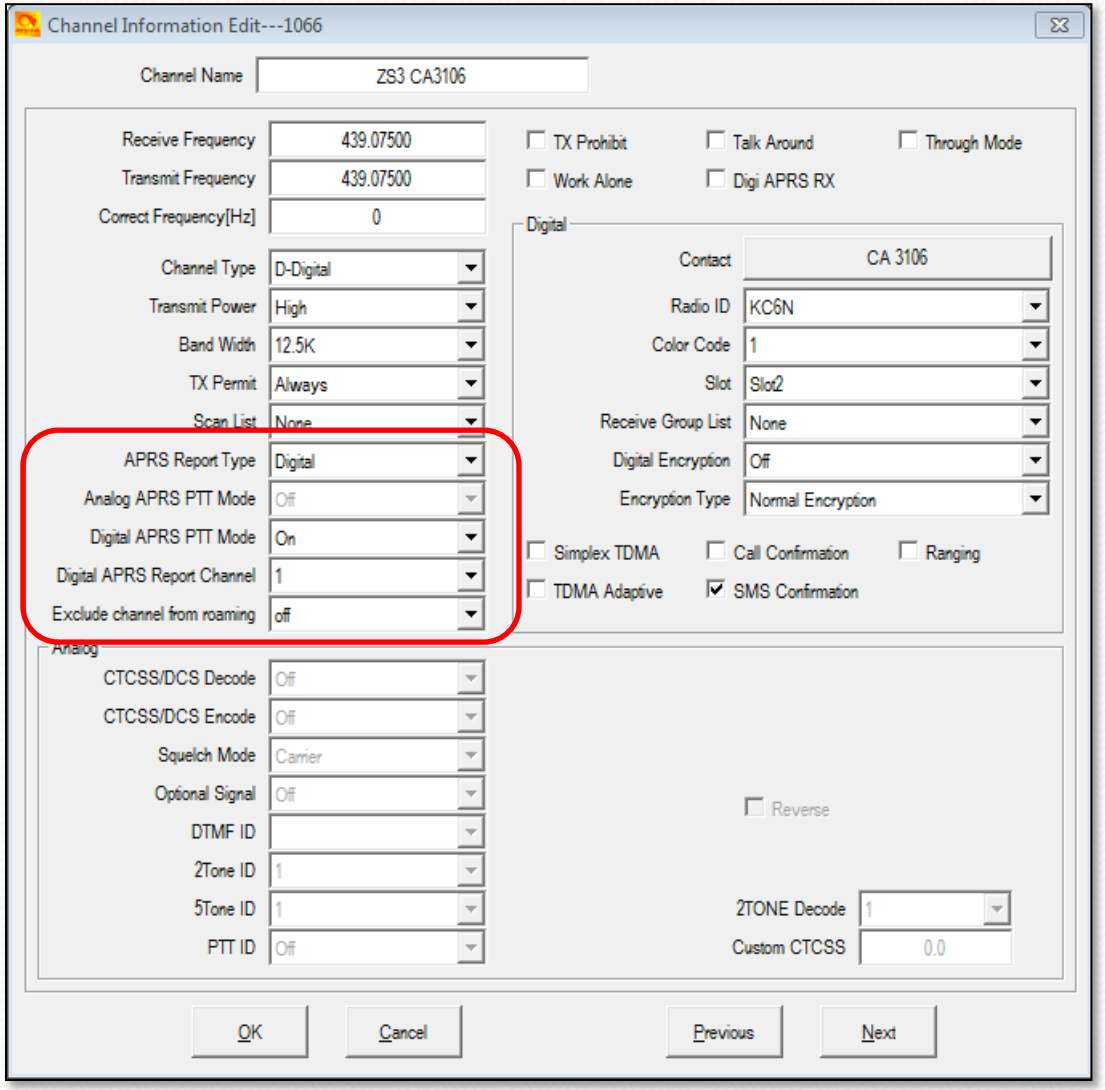

1. While in “Optional Settings”,
2. Select the “GPS Ranging” tab and,
3. Set GPS to “ON”

# Set up APRS




1. Open the APRS configuration dialog shown here from the left hand menu tree.
2. Set “Manual TX Interval” = 30 s, Turn “APRS Auto TX Intervals” to OFF so it doesn’t beacon.
3. Configure at least one channel in the “Digital” section at the top right. You may configure up to 8 of them.
4. Set APRS TG to 310999
5. Set Call Type to “Private Call”

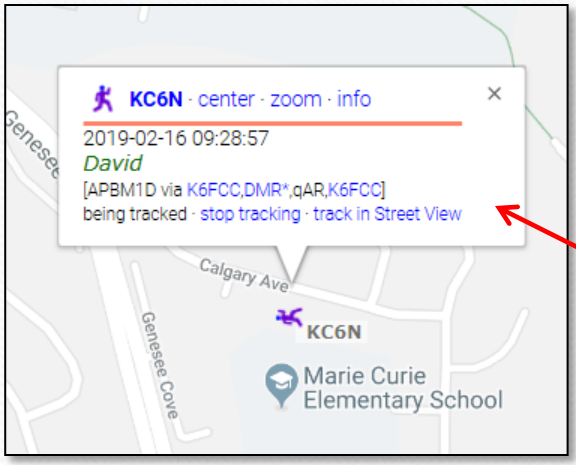
# Configure Report Channel




1. Go to the channel you set for reporting channel 1. In this case it was “ZS3 CA3106”
2. Set the APRS Report Type = “Digital”
3. Set Digital APRS PTT Mode = “ON”
4. Set the Digital APRS Report Channel = 1 to reference the setting in the APRS set-up panel.
5. Do this for each channel you set up in the APRS setup.

# Verify Operation

1. Verify that your GPS is locked (Icon should be Red). If it is blue you will need to wait for it to find GPS lock. You may need to go outside and walk around or wait a bit.
2. Set your radio to one of the channels set up for APRS.
3. Key your radio and look for the “Sending Digital APRS data…” Response.
4. Check your position at https://aprs.fi



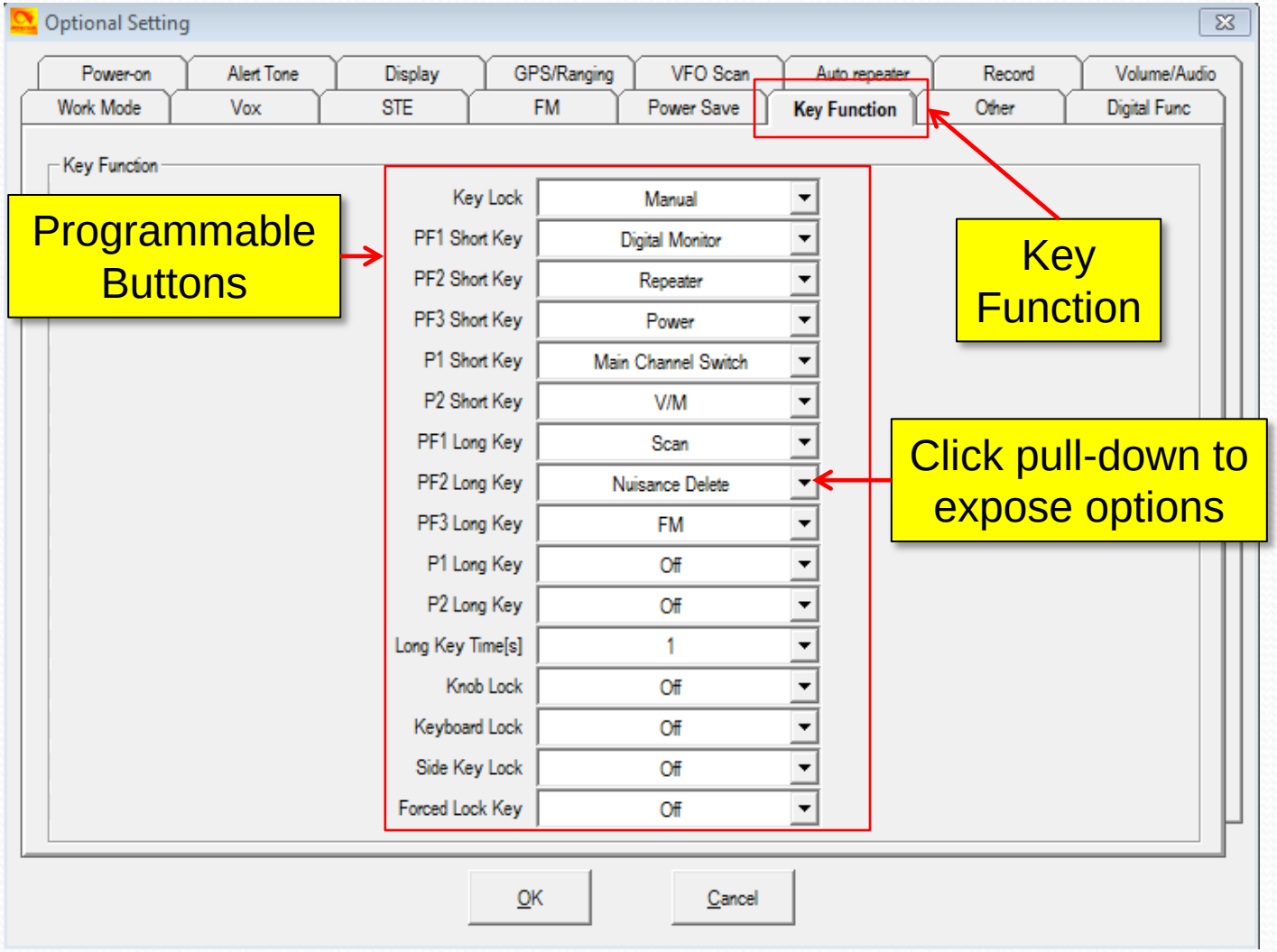
# AT D868 CodePlug 101

Part VI

Code Plug management Concepts

(Bells and Whistles)

# Programmable Buttons

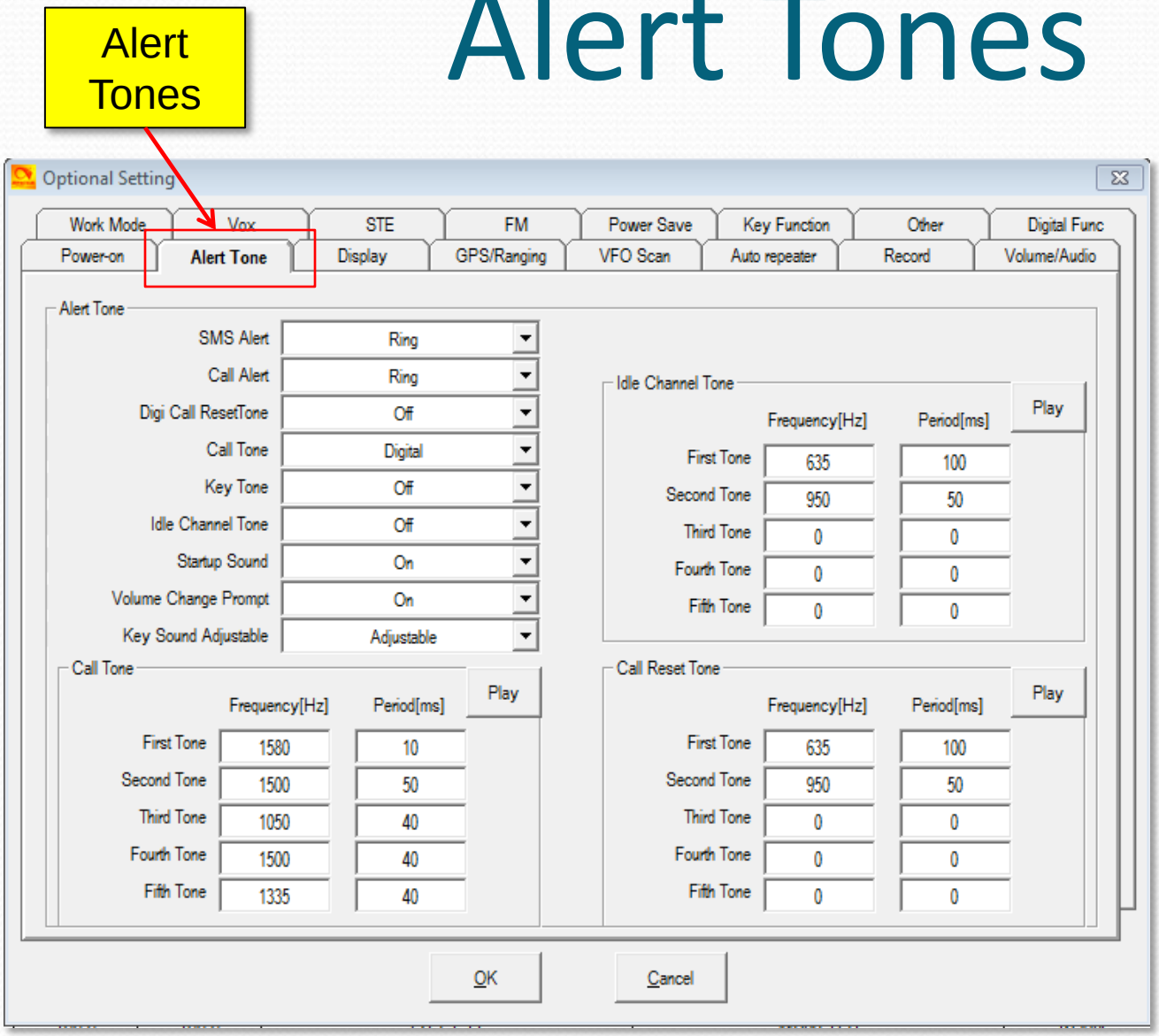



Select the “Key Function” tab to set the function of the various buttons on the radio.

This is my setup, but you can do whatever makes sense to you.

Consult the manual for specific button locations.

# Alert Tones

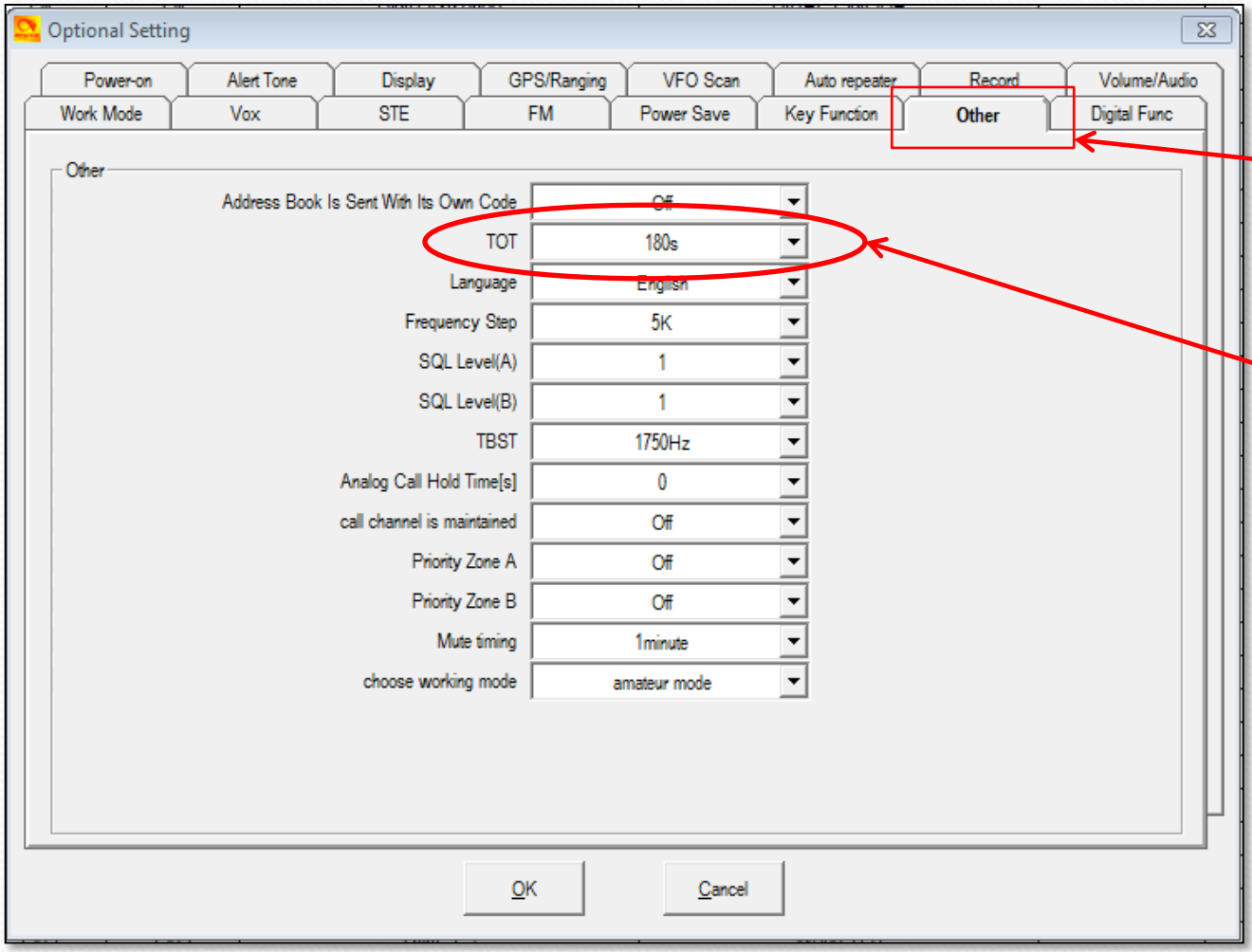



This page allows one to program a different set of alert tones which affect the sounds that the radio makes as it is used.

The setup here makes the AT UV-878 sound like a Motorola XPR7550 (which is nice since it still doesn't "cost" like one).

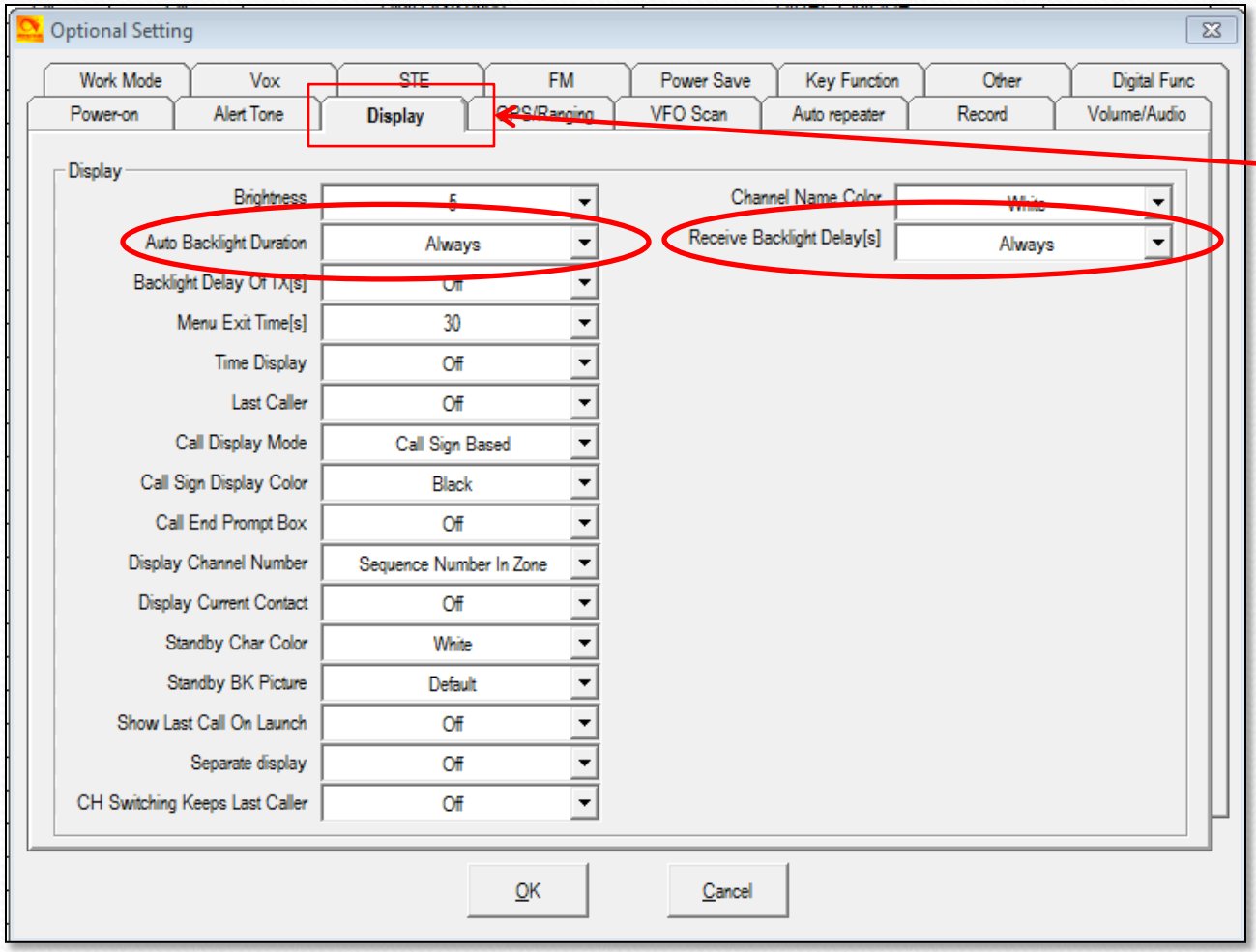
Thanks to Brian, KC2GNV for working this out.

# “Blab-Off” Timer



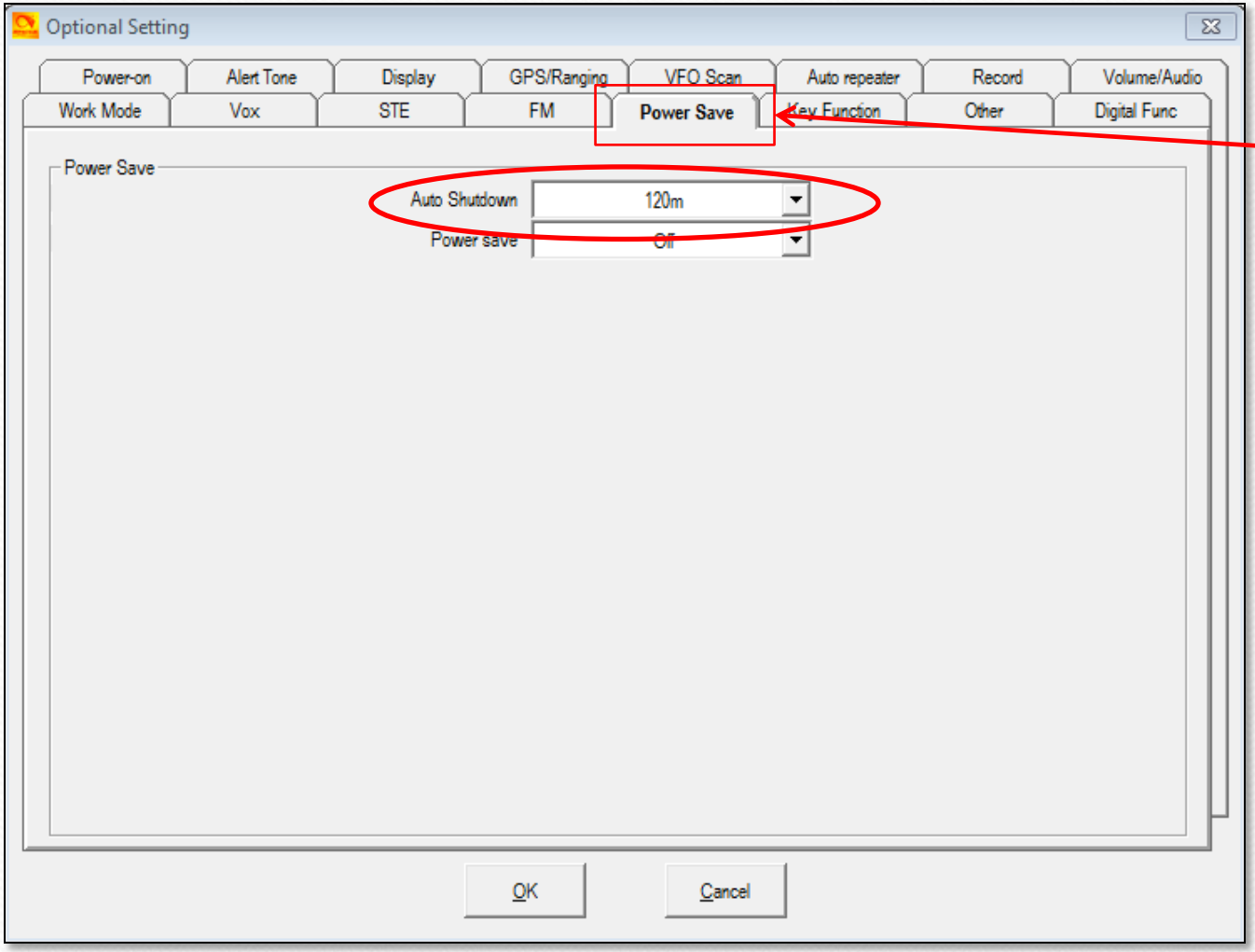

The “Other” tab provides a number of radio functions that you may want to adjust to suit your taste. One of which is the Time Out timer which will cut you off after a predetermined talk time.

# Display Options




The “Display” tab provides a number of options allowing you to customize how the radio display operates. I have the backlight delays set to always. There are a lot of things you can twiddle here to customize your display.

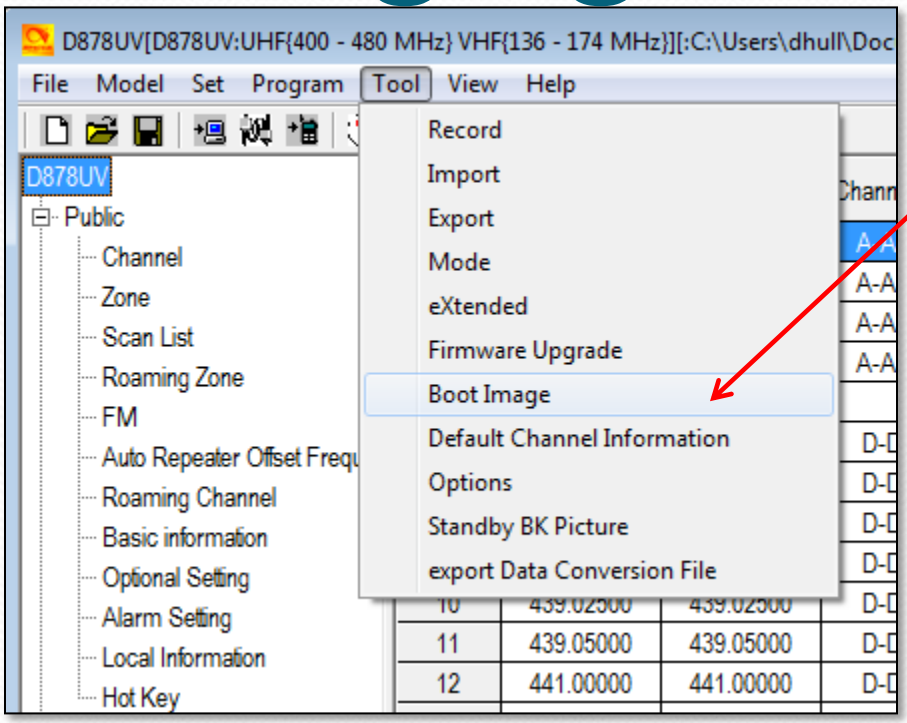
# Power Save



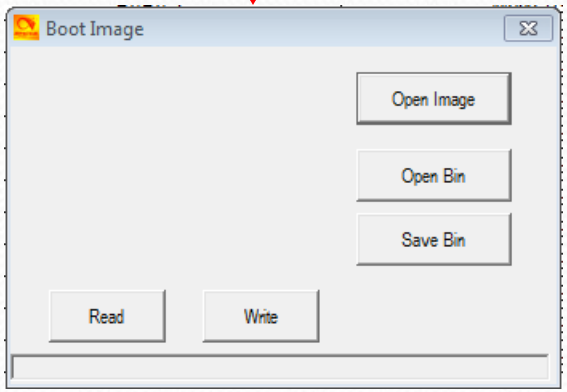

The “Power Save” tab provides an option set your to turn itself off automatically after a predetermined period of inactivity. This is a handy feature not generally provided on “commercial” radios.

You can see that I have this one set to shut off after two hours of inactivity.

# Changing Screen Image (1)

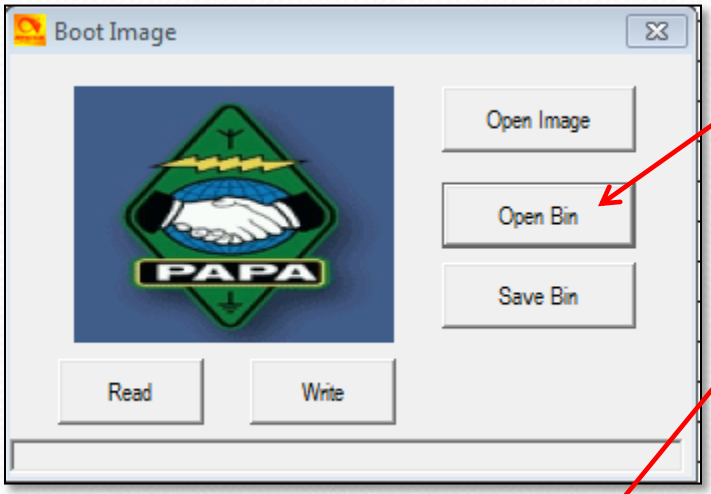


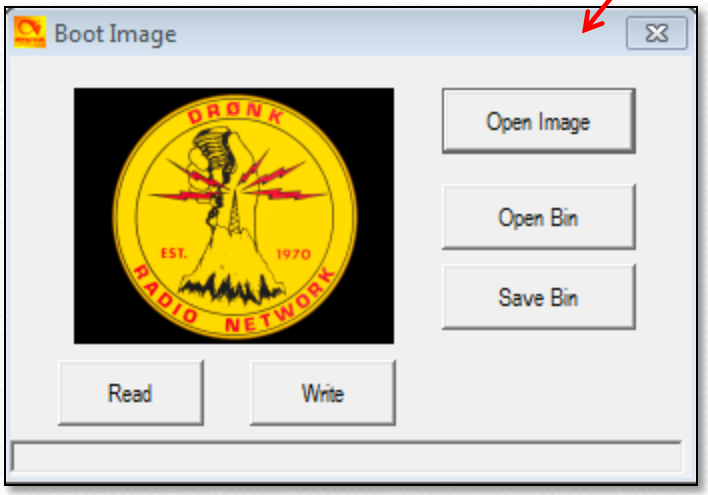

1. Select “Tool”
2. Click “Boot Image”
3. The “pop-up” below will appear




Select “Open Image” to bring up a file browser window. Point this to a JPEG file of an image you want to use as your boot image. Click “Write” to write this image to the radio. You can also use a binary file, in which case you would click “Open Bin” then select “Write” to write this image to the radio. This image will come up whenever you turn your radio on. You can save a standby image as well.

# Changing Screen Image (2)

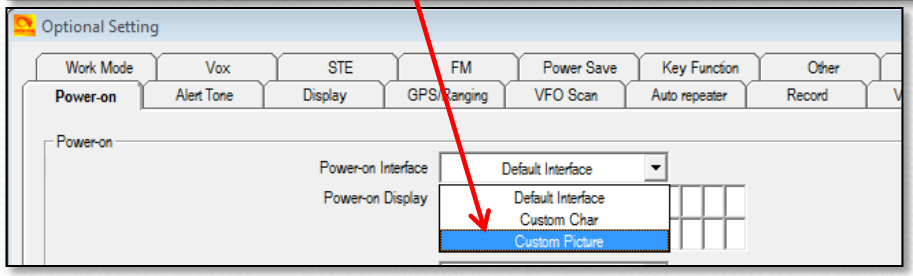


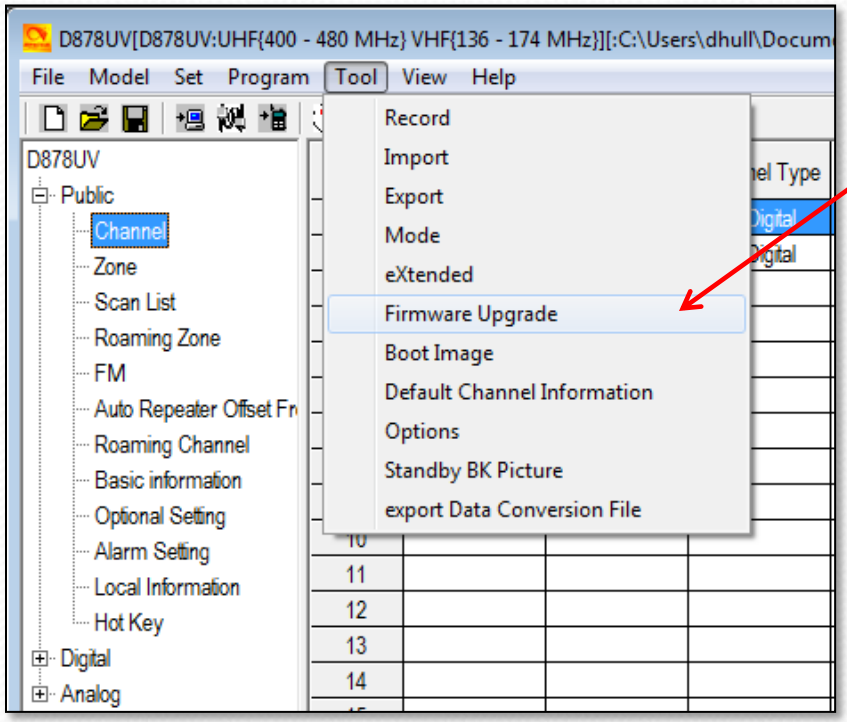

Here is an example of a .bin image available on the PAPA web site.

Here is an example of a .jpg image shot with a Canon 5DIV and worked in Lightroom. If you take this route, crop it to 8x10 landscape to fit the 128x160 pxl screen. There are no limitations as to color.

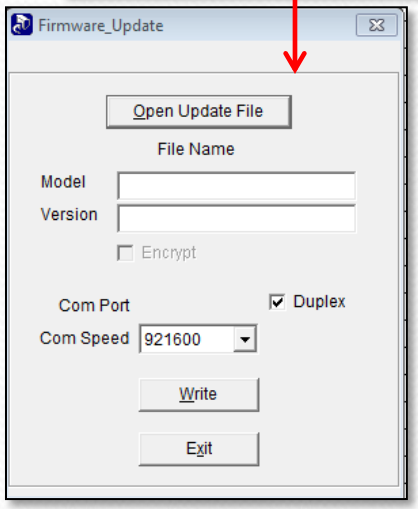
There is one more step, after this which is that you will need to go into “Optional Setting” and on the “Power-on” tab, in the “Power-on Interface” pull down, select “Custom Picture”



# Upgrading Firmware




1. Select “Tool”
2. Click “Firmware Upgrade”
3. The “pop-up” below will appear




Note: The radio must be in FW Flash mode for this to work. Hold down the top button and PTT while turning the radio on.

Select “Open Update File” to bring up a file browser window. Point this to the desired FW upgrade file. Something like D878UV_V1.10_2018-12-21.spi. Select the file and click “Open”. The file name, Model and Version will appear in the pop-up window. Make sure these are correct, then click “Write”. Once the write process completes, your radio will re-boot. Verify the new FW version in the radio menu.

# That’s it !

Thanks and back to Net Control.

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