AT-D878UVII PLUS

Programming Guide

Index:

AT-D878UVII PLUS CodePlug Programming Guide

1.0 INTRODUCTION

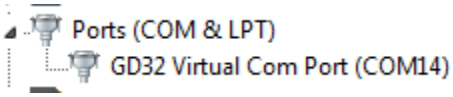
The AnyTone D878UVII PLUS radio are both VHF and UHF radios with Digital DMR (Tier I and II) and Analog capabilities. It offers a total of 4,000 channels (Analog and Digital), 10,000 Digital Talk Groups, and up to 500,000 contacts, as well as multiple DMR ID numbers (Radio ID's) for a single radio. With the enhanced capabilities of the radios, this Programming Guide will help users to understand all aspects of how to program and set up the radio for maximum usability.

Please note that the AT-D878UVII PLUS radio may have a locked key-board upon arrival. The FCC requires per 47CFR90.203 that an unauthorized user shall not be able to enter any frequencies and transmit on a frequency not authorized. Frequencies should only be programmed by service or maintenance personnel. This Guide is primarily provided for such service or maintenance personnel. For such person to open up the keyboard, press the "Menu" key (green bar) and the "*" (star) key together.

The software which programs the radio frequencies and all other user defined aspects of the operation is called a "codeplug". Creating a codeplug is a 'bottom up' process where the lowest (common) elements must be created first, then built upon until a fully functional codeplug, that can be loaded into a radio, has been created. The AT-D878UVII PLUS radio has unique software for both creating the codeplug and writing it into the radio for use. When you start creating a new codeplug, many lists and groups are populated with single entries, which may be used as placeholders for initial creation of lists. The programming software (also called CPS) allows "importing" and "exporting" most of the programming parameters for the creation of large amount of input data to the radio – for example large lists of contact names.

2.0 GETTING STARTED

The programming cable for the AT-D878UVII PLUS radio is typically provided by AnyTone. There are several different types of programming cables available, and the one to use has a very small USB connector. Others use an electronic circuit inside the USB connector, and will not work. Make sure the computer has the correct driver for the cable – see the Device Manager on your PC.



If you do not see this USB port driver, you should install the USB driver from the file USB ComPortDriver v2.0.2.4944 folder **as an Administrator** to your computer. Select the x64 or x86 version depending on the operating system of the computer you use.

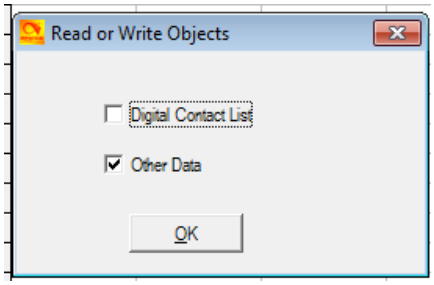
Open the Device Manager, and then double click on the "Ports" to display the driver (GD32 Virtual Com Port) and right click on the driver to open PROPERTIES. This will

display the details of the driver, and under **Port Settings** update the “Bits per second” to 128,000 for faster read and write to the radio.

Note: Before you start any programming work read the current file from the radio into your PC so you have a baseline and something to start with as it can be Band dependent (the radio uses different Bands depending in what Country it is used).

The **Computer Programming Software (CPS)** for the AT-D878UVII PLUS radio may be updated from time to time to correspond to the firmware version used for the radio, and the AnyTone website (plus many retailer websites) will offer those updates. Do not mix versions of the CPS with non-matching firmware versions. The CPS rev. no. and firmware rev. no, has to match. The latest is now V 4.0 as it does not contain satellite reception.

Install the CPS Programming software on your computer, and when you read (or write) software to or from the radio, it asks the question if you want to read only the “other data” – which is all programming parameters of the radio, and/or the “Digital Contact List”. The DMR contact list could contain over 200,000 names, and as a result consume up to 5 minutes to read or write to the radio.



If you are living in an area where you may be the first to have to generate the codeplug with all your local repeater frequencies, there may be a codeplug for the AnyTone D878UVII PLUS radio from another geographical area which has most of the basic data as a starting point. The Minnesota DMR websites may be a good place to start looking for the codeplug which has all the DMR ID’s already in the codeplug. That would save you a lot of time to use this codeplug as a start, and then update your local frequencies.

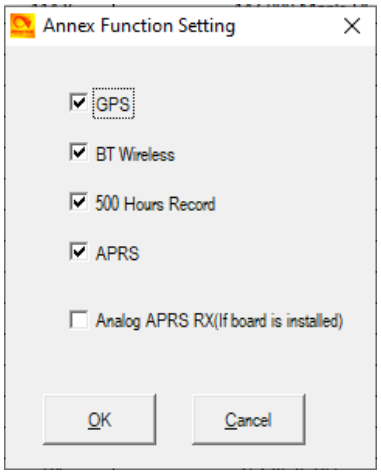
One of the first recommended operations is as described below:
1) Use the AT-D878UVII PLUS CPS to read the radio, and check the Model (Band) information to understand which frequency mode the radio is.
2) Use the AT-D878UVII PLUS CPS to open an existing codeplug .rdt file from a D878UV or D578UV codeplug. Check the Mode information to understand which frequency band the codeplug is generated for.
3) If the codeplug has a matched frequency band with the radio’s frequency band, then it will work. The user just has to examine the Optional Settings, as they are different, before loading the codeplug into AT-D878UVII PLUS.

4) If the codeplug has a mismatched frequency Band with the radio's frequency Band, the user needs to change either the frequency Band in the radio or the frequency band of the codeplug.

Option A: to change the radio's frequency band to be the same as the codeplug's band, it can be done by a special program released to dealers only (you must request their help if you want any changes to the band other than for amateur use). This program will open a different frequency band for the radio.
Read the radio first with the special program described above, select the new frequency band and write it into radio so it will change the band to something else than the amateur band. Then you can go back to step 1 to check the radio's frequency band, make sure it is the same as the codeplug's frequency band.
Option B: create a new codeplug using the correct frequency band.
Use the AT-D878UVII PLUS CPS to open a codeplug, then use "export all" to export the files.
In the AT-D878UVII PLUS CPS, "Set Initialization" (from the top menu), and then in "Model Information" (top menu), select a frequency band which matches that with the radio's frequency band – no password required. Then use "import all" to import the files.

3.0 TOOL – OPTIONS

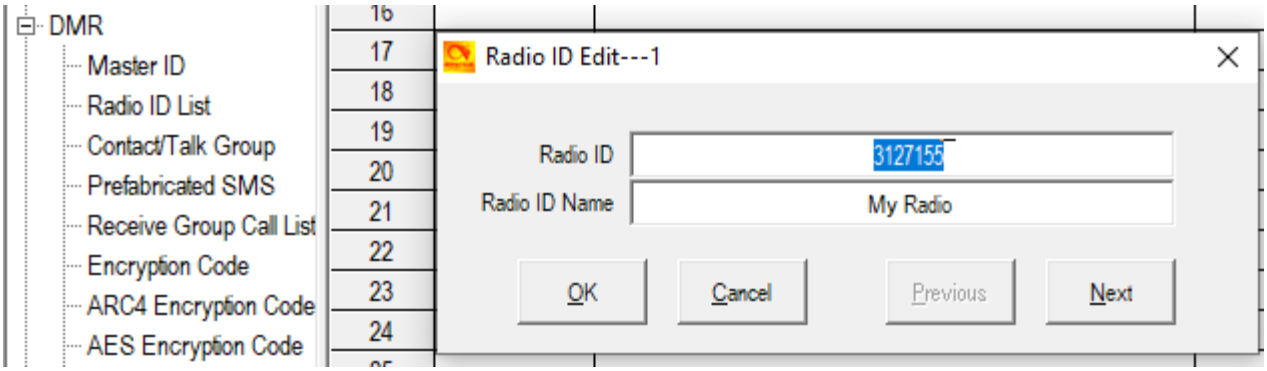
In the CPS under the TOOL menu (on the top) is a set-up called **Options** and for the D878UVII PLUS radio most of the options should be checked like below:



This will allow the CPS to display those options and allow you to program them. If they are not highlighted the Options will not be available in the CPS.

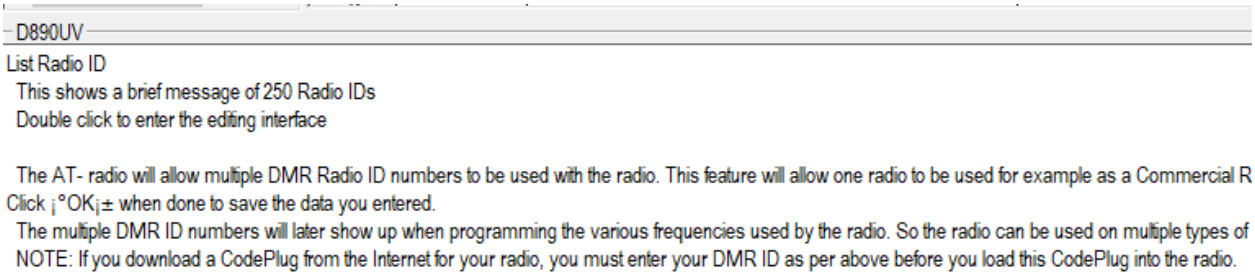
4.0 FIRST THING FIRST – RADIO ID LIST

If you copy a codeplug or build your own the first thing to do is to set your DMR number in the radio. To do this you must expand the DIGITAL list on the very left side of your CPS.

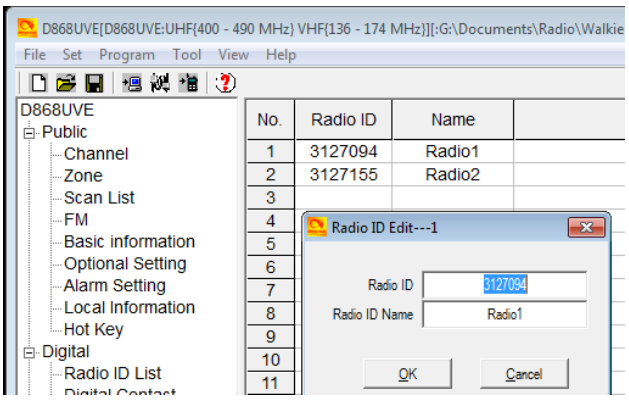


You will there see “Radio ID List” which you should open. Double click on the first line and you get a second window like seen above. Fill in your DMR number and click on OK. The Manual goes into further details as you can have several DMR numbers in the radio.

Please note that each page that requires programming have a text field at the bottom of the page. This field can be made taller if so required to read all the text by moving the line separating the text and the upper window. An example of set-up for the radio DMR list is shown below:



The AT-D878UVII PLUS radio will allow multiple DMR Radio ID numbers to be used with the radio. This feature will allow one radio to be used for example as a Commercial Radio with its own DMR ID, and at the same time also be used as an Amateur radio with another DMR ID. Double click on a line and enter the data in the separate window. Click “OK” when done to save the data you entered.



The multiple DMR ID numbers will later show up when programming the various frequencies used by the radio. So the radio can be used on multiple types of networks and be defined as appropriate for each network – Government, Commercial, and/or Amateur.

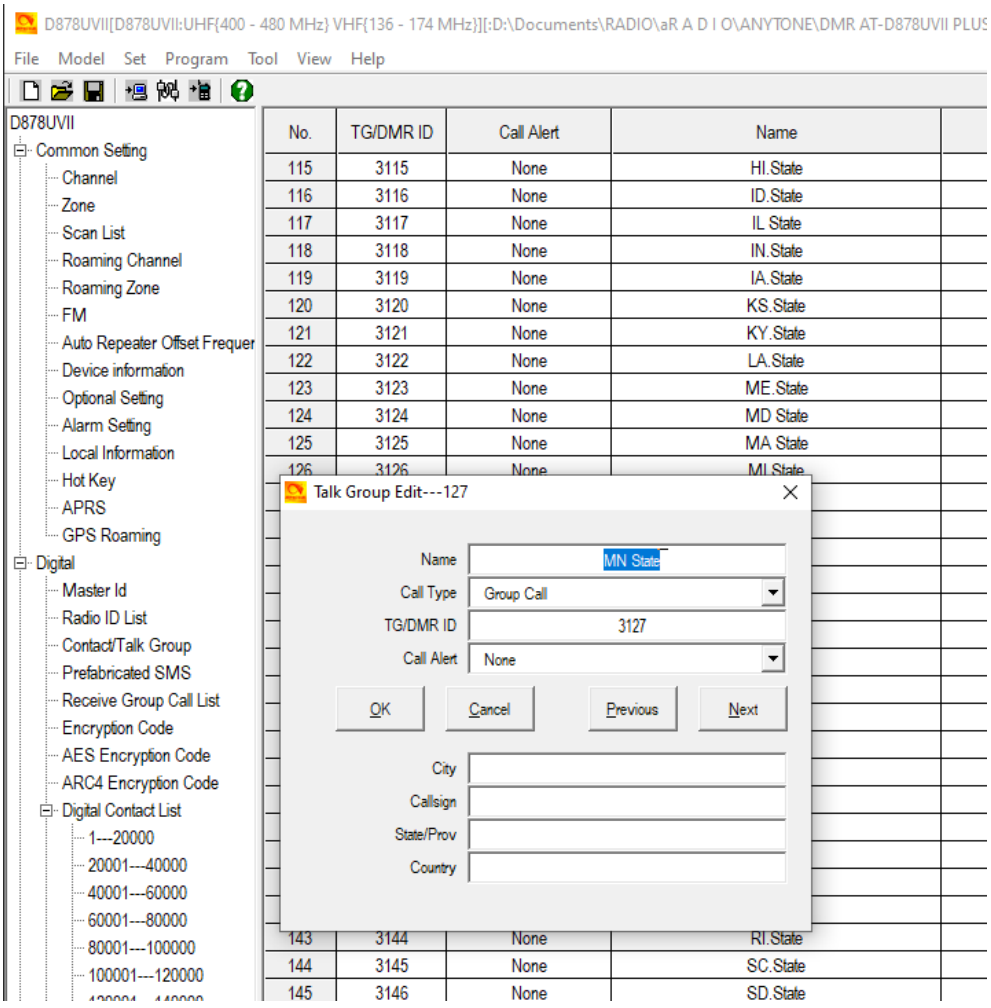
NOTE: If you download a CodePlug from the Internet for your radio, you must enter your DMR ID as per above before you load this CodePlug into the radio.

5.0 CONTACT/TALK GROUP (TG)

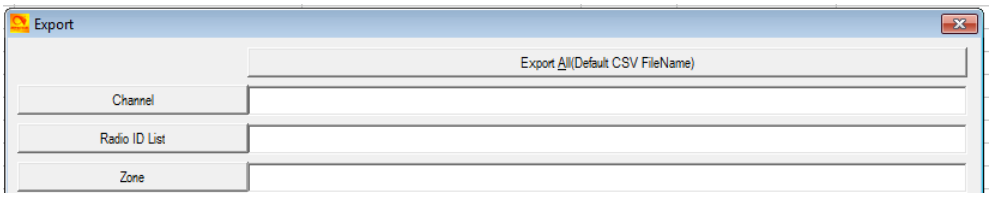
The second thing is to fill the Contact Talk Group (TG) list you also find under the expanded DMR area to the left of the CPS Program. The AT-D878II PLUS program looks like an excel spreadsheet once opened, and the left side defines the many aspects of programming. Open the **CONTACT/TALK GROUPS** tab on the left side and double click on the first line (Line No. 1). The DMR Contact/Talk Group List typically contains the DMR Talk Groups which the user may want to use.

Talk Groups can be found on the Internet. Start to program all applicable DMR Talk Groups (TG uses Group Call) you which to monitor or talk on. This list of Talk Groups may include up to 100+ different groups. A list of worldwide Talk Groups can be found at

https://w0chp.radio/brandmeister-talkgroups/



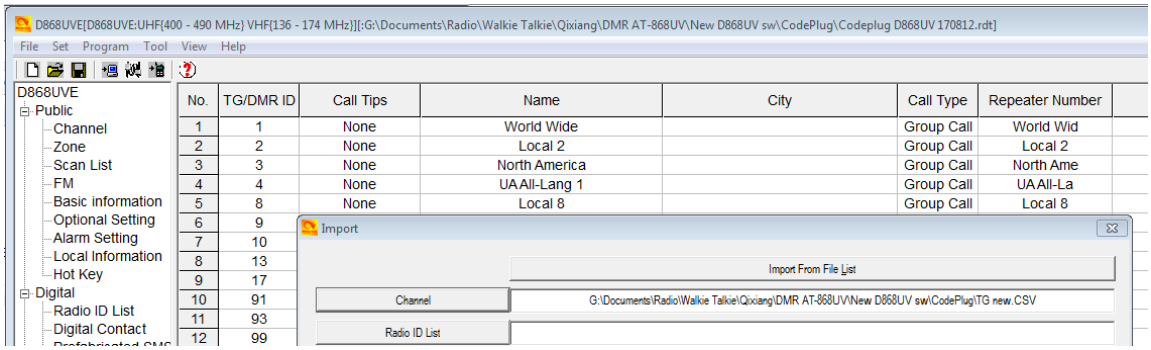
The Talk Group list can also be generated by exporting the original radio Digital Contacts Talk Groups and then add in to that list in an excel format. In the Programming Software there is import and exports features in the taskbar – open the TOOL menu and do an “export”. This opens up a new screen where you click on “Digital Contact”. A new screen shows up where you define where to save the list on your PC.



In the .csv format you can paste all or your required Talk Groups from the DMR-MARC website into the spread sheet. You get the format from the original radio Codeplug you just exported.

	A	B	C	D	E	F	G	H	I	J
1	No.	TG/DMR ID	Repeater Number	Name	City	State/	Country	Remarks	Call Type	Call Tips
2	1	1	World Wid	World Wide					Group Cal	None
3	2	2	Local 2	Local 2					Group Cal	None
4	3	3	North Ame	North America					Group Cal	None
5	4	4	UA All-La	UA All-Lang 1					Group Cal	None
6	5	8	Local 8	Local 8					Group Cal	None
7	6	9	Local 9	Local 9					Group Cal	None
8	7	10	WW German	WW German					Group Cal	None
9	8	13	WW Englis	WW English					Group Cal	None

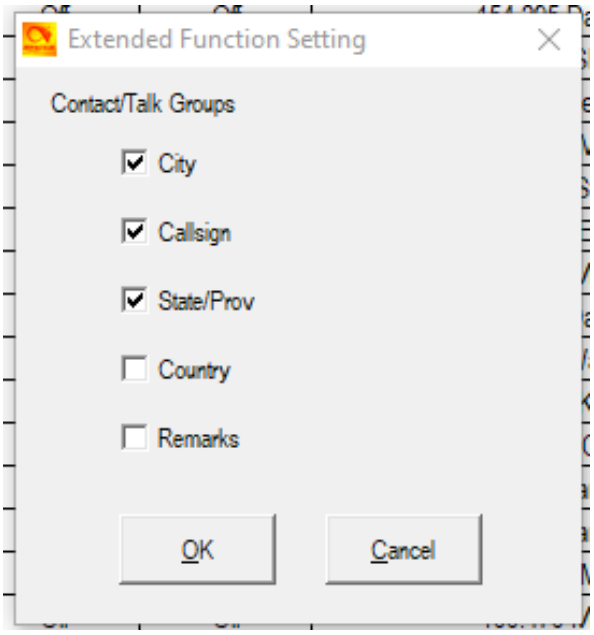
Once all TG’s are entered, the Contact List should be “imported” back into the Programming Software the same way you exported the file. Click on TOOL menu, and then “import” and in the new window click on Digital Contacts and select the .csv file you want imported.



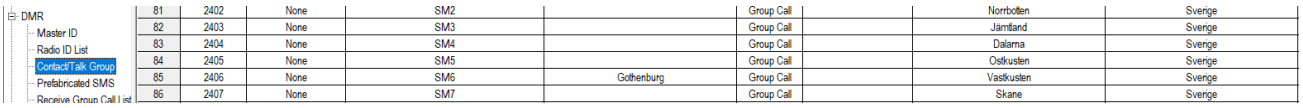
NOTE: If you import a Talk Group list with duplicate TG numbers, then the Receive Group Call List set-up will not function correctly, and may shut down the Programming software if you try to set up your Receive Groups.

6.0 EXTENDED FUNCTION SETTING (TOOL MENU)

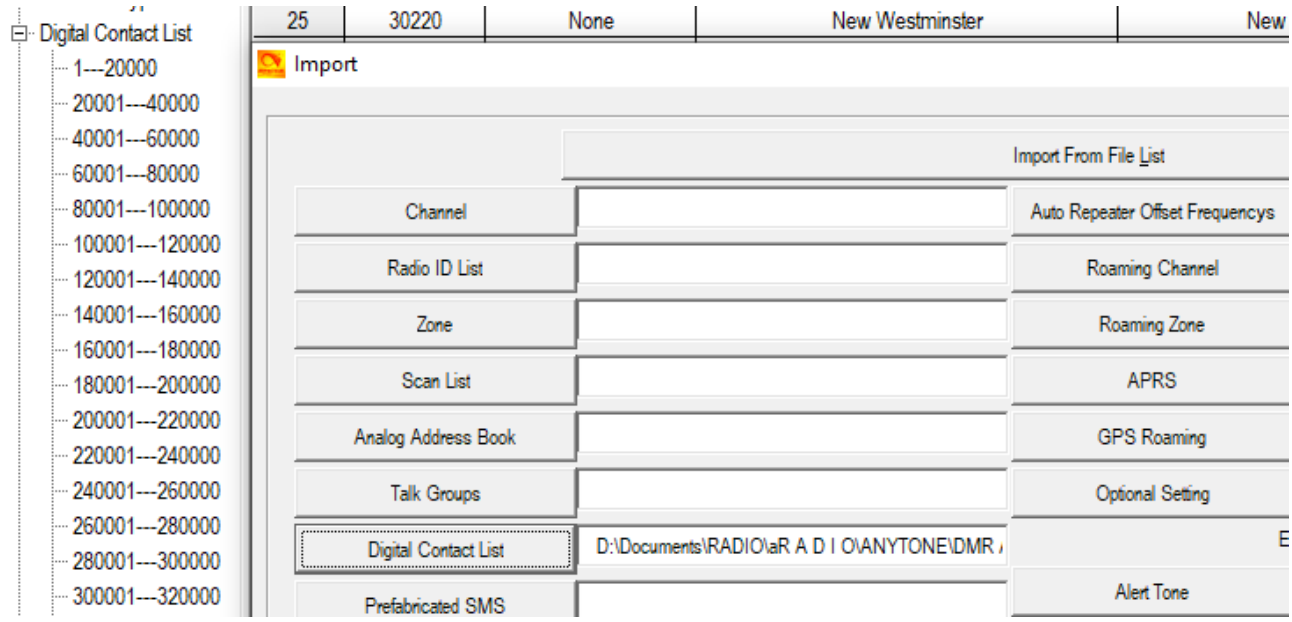
In the TOOL Menu there is a set-up (eXtended) for Contact/Talk Groups (TG) of what the radio should display on the LED display when transmitting on a digital channel. You may see the DMR Contact/TG expand as this function is added. It has 5 additional selections to make as follows and they show up in the Contact/Talk Groups in the CPS:



The of City, Callsign, State/Province and Country in the picture above can be left blank but are included to allow the radio LED display to show them upon transmitting a call from that TG. The items will add new columns in the TG set-up as they are clicked in the matrix above to appear. It could be used for example do further describe where the repeater is located that uses that specific TG.



7.0 DIGITAL CONTACT LIST (DMR)

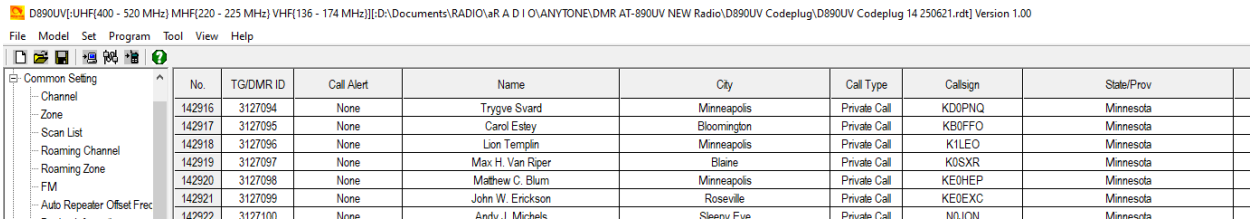


The next step is to fill the radio with all possible digital contacts you may ever encounter. By doing this, the radio will for each contact you make display the name, DMR ID, Call sign etc. of the individual you are connected with instead of just the DMR ID.

The Contact List is a “look-up” table for the radio to display all the details of the contacted person instead of only the DMR ID number. If you do not update the Contact List from time to time you may see the DMR number for new people instead of their name. A master list of DMR contacts is available at the new radioid.net website:

https://www.radioid.net/database/dumps

and select the **“user.csv”** file to download and import to the AT-D878UVII PLUS radio. This database of contacts must be the.csv format to be used for DMR ID’s and imported into the AT-D878UVII PLUS radio as required. The radio holds 500,000 names in the look-up table.



In the CPS Programming Software for the old radio, like a AT-D878UV, open the TOOL menu and do an “export”. This opens up a new screen where you click on “DMR ID List”

and on the second screen select where you want to save it on your PC. This list is automatically divided in sections to accommodate up to 500,000 ID's. If your list you work in the .csv format is more than 20,000 names per section, when loaded into the radio, they will split up and be distributed between the several lists in the radio.

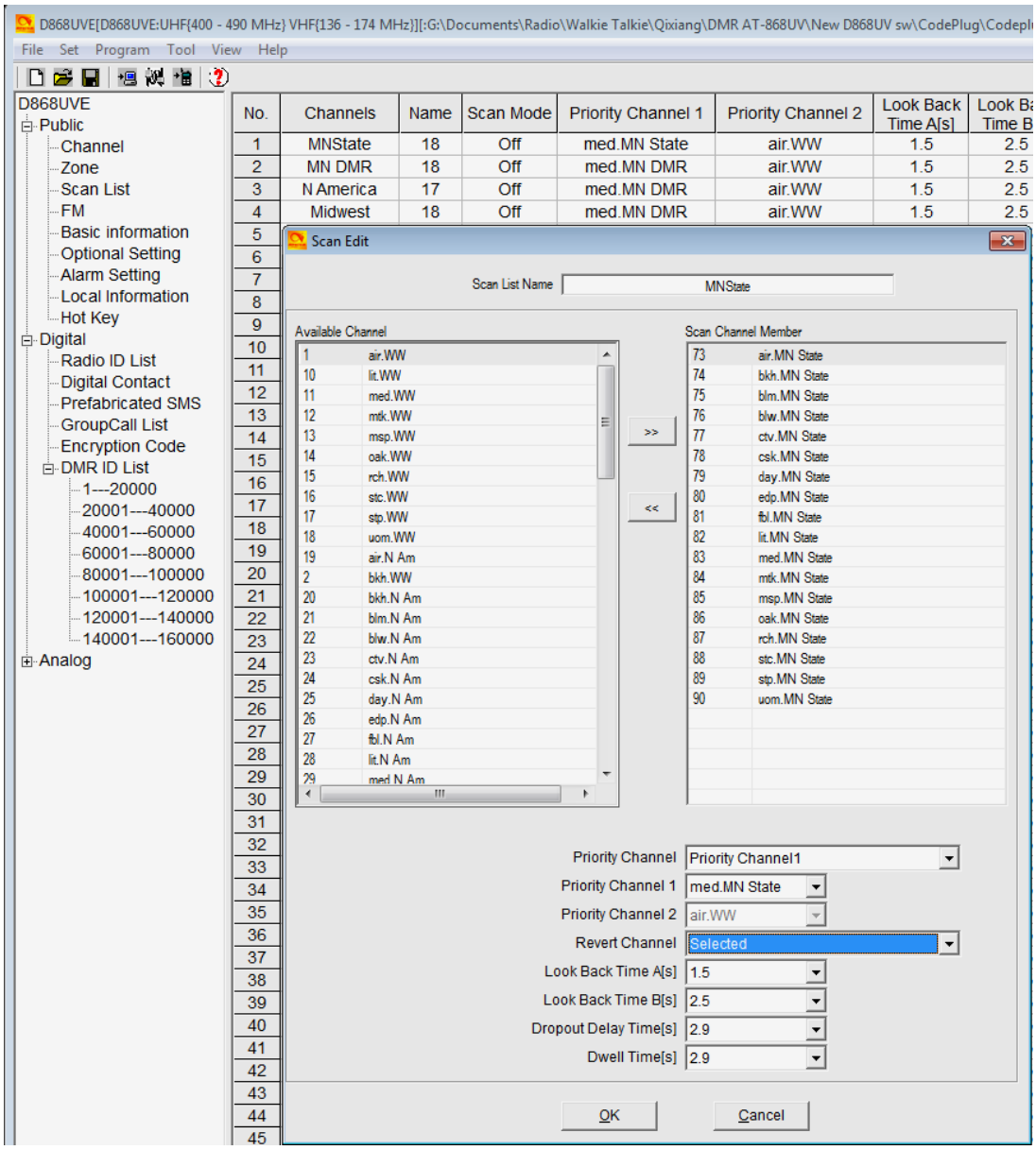
So now that you have both the DMR database and the radio original database open, copy the list of DMR ID's you want from the DMR database into the radio .csv file. Then back to the TOOL menu on the AT-D878UVII PLUS, and "**import**" so you can import the entire .csv DMR ID list into the radio. Note: You have to enter "Private Call" in all the CALL TYPE columns of the radio .csv database before loading it into the radio. The No. column can be left blank.

Note: Any .csv file being loaded back into the AT-D878UVII PLUS radio must be in the correct format and have no stray information in any cell outside the ones being used by the radio. If the "import" seems to not work – check the .csv for any inconsistency. The Contact database, downloaded is not necessarily correct for each entry and have been found in some cases needing cleanup to work with the radio. Therefore, it may be important to "export" the original list when the radio was new to see the format of the .csv file.

8.0 SCAN LIST (not required to get the radio to work)

Typically, a scan list is created with one 'channel' for each repeater on slot 1, and one for the slot 2 channels. Initially just create an 'empty' scan list (with a name) to use during the channel creation step. Create the Scan list name that relates to your set of channels. In the Scan List menu, click on line No. 1 and open the Scan Edit window. NOTE: A channel number refer to the Channel Matrix (excel format) number No. to the very left of the matrix – there you can reference the DMR Talk Group for a channel.

Please note – when you want to change the scan list using the Menu on the radio, go to Scan List > Scan List > select the TG list you want > then go to bottom of the list and "Select Current List" to make the one you selected become the new scan list. Then go back to Scan List and select "Scan On/Off" and turn the scan on.



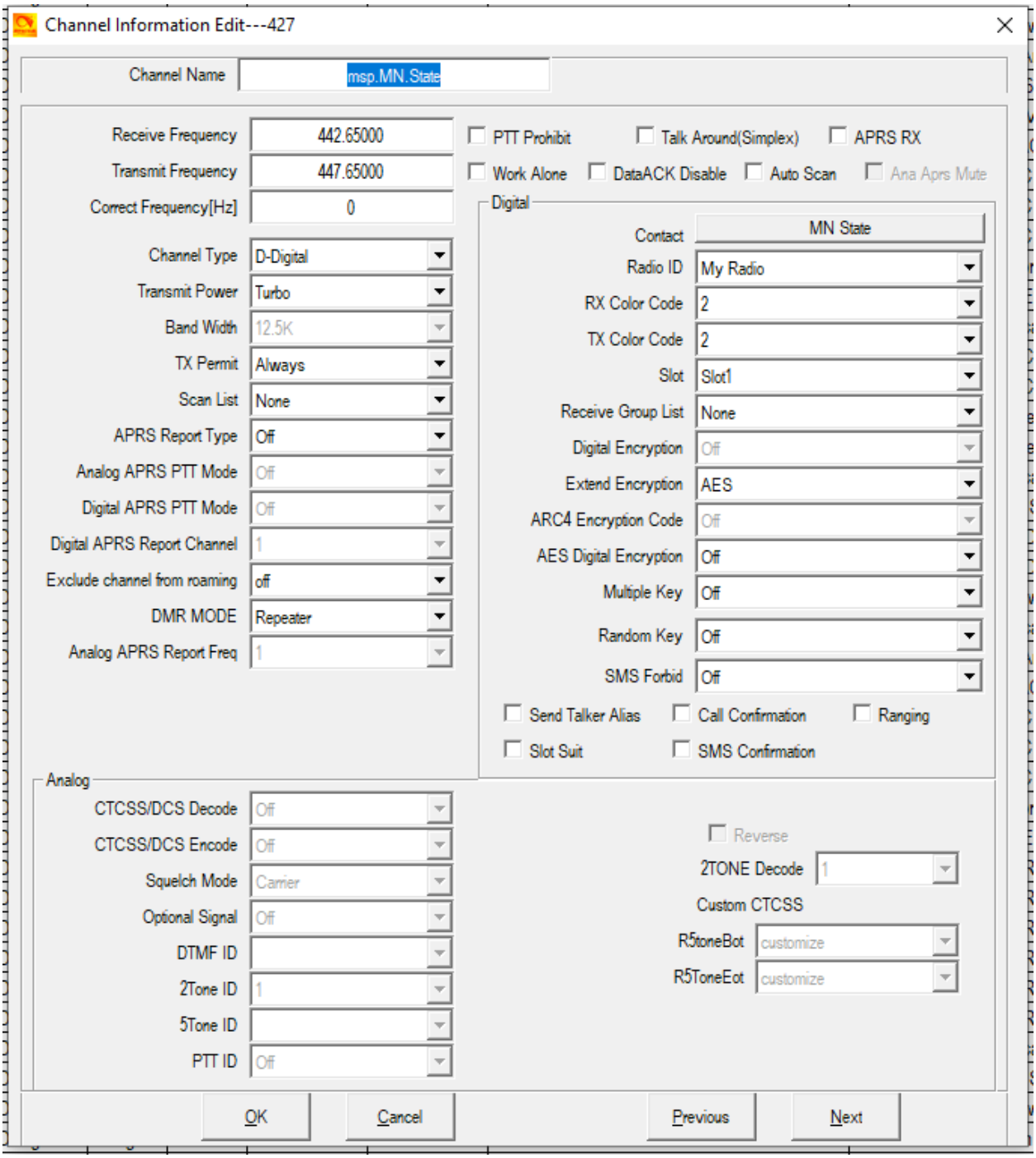
Scan List Name:	Name it so it relates to the scan channels
Available Channels:	Will list the channels you create
Priority Channel select:	Select the priority channel or off
Priority Channel 1:	Sets which channel is priority 1
Priority Channel 2:	Sets which channel is priority 2
Revert Channel:	During scanning, when there is no call received, press the PTT key to transmit on this channel.
Look Back Time A:	During scanning, it will scan the priority channel when check the look back time A every time.
Look Back Time B:	Only for analog use. During scanning, when the priority channel has signal but with incorrect CTCSS/DCS, it will

	scan the priority channel when check the look back time B every time.
Dropout Delay Time:	Only for analog use. When scanning with a signal and starting a transmit, after release the PTT key, the radio will resume scanning after reaching the Dropout Delay Time.
Dwell Time:	Only for analog use. When press PTT key to transmit, after release of the PTT key, the radio will resume scanning after reaching the Dwell Time.

Once all done, click on “OK” to save this set-up.

9.0 CHANNEL – FREQUENCY SET-UP

The AT-D878UVII PLUS offers programming of 4,000 channels for UHF and VHF. To start double click on the first line No.1 to open the Channel Information programming window for that channel:



The Channel Information Edit window contains several options which will be explained below:

Channel Name:	the name of the channel (typically name of repeater and TG)
Receive Freq.:	the VHF or UHF frequency
Transmit Freq.:	the VHF or UHF frequency
Correct Frequency (Hz):	leave alone at 0 or adjust for a bad local hot-spot
Channel Type:	Select Analog, Digital, Mixed Analog or Mixed Digital

Transmit Power:	Select one of four levels L, M, H, T 6W/2.5W/1W/0.5W
Band Width:	Select the bandwidth of transmit – typically 12.5 kHz
TX Permit:	Selects PTT transmit criteria – 1 of 4 and select Always
Scan List:	Select which Scan List to start scanning from
APRS Report Type:	Select Analog, Digital or Off
Analog APRS PTT Mode:	Select Off or On
Digital APRS PTT Mode:	Select Off or On
Digital APRS Channel:	Select 1 – 8 as needed
Exclude Channel Rming:	Select Off or On
DMR Mode:	Select DMO Simplex, Repeater, Double Slot or TS Split This set-up is important and for a hot spot with 1 frequency select Simplex otherwise Repeater
Analog APRS Rpt Freq.:	Select one of several if required.
PTT Prohibit:	Select if you only want to listen to this frequency.
Talk Around :	Check for RX freq. the same as the TX freq. (Simplex).
APRS RX:	Select if you want to hear the APRS receiver.
Work Alone:	Select if you want to send a help signal
Data Acknowl. Disable:	Select if you want to disable data acknowledge
Auto Scan:	Select in you want automatic scan of this channel

9.1 Digital

Contact:	Select the Talk Group you want for this frequency (important)
Radio ID:	Select which of the DMR ID's to use for this channel
RX Color Code:	Select which RX ColorCode is related with this channel
TX Color Code:	Select which TX ColorCode is related with this channel
Slot:	Select which Slot (1 or 2) applies to this "Channel"
Receive Group List:	If programmed select which Talk Groups you want to listen to, or select NONE to listen to only the programmed Talk Group for the transmission (TX and RX TG the same)
Digital Encryption:	Select Off or which of 32 numbers to use for encryption
Extended Encryption:	Select which types to use (AES or ARC4).
ARC4 Encryption Code:	Select Off
AES Digital Encr.:	Select Off
Multiple Key:	Select Off or On.
Random Key:	Select Off or On.
SMS Forbid:	Select Off or On.
TX Prohibit:	Check if no transmit on this frequency / TG
Send Talker Alias:	Do not check.
Talk Around:	Check if you are not using a repeater and want simplex
Call Confirmation:	Check if the receiver has to transmit before accepting private calls.
Ranging:	Check if you want to allow 2 radios to check distance between them.
Slot Suit:	Do not select.
SMS Confirmation:	Select if you want to confirm an SMS

9.2 Analog

CTCSS/DCS Decode	Select Off or CTCSS or DCS and tone frequency
CTCSS/DCS Encode	Select Off or CTCSS or DCS and tone frequency
Squelch Mode:	Select how to use the squelch - carrier
Optional Signal:	Select Off, DTFM, 2Tone or 5Tone
DTFM ID:	Select DTFM ID
2Tone ID:	Select 2 Tone ID
5Tone ID:	Select 5 Tone ID
PTT ID:	Select Off, at start, at end or both
2Tone Decode:	Write how to decode
Custom CTCSS:	Enter value when requiring a custom CTCSS tone

Once completely filled in, click OK to save this Channel. There is also an option to first “export” the channel data into a .csv file, and then work the entry of most data in the excel format. Then save it and “import” back into the codeplug. For large channel data entries, this may be the easiest method where copy and paste function will allow easier generation of a lot of channels.

The channel set-up can also be created by first exporting the original channel set-up in the radio, and then as a .csv excel file edit, copy and paste as many channels and frequencies you need. As each repeater being programmed may have the same Talk Groups, working all of this in a excel format and then importing it all back into the radio is the most efficient method of building a large channel database for the radio.

Note: working the .csv file for channels, the No. column either should be empty, or show sequential numbers starting with 1 for channel 1, 2 for channel 2 etc.

10.0 ZONE LIST CREATION

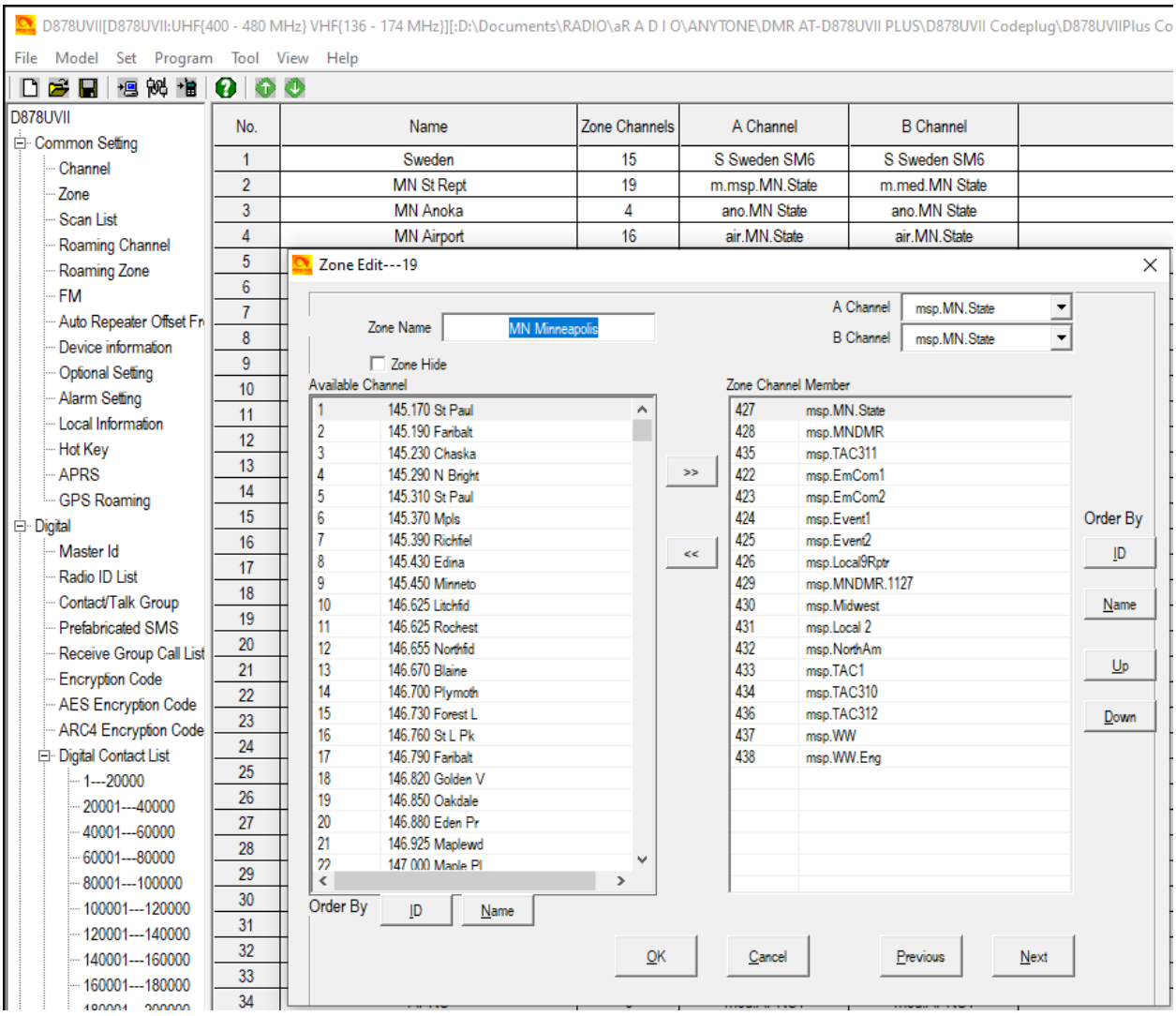
NOTE: Once you use the radio and with the up/down key switch between zones, holding the key down for up or down rapidly switches the zones instead of repetitively pushing it to switch.

Create a ‘Zone’ name (that relates to the name of the scan list in the step above) and leave empty for the time being. Creating a ‘Zone’ allows you to put your configured ‘channels’ into logical groups. You can use the same ‘name’ for these (as your Scan List names) to help you keep things straight in your mind, they are in two different sections, so there is no conflict. You will need to create a zone in order to select the group of channels you will be adding. Naming choice is up to you, and the ‘Zones’ do not have a limit of 16 channels on this radio. You can name each zone by the geographical location or any other name you wish. Add your channels in the order you wish them to be accessed by the channel select knob or menu selection. Please note that you are able to sort the order of the channels or move one up or down to better reflect where you want it when turning the channel knob. You may wish to use a name for your zones that relates to its ‘Scan Lists’.

In the Zone menu, double-click on Line No.1 to open the Zone Edit window.

The green up and green down arrow in the picture below allow re-sorting the Zone list names to achieve a different order.

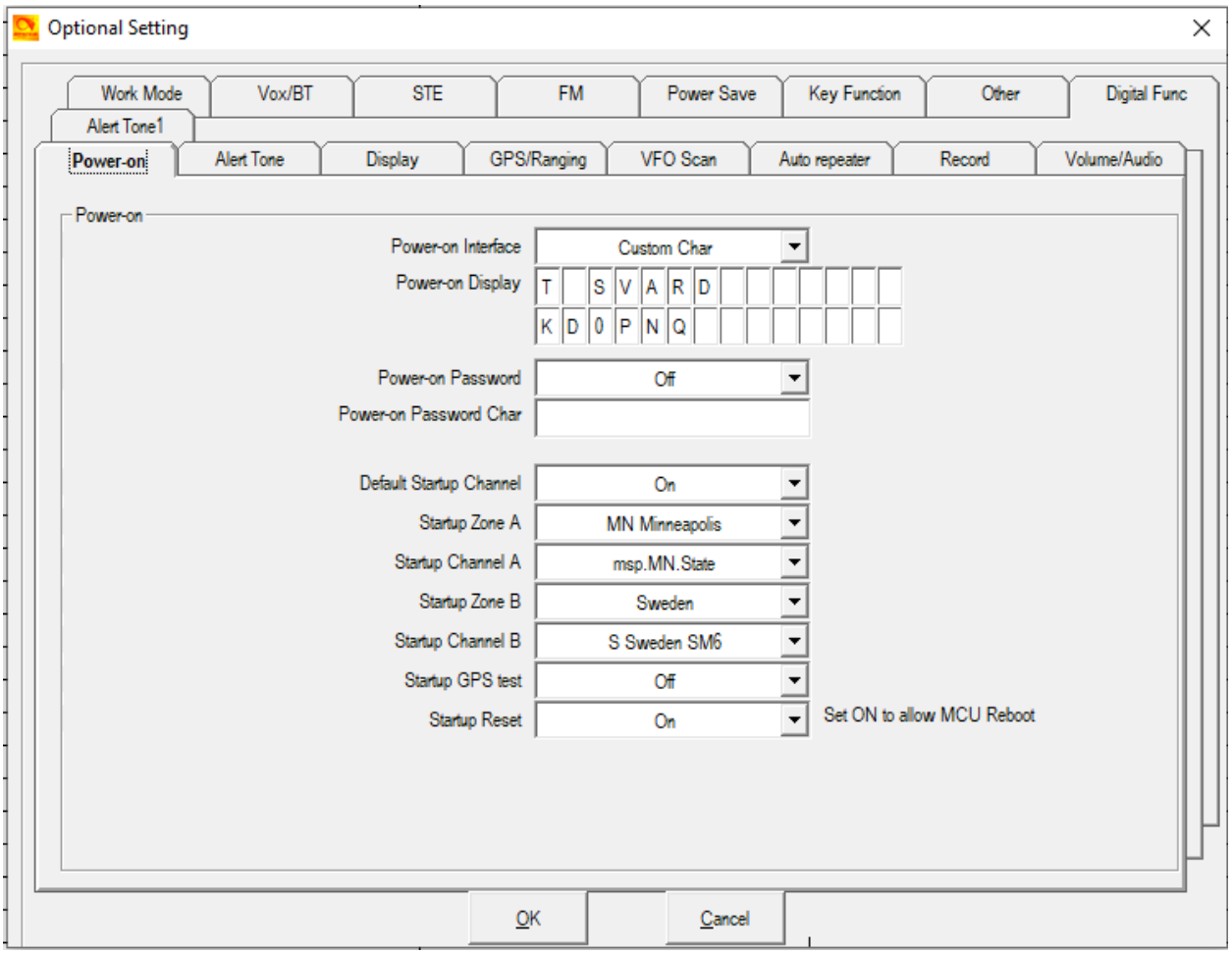
The below sample for MN State allows scanning the same channel but from several different repeaters so that when driving around the city there is always an available connection. Other set-ups for scanning uses one repeater and scans all programmed Talk Groups on that repeater.



A Channel: The channel the radio starts up with for channel A
B Channel: The channel the radio starts up with for channel B

11.0 OPTIONAL SETTING

The AT-D878UVII PLUS radio basic configuration set-up is done in the Optional Setting window. This page contains a lot of important information for the radio operation.



Once the Optional Setting window is open, there are several sub-sections to program. The above window shows all the 16 sub menus available in the Optional Settings.

11.1 Work Mode

Display Mode:	Defines what the radio display will show when in receive mode – frequency or channel name
VFO/MEM A:	Select VFO or MEM for the “A” upper channel
MEM Zone A:	Selects any of the programmed Zones to start on power up.
VFO/MEM B:	Select VFO or MEM for the “B” lower channel
MEM Zone B:	Selects any of the programmed Zones

Main Channel Set:	Select A or B for radio startup
Sub-Channel Mode:	Select On or Off (allows both channel A and B to be displayed)
Chose Working Mode.:	Select Amateur or Professional Mode (in professional mode you can lock keys in “Key Function” of Optional Settings)

11.2 VOX/BT (Bluetooth if BT selected under TOOL/Options)

VOX Level:	Select Off or On
VOX Delay:	Select how many seconds of delay after a transmission end
VOX Detection:	Select built-in mic or external mic or both
BT On/Off:	Select On or Off (BT stands for Bluetooth)
BT + Int Mic:	Select On or Off
BT + Int. speaker:	Select On or Off
BT Mic Gain:	Select 1 through 5 (3)
BT Speaker Gain	Select 1 through 5 (5)
BT Hold Time:	Select Off or 1 through 15 or Infinite (10 Sec.)
BT RX Delay:	Select 30 mS to 5.5 sec. (1.5 sec.)
BT PTT Hold	Select On or Off
BT PTT Sleep Time:	Select Infinity to 4 minutes (1)

11.3 Squelch Tail Eliminate (STE) for simplex radio to radio only

STE Type of CTCSS:	Select Off, Silent or a selected tone phase shift
STE When No Signal:	Select Off or 55.2 Hz or 259.2 Hz
STE Time:	Select 10 mS to 1000 mS (250 mS)

11.5 FM

FM VFO/MEM:	Select VFO or Memory
FM Work Channel:	Select the FM channel to listen to (after set-up done)
FM Monitor:	When in FM mode select On if the radio shall receive calls

11.6 Power Save

Auto Shutdown:	Select Off or minutes before auto shut-down
Power Save:	Select Off or 1:1 or 2:1 for saving power
Auto Shutdown Type:	Select “is” or “is not”

11.7 Key Function

Key Lock:	Select Manual or Auto key lock function
PF1 Short Key:	Select from several functions for the radio key below PTT
PF2 Short Key:	Select from several functions for the radio key 2 below PTT
PF3 Short Key:	Select from several functions for the orange radio key
P1 Short Key:	Select from several functions for the P1 radio key
P2 Short Key:	Select from several functions for the P2 radio key

PF1 Long Key:	Select from several functions for the radio key below PTT
PF2 Long Key:	Select from several functions for the radio key 2 below PTT
PF3 Long Key:	Select from several functions for the orange radio key
P1 Long Key:	Select from several functions for the P1 radio key
P2 Long Key:	Select from several functions for the P2 radio key
Long Key Time:	Select how many seconds to hold the key for Long duration
Knob Lock:	Select Off or On to lock the knobs function
Keyboard Lock:	Select Off or On to lock the keyboard
Side Key Lock:	Select Off or On to lock the side keys (PF1 – P2)
Profession. Lock Key:	Select Off or On when all others are locket to prevent unlock.

11.8 Other

Address Book….	Select On or Off
TOT:	Max Total Time of Transmit or Off (no limit)
Frequency Step:	In VFO mode, selects the frequency steps
Language:	Select language for the programming software (English)
SQL Level A:	Set the squelch level for the “upper” channel – set at 1
SQL Level B:	Set the squelch level for the “down” channel – set at 1
TBST:	Tone Pulse Freq. Selection to open certain repeaters –

to initiate this tone push the PTT + PF1 key below the PTT together to send tone!

Analog Call Hold Time:	Select how long a call is held for Analog reception (0).
Call Channel maintained:	Set to Off or On allows a transmit on the sub-channel B if done within 5 seconds after the call carrier was dropped
Priority Zone A:	Select Off or which zone should become priority
Priority Zone B:	Select Off or which zone should become priority
Mute Timing:	Select 1 to 256 minutes (1)
Encryption Type:	Select Extended Encryption or Common
TOT Predict:	Select Off or On
TX Power AGC:	Select Off or On

11.9 Digital Function

Group Call Hold Time:	Select hang time for a Group Call (5 sec)
Person Call Hold Time:	Select hang time for a Private Call (5 sec)
Group TG Hold Time:	Select hold time for a Group Call (5 sec)
Private TG Hold Time:	Select hold time for a Private Call (5 sec)
Voice Header Repetition:	Select 2 to 8 (4)
TX Preamble Time:	Select 0 to 2400 mS (180 mS)
Filter Own ID in Miss Call:	Select On or Off
Digital Remote Kill:	Select Off or On to allow remote kill of a radio
Digital Monitor:	Select Off or Single or Dual Slot to allow promiscuous mode
Digital Monitor CC:	Select Any or Same to allow same Color Code monitor
Digital Monitor ID:	Select Any or Same to allow monitor for a DMR ID
Monitor Slot Hold:	Select Off or On to monitor Slot continuously
Remote Monitor:	Select Off or On to allow other radio to check this radio
SMS Format:	Select M (Motorola) or H (Hytera) format for SMS messages

11.10 Power On

Power-on Interface:	Select Default, Custom Char. or Custom Picture at start-up
Power-on Display Char.:	Enter your unique characters for the start-up display
Power-on Password:	Select On or Off
Power-on Password Ch.:	Write in keyboard characters to unlock the radio
Default Startup Chan.:	Select Off or On
Startup Zone A:	Select which Zone A you want the radio to power on with
Startup Channel A:	Select which Channel in the above Zone you want
Startup Zone B:	Select which Zone B you want the radio to power on with
Startup Channel B:	Select which Channel in the above Zone you want
Startup GPS Test:	Select On or Off
Startup Reset:	Select Off or On (to allow MCU Reboot for new firmware)

11.11 Alert Tone

SMS Alert:	Select which notification you want when receiving an SMS
Call Alert:	Select which notification you want when getting a digital call
Dig Call Reset Tone:	Select Off or On, Digital call has a group call hold time and a private call hold time to prevent voice missing after the call. When set Digi Call Reset Tone is On, it will beep when the hold time terminates.
Talk Permit:	Select Off or Analog, Digital or combined Digital & Analog
Key Tone:	Select Off or On if you want a tone for pressing a key
Idle Channel Tone:	Select Off or On if you want a tone when a channel is idle
Startup Sound:	Select Off or On if you want a tone when powering on
Tone/Key Sound Adjust.:	Select Adjustable or 1 to 15
Anal Idle Channel Tone:	Select Off or On
Plug-in Recording Tone:	Select Off or On

The programming also allows you to program the tone frequency for the Call Permit Tone, the Idle Call Tone and the Call Reset Tone as well as the duration of those tones.

11.12 Display

Brightness:	Sets the display brightness – 5 is the brightest
Auto Backlight Duration:	Sets the time the display is on or “Always” for always on
Backlight Delay of TX:	Select Off or 1 to 20
Menu exit time:	Set the time the Menu selection is left on - minimum 5 sec
Time Display:	Select Off or On to show current time at top of LCD screen
Last Caller:	Select Off or what to display on the screen (Show Both)
Call Display Mode:	Select Name or Call Sign as primary display
Call Sign Display Color:	Select color for how to display the call sign (Green)
Call End Prompt Box:	Select Off or On to add a display box indicating end of call
Display Channel No.:	Select Actual Channel Number or sequence in zone

Display Current Contact:	Select On or Off
Standby Character Color:	Select color (yellow)
Standby BK Picture:	Select Default, Custom 1 or Custom 2
Show Last Call on Launc:	Select Off or On to show last heard name while in PTT
Ch Switching Last Caller:	Select Off or On to show last caller name keep last caller

11.13 GPS/Ranging

GPS:	Set On or Off (can also be changed under Menu)
Get GPS Positioning:	Select Off or On to allow other radio to check this radio
Time Zone:	Set the GMT time zone for the radio (remember summer time is different)
Ranging Interval:	Select from 5 to 255 sec for checking received GPS position
Ranging Display:	Select meters or feet for the ranging display
GPS Template Inform.:	Select Off or On to include a GPS message (written below) to be part of the GPS TX data – typically your call sign!
GPS Mode:	Select GPS
GPS Roaming:	Select On or Off

11.14 VFO Scan

VFO Scan Type:	Select TO – 5 sec stop, CO – 2 sec stop or SE stops scan
VFO Scan Start UHF:	Set start frequency for a UHF Analog scan
VFO Scan End UHF:	Set stop frequency for a UHF Analog scan
VFO Scan Start VHF:	Set start frequency for a VHF Analog scan
VFO Scan End VHF:	Set stop frequency for a VHF Analog scan

11.15 Auto Repeater (not used)

Auto Repeater A and B:	When On, changing the TX frequency via keyboard, will also change RX with correct offset.
Auto Repeater UHF:	Set to Off or set the offset for the RX frequency for UHF
Auto Repeater VHF:	Set to Off or set the offset for the RX frequency for VHF

11.16 Record

Record Function:	Select Off or On to record each TX and RX internally

11.17 Volume/Audio

Maximum Volume:	Select 1 to 8 for higher max volume – 8 is max
Max Headset Volume:	Select Indoor, or 1 to 8 for max volume for a headphone (3)
Digital Mic Gain:	Allows increasing the mic sensitivity from 1 to 5 times (4)
Enhanced Sound:	Set to On for increased high pitch voice or Off for normal.
Analog Mic Gain:	Allows increasing the mic sensitivity from 1 to 5 times (4)

Once all the parameters have been programmed, click on “OK” to save what you have programmed.

12.0 FINAL STEP - WRITE YOUR CODEPLUG TO YOUR RADIO

The first thing to do is to check that your Comm Port is correct. You can do that on the sign between reading from and to the radio. See below for the picture of checking the Comm Port. You can also use “Set” and “Set COM” on the top line doing the same.

In the worst case you have to right-click “This PC” on your computer and open “Manage” and then “Device Manager” to make sure the cable you have works correctly – take it off and on to see what Port (COM & LPT) it opens.

The AT-D878UVII PLUS radio comes with a standard programming cable. Select if you want to write just the “Other Data” (all radio parameters) and/or Digital Contact List when loading the CodePlug into the radio. Write the file to your radio. Save also the file to your PC with a name that you will remember. You may wish to use version numbers in your file naming to help you with progressive updates. At some point you may ‘break’ your CodePlug by setting something differently and this may affect the radio operation. It helps to be able to ‘go back’ to an earlier working version. Some CodePlug Programming Software (CPS) may also require that you update the clock in the radio by another function, be sure to do this if you want an accurate time display!

Please note that the AT-D878UVII PLUS radio offers many more set-ups but those are best described in the Manual that comes with the radio. The Manual also talks about how to safely use the battery. Note, that even with the LCD display on the radio lit up all the time (“Always” in the display setting) the radio has battery power for several days before requiring recharging. What has been covered in this Programming Guide are those parameters most important to get the radio up and running.

Please note that the satellite reception in the D168UV radios is very similar to what is described here for the D878UVII PLUS radio (Firmware 4.0 stopped using satellite reception due to a memory limitation in the D878UVII PLUS radio).

Please also remember to save the codeplug on your computer so you have a back-up.

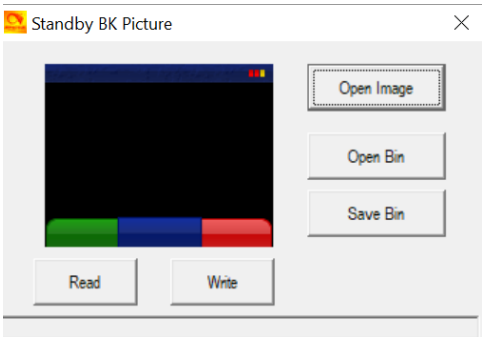
We do not condone any changes to the radio but want to reference 2 sites with a lot of data:
https://anytonetechzone.byethost7.com/878techmods.htm?i=2
https://www.hamradiosouthernrepeaters.co.uk/anytone-dmr.html/

13.0 TOOL Pull-down Menu

The pull-down TOOL menu offers several unique features such as, APRS Information, importing and exporting file data to an excel format for separate programming, mode function, extended settings, firmware updating, adding a boot image, and default channel settings.

14.0 START-UP SCREEN STARTUP PICTURE CHANGE

The TOOL menu in the CPS has an option (Standby BK Pict.) to replace the Startup or Background Picture to something you desire. Set Option / Display – *Separate Display* to ON. Here are the options:



- Open Image – accepts JPG images from your photos or files (size not critical as software will re-size)
- Open Bin – opens a .bin image file instead of a .jpg file (gives you an option)
- Save Bin – saves the image you opened to a .bin file
- Read – read your loaded image file from the radio (if you loaded one)
- Write – write your new image file to the radio

On the top row of the LED display the following indications can appear:

- Reception bars left side is showing signal strength
- Within a square "**L/M/H/T**" transmit power levels showing from Low to Turbo
- Speaker = Digital Monitor is turned on for 1 or 2 slots (promiscuous mode)
- Microphone = You have turned On the recording feature of the radio (3 hours)
- GPS symbol **gray** = no GPS signal received, **red** = GPS signal received
- "**A**" indicates a set-up for Automatic Power Off
- **CC11** for Digital reception shows the ColorCode for the primary channel
- **DCS** or **CTC** for Analog reception indicates a tone signaling squelch
- The date line changes and shows sequentially date/last heard/current TG
- **DIG/ANA** CH-796 – shows the channel type and number of the channel.
- **T1** or **T2** time slot shown for the digital channel used as "A" and/or "B"
- **R** next to a digital channel = repeater with different RX and TX frequency. A red **R** indicates reversed RX and TX frequencies.