

AT-D890UV Programing Guide



AT-D890UV Programming Guide

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The word **NXDN** is a trademark of **JVC**Kenwood and will most likely be approved for use by **AnyTone** in the near future. This Guide will use the **NXDN** name or the word **NX** interchangeable. You can read more about **NXDN** on <https://evoham.com/nxdn-for-beginners/>

This radio also sold under other names such as **Maverick**, **BTech DA-7X2**.

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INTRODUCTION

The AnyTone AT-D890UV radio released late 2025 is similar to the AT-D868UV and AT-D878UV radios but with more capabilities. This is an advanced one chip digital/analog radio complying with the ETSI Tier I and II specifications and offering 4 inherent power levels of 7W/5W/2.5W/0.2W on VHF and 6W/5W/2.5W/0.2W on UHF. The frequency bands include both 136-174 MHz, (220-225 MHz on Band 14 only with reduced power) and 400-512 MHz and can be changed for Bands related to non-US use. The radio will also receive on 87.6-108 (FM) and 108-145 MHz (AM). If a channel is programmed for digital and analog reception type, the radio will auto-sense digital or analog transmissions and connect accordingly. It offers 4,000 channels as well as VFO tuning and for DMR/NXDN operation and offers 2 channels per frequency. The radio has 10,000 Talk Groups and 500,000 Digital Contacts.

The display is a 1.77 inch TFT color LCD display which allows ease of seeing the many operating modes including icons for a successful connection to a repeater as well as the caller ID and name etc. The LCD also shows signal strength of received signal. The bandwidth is 12.5k or 25k for analog, and 12.5k for digital DMR and 6.25k or 12.5k for NXDN operation. The radio offers text messaging, voice messaging, roaming function, 14 hours of analog and digital voice recording, digital encryption, and ranging between radios are now standard features. Firmware can be user updated. All typical CTCSS/DCS, and DTMF/2TONE/5TONE encode and decode features are also included with the radio. The digital part of the radio allows SMS texting functions via the keyboard and includes a vibrating radio for receipt of messages. You can even talk/listen to satellites with the radio.



This radio offers the following new items compared to a D878UV radio:

- New and better Bluetooth device
- New Main Control Unit (MCU) chip for dual-mode receiver
- New digital protocol for NXDN in addition to DMR
- Microphone Automatic Gain Control (AGC) setting
- Noice reduction of received channel
- Allows U/V digital/analog dual receive

One battery is delivered with the radio and will be a 3,100 mAh Li-ion battery. The radio battery charger included has a 3 pin connection for charging like the D878UV radio. The new battery also has a USB-C connector at the bottom of the battery for charging. When plugged in and charging there is a **red light** on the battery lighting up. **Green** when fully charged. This would allow a standard USB-C charger (used for phones) to be used for charging the battery.

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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-D890UV radio may have a locked key-board upon delivery. 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 (amateurs) or maintenance personnel. This Guide is primarily provided for such service or maintenance personnel. To lock the keyboard - for commercial use tex. - long press the “*” (star key) or see Optional Settings – Key Functions. For a person to open up the keyboard, press the “Menu” key (green bar) and then the “*” (star) key one after the other. US radios are set to 144 – 148 MHz, (222 – 225 MHz for Mode 14 only) and 420 – 450 MHz ham band and the key lock is unlocked when delivered. In some cases, dealers request the radios to be shipped with the full band of 136 – 174 MHz and 400 – 480 MHz professional Mode with a locked keyboard. This Mode requires the radio to be set to amateur Mode in the CPS Optional Settings to be able to open the keyboard as per above. The radio also offers regular FM and also AM Air Band reception

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-D890UV radio has unique software called Computer Programming Software (CPS) 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. A codeplug from any other model can be used if first exported from the older radio and then imported to the AT-D890UV radio. Please make sure that the radios have the same Band or Mode so the codeplug can be imported without an error message.

1.0 GETTING STARTED

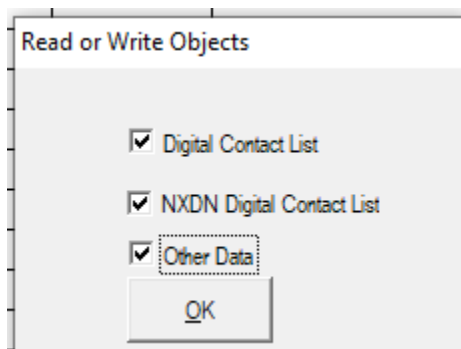
The programming cable for the AT-D890UV radio is provided by AnyTone. Make sure the computer has the correct driver for the cable – see the Device Manager on your PC and make a note what USB port which the computer uses for the radio.

The **Computer Programming Software (CPS)** for the AT-D890UV radio may be updated from time to time to correspond to the firmware version used for the radio, and the AnyTone website <https://www.anytone.net/download> (plus many retailer websites) will offer those updates. Do not mix versions of the CPS with non-matching firmware versions.

NOTE: that installing the CPS for the first time may be different that installing most new programs. On the C drive (where you have the folder for the Program Files) make a new folder

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and call it **D890UV**. Install the CPS Programming software D890UV_Setup_1.01X.exe on your computer in the newly created folder. Install it by double clicking on it – It should be installed in that folder and not in the Program Files. The shortcut could be anywhere you want to see it. After installation, read software from the radio first so you use the correct set-up. The AT-D890UV radio, used in Europe and other places in the world, compared to the USA, uses different frequency bands. The CPS 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 up to 500,000 names, and as a result consume up to 5 minutes to read or write to the radio. Make sure you use the correct port the radio is attached to. You should read everything (3 checkmarks below) the first time.



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, or there may be a codeplug for the AT-D890UV radio from another geographical area which has most of the basic data as a starting point. There are typically codeplugs available on the Internet for your location. If those codeplugs are for a different AnyTone radio they still serve as a good starting point. Load a codeplug for example from the AT-D878UV radio and export it in its totality or a AT-D578UV radio and then import it into the AT-D890UV radio CPS and it should work – please note that it requires Optional Settings to be updated in the C890UV. If NXDN programming is not shown in the CPS, connect the programming cable and read “Local Information” on the left in the CPS.

The recommended operation is as described below:

- 1) Use the AT-D890UV CPS to read the radio, and check the Model (Band) information to understand which frequency mode the radio is.
- 2) Use the AT-D890UV 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-D890UV.
- 4) If the codeplug has a mismatched frequency Band (or Mode) 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.

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Option A: to change the radio's frequency band to be the same as the codeplug's band or Mode, 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.

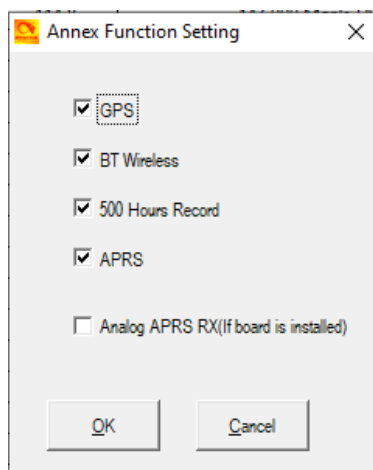
Option B: create a new codeplug using the correct frequency band.

Use the AT-D890UV CPS to open a codeplug, then use "export all" to export the files.

In the AT-D890UV 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.

2.0 TOOL – Options

In the CPS under the TOOL menu is a set-up called **Options** and for the D890UV radio most of the options should be checked like below:

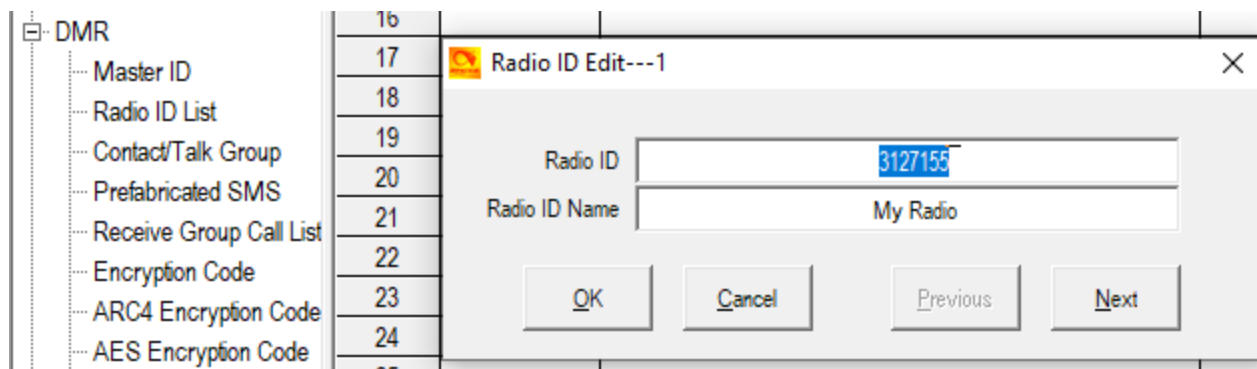


This will allow the CPS to display those options and allow you to program them. If they are not highlighted the Options will not be available in the CPS.

3.0 FIRST THING FIRST – RADIO DMR ID LIST

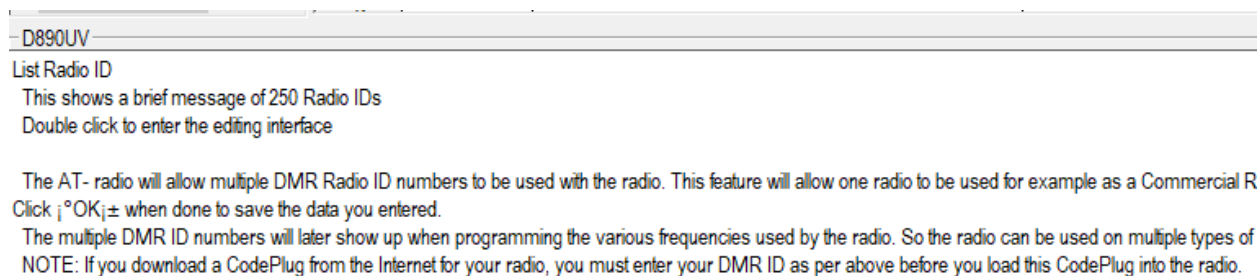
If you copy a codeplug or build your own the first thing to do is to set **your DMR number** in the radio. To do this you must expand the DIGITAL list on the very left side of your CPS. When used for Professional Mode we recommend starting with for example with 1,000 instead of a radio ID number. Se Appendix B why 1,000 is recommended. The name of the radio can be anything but we recommend My Radio as shown below.

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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. “My Radio” can also be changed to your FCC License Number if you so want.

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:



4.0 CONTACT/TALK GROUP (TG) LIST for DMR

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-D890UV 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/>

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ID	Call ID	Call Name	Call State
134	3134	None	NJ.State
135	3135	None	NM.State
136	3136	None	NY.State

The Talk Group list can also be generated by exporting the original radio Digital Contacts Talk Groups (from an AT-D878UV for example) 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” where you have the original Talk Groups. 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.

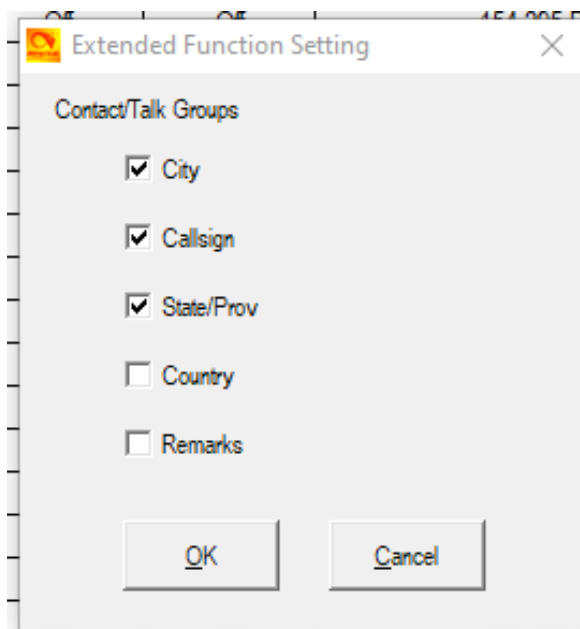
In the .csv format you can paste all or your required Talk Groups from the DMR-MARC website into the spread sheet. You get the format from the original radio codeplug you just exported.

Once all TG’s are entered in the .csv file, the TG List should be “imported” back using the Programming Software for the AT-D890UV radio the same way you exported the file. Click on TOOL Menu in the CPS, and then “import” for TG’s and in the new window click on Talk Groups and select the .csv file you want imported. Please note that the radio can have up to 10,000 Talk Groups.

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5.0 EXTENDED FUNCTION SETTING (TOOL MENU)

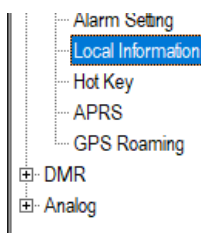
In the TOOL Menu there is a set-up (eXtended) for Contact/Talk Groups (TG) of what the radio should display on the LED display when transmitting on a digital channel. You may see the DMR Contact/TG expand as this function is added. It has 5 additional selections to make as follows and they show up in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

DMR	81	2402	None	SM2		Group Call		Norrbotten	Sverige
Master ID	82	2403	None	SM3		Group Call		Jämtland	Sverige
Radio ID List	83	2404	None	SM4		Group Call		Dalarna	Sverige
Contact/Talk Group	84	2405	None	SM5		Group Call		Östskusten	Sverige
Prefabricated SMS	85	2406	None	SM6	Gothenburg	Group Call		Västskusten	Sverige
Receive Group Call List	86	2407	None	SM7		Group Call		Skane	Sverige

NOTE: If the NXDN programming is not shown to the left in the CPS, you have to have the programming cable attached to the radio and click **Local Information** – See below.



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6.0 DIGITAL CONTACT LIST (DMR)

Channel	Auto Repeater Offset Frequencys
Radio ID List	Roaming Channel
Zone	Roaming Zone
Scan List	APRS
Analog Address Book	GPS Roaming
Talk Groups	Optional Setting
Digital Contact List	D:\Documents\RADIO\A R A D I O\ANYTONE\DMR
Prefabricated SMS	Alert Tone

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. You must create a login to access this list031:

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

and select “downloads” and the “**user.csv**” file to download and import to the AT-D890UV radio. This database of contacts must be the.csv format to be used for DMR ID’s and imported into the AT-D890UV radio as required. The radio holds 500,000 names in the look-up table.

D890UV[UHF(400 - 520 MHz) MHF(220 - 225 MHz) VHF(136 - 174 MHz)][D:\Documents\RADIO\A R A D I O\ANYTONE\DMR AT-890UV NEW Radio\D890UV Codeplug\D890UV Codeplug 14 250621.rdt] Version 1.00

File Model Set Program Tool View Help

No.	TG/DMR ID	Call Alert	Name	City	Call Type	Call sign	State/Prov
142916	3127094	None	Trygve Svard	Minneapolis	Private Call	KD0PNQ	Minnesota
142917	3127095	None	Carol Estley	Bloomington	Private Call	KB0FFO	Minnesota
142918	3127096	None	Lion Templin	Minneapolis	Private Call	K1LEO	Minnesota
142919	3127097	None	Max H. Van Riper	Blaine	Private Call	K0SXR	Minnesota
142920	3127098	None	Matthew C. Blum	Minneapolis	Private Call	KE0HEP	Minnesota
142921	3127099	None	John W. Erickson	Roseville	Private Call	KE0EXC	Minnesota
142922	3127100	None	Andru J. Mirheals	Sleepers Falls	Private Call	N01ION	Minnesota

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

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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-D890UV, 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-D890UV 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.

7.0 CHANNEL – FREQUENCY SET-UP

The AT-D890UV radio offers programming of 4,000 channels for UHF and VHF. The channels can be either analog or digital (DMR or NXDN). To start, double click on the first line No.1 to open the Channel Information programming window for that channel as seen on page 13 below.

If you plan to import the channel list from a different radio like a AT-D878UV you need to make sure it is from a radio with the same frequency band. See above description for details of importing data to the new radio AT-D890UV. The NXDN part of each channel will automatically be entered the first time it is used.

You may want to set up the Default Channel Information under TOOL menu to make it easier to program each channel if you start from scratch. You will then get a good start for each channel you want to program.

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.:	Program the frequency in the VHF or UHF band
Transmit Freq.:	Program the frequency in the VHF or UHF band
Correct Frequency:	Program any offset of the TX/RX frequency in Hz for a hot-spot
Channel Type:	Select Analog, Digital, Mixed Analog or Mixed Digital
Transmit Power:	Select one of four levels and to 7W/5W/2.5W/0.2W for VHF, 6W/5W/2.5W/0.2W for UHF (Turbo, High, Mid, Low)

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Band Width: (not selectable for DMR) 6.25kHz, 12.5 kHz or 25 kHz
TX Permit: Selects PTT transmit criteria of 4 – typically Same Color Code (CC)
Scan List: Select which Scan List to start scanning from (create list first)
APRS Report Type: Select Off, Analog or Digital. (only visible if APRS selected under TOOL)
Analog APRS PTT: Select Off, Start or End of transmission
Digital APRS PTT: Select Off or On
Digital APRS Ch.: Select 1 through 8 (programmed separately)
Excl Ch from roam.: Select On or Off
DMR Mode: Select Repeater for normal mode or simplex, double slot or split.
(Simplex and double slot with same time slot between radios but without repeater. Split with repeater and with different time slots between TX and RX)
Analog APRS Freq.: Select 1 through 8
DMR CRC Ignore: Select Off or On
PTT Prohibit: Check if the frequency is a listening channel only
Talk Around (Simpl): Check for RX freq. the same as the TX freq. (Simplex).
When the TX radio and RX radio both are set up with Talk Around on, they can communicate directly without a repeater. The analog channel will use the RX frequency as TX/RX frequency, the RX CTCSS/DCS decode as TX CTCSS/DCS encode.
APRS RX: Check if receiving APRX on this channel
Idle TX: Check if you want transmitting being on idle
Work Alone: Check if the “alone” emergency function should be allowed
Data ACK Disabled: Check to ignore the repeater data service request for a confirmation.
Auto Scan: Check if you want automatic scan of that channel
Send Talker Alias....: Check mark this as it allows your license to be sent with every digital call

7.1 Digital DMR

Please note that you have to set (on page 26 below) if you want DMR or NXDN digital protocols.

Contact/TG: Select the Talk Group you want for this frequency (**very important!**)
When you click on this you should see all the TG you have under DMR Contact/Talk Group you programmed under section 4.0 above.
Radio ID: Select which of the DMR ID's to use for this channel (My Radio)
RX Color Code: Select which Color Code (CC) to use for the channel used.
TX Color Code: Select which Color Code (CC) to use for the channel used.
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 (not allowed)
Extend Encryption: Select AES or ARC4
ARC4 Encryption: Select Off

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AES Encryption: Select Off
Multiple Key: Select Off
Random Key: Select Off
SMS Forbid: Select ON or OFF
TX Interrupt: Select Off and transmit on this frequency / TG
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: Check if the radio shall ignore the slot setting on this channel.
SMS Confirmation: Check if the radio shall request an SMS confirmation from the other radio.

7.2 Digital NXDN

This feature allows for Next Generation Digital Narrowband (NXDN) using FSK modulation and uses Frequency-Division Multiple Access (FDMA) technology. Typically, 2 separate voice signals (analog and/or digital) can be used (6.25 kHz) on a 12.5 kHz channel. See page 8 at the bottom for NXDN programming and page 29 below for additional NXDN setup.

Contact/Talk Group: Select Talk Groups as set up separately under NXDN Contacts below
Band Width: Select 6.25 kHz or 12.5 kHz (amateur must select 6.25 kHz)
Optional Signaling: Select NXDN ID or Off (get your NXDN ID at www.radioid.net after logging in go to top right corner and click on the license no. there)
Squelch Mode: Select RAN or RAN & NXDN ID
TX Busy: Select Off, Carrier, Error RAN, Correct RAN or Any Ran
PTT ID: Select On or Off
RAN Encode: Select 1 and 1 to 63 (Random Access Number similar to CTCSS)
RAN Decode: Select 1 and 1 to 63 (leaving RAN = 1 will listen to all traffic)
(please do not use a "0" if that is allowed or the radio will be silent)
NDXN Encryption: Select Off
Receive Group Li.: Select Off
Send Status Info: Select Off

7.3 Analog

CTCSS/DCS Decode: Select Off or CTCSS or DCS and tone frequency (receiver)
CTCSS/DCS Encode: Select Off or CTCSS or DCS and tone frequency (transmitter)
Squelch Mode: Select how to use the squelch where "Carrier" is the most common
Optional Signal: Select Off, DTFM, 2Tone or 5Tone
DTFM ID: If DTFM ID was selected:
Step 1: Analog->DTMF, input the DMTF self ID and DTMF encode.
Step 2 : Channel->Analog->Optional setting, set to DTMF
Step 3: Channel->Analog->Squelch mode, set to Optional Signal

Step 4: Channel->Analog->DTMF ID, select the DTMF code
Step 5: Optional Setting->Key function, assign a key to Call.

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- 2Tone ID: Step 6: Press the Call key to send the selected DTMF ID.
If 2 Tone ID was selected:
Step 1: Analog->2Tone, complete the settings in Encode page.
Step 2 : Channel->Analog->Optional setting, set to 2Tone
Step 3: Channel->Analog->Squelch mode, set to Optional Signal
Step 4: Channel->Analog->2Tone ID, select the 2Tone code
Step 5: Optional Setting->Key function, assign a key to Call.
Step 6: Press the Call key to send the selected 2Tone.
- 5Tone ID: If 5 Tone ID was selected:
Step 1: Analog->5Tone, input the 5Tone self ID and complete the settings in Encode page.
Step 2 : Channel->Analog->Optional setting, set to 5Tone
Step 3: Channel->Analog->Squelch mode, set to Optional Signal
Step 4: Channel->Analog->5Tone ID, select the 5Tone code
Step 5: Optional Setting->Key function, assign a key to Call.
Step 6: Press the Call key to send the selected 5Tone.
- PTT ID: Select off, at start, at end or both. To get the PTT ID working, the optional signal shall be set to DTMF or 5Tone, and the EOT/BOT in the DTMF & 5Tone page shall be set up first.
OFF: Select OFF
Start: Select Start, press PTT key to send a series of DTMF codes or 5Tone code.
End: Select End, release PTT key to send a series of DTMF code or 5Tone code.
Start & End: Select Start and End, press and release PTT key to send a series of DTMF code or 5Tone code.
- Scramble Set: Select Off or a frequency to offer a more confidential communication while other radios will hear only a noise.
- Custom Scramble: Select if you want to add a custom scrambler frequency.
- Reverse: Check if you want Reverse TX and RX frequencies on the channel.
- Compand: Enable this function to reduce background noise and enhance audio clarity, especially in long range communication.
- QDC1200: If the QDC1200 code was selected:
Step 1: Analog->QDC1200, complete the settings in Encode page.
Step 2 : Channel->Analog->Optional setting, set to QDC1200
Step 3: Channel->Analog->Squelch mode, set to Optional Signal
Step 4: Channel->Analog->QDC1200, select the QDC1200 code
Step 5: Optional Setting->Key function, assign a key to Call.
Step 6: Press the Call 1 key to send the selected QDC1200.
- 2 Tone Decode: Write how to decode
- Custom CTCSS: Enter value when requiring a custom CTCSS tone
- R5 Tone Bot: Select if a R5 tone is to be sent at PTT
- R5 Tone Eot: Select if the R5 tone is to be sent at the release of the PTT

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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, from the original AT-D890UV CPS, where the radio was read to get all the data in the correct format, and then work the entry of most data in the excel format. Then save it and “import” back into the codeplug of the radio. 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 channel set-up from for example an AT-D878 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 AT-D890UV radio.

The completed Channel data should look something like below:

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D890UV[UHF(400 - 520 MHz) MHF(220 - 225 MHz) VHF(136 - 174 MHz)]([D:\Documents\RADIO\ar A D I O\ANYTONE\DMR AT-890UV NEW Radio\D890UV Codeplug\D890UV Codeplug 14 250621.rdt] Version 1.00)

File Model Set Program Tool View Help

No.	Receive Frequency	Transmit Frequency	Channel Type	Power	Band Width	CTCSS/DCS Decode	CTCSS/DCS Encode	Channel Name	Contact	Radio ID	Optional Signal
1	145.17000	144.57000	A-Analog	High	12.5K	100.0	100.0	145.170 St Paul	Contact 1	My Radio	Off
2	145.19000	144.59000	A-Analog	High	12.5K	100.0	100.0	145.190 Faribault	Contact 1	My Radio	Off
3	145.23000	144.63000	A-Analog	High	12.5K	114.8	114.8	145.230 Chaska	Contact 1	My Radio	Off
4	145.29000	144.69000	A-Analog	High	12.5K	114.8	114.8	145.290 N Bright	Contact 1	My Radio	Off
5	145.31000	144.71000	A-Analog	High	12.5K	114.8	114.8	145.310 St Paul	Contact 1	My Radio	Off
6	145.37000	144.77000	A-Analog	High	12.5K	107.2	107.2	145.370 Mpls	Contact 1	My Radio	Off
7	145.39000	144.79000	A-Analog	High	12.5K	D047N	D047N	145.390 Richfield	Contact 1	My Radio	Off
8	145.43000	144.83000	A-Analog	High	12.5K	127.3	127.3	145.430 Edina	Contact 1	My Radio	Off
9	145.45000	144.85000	A-Analog	High	12.5K	Off	Off	145.450 Minnetonka	Contact 1	My Radio	Off
10	146.62500	146.02500	A-Analog	High	12.5K	146.2	146.2	146.625 Litchfield	Contact 1	My Radio	Off
11	146.62500	146.02500	A-Analog	High	12.5K	100.0	100.0	146.625 Rochester	Contact 1	My Radio	Off

8.0 ZONE LIST CREATION

NOTE: You have to use the AT-D890UV radio with the up/down key (big round center key) arrow button to go between zones.

Create a 'Zone' name (that relates to the name of the scan list) and insert it for the time being to create a group of channels for example all tied to one repeater. 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, however 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'.

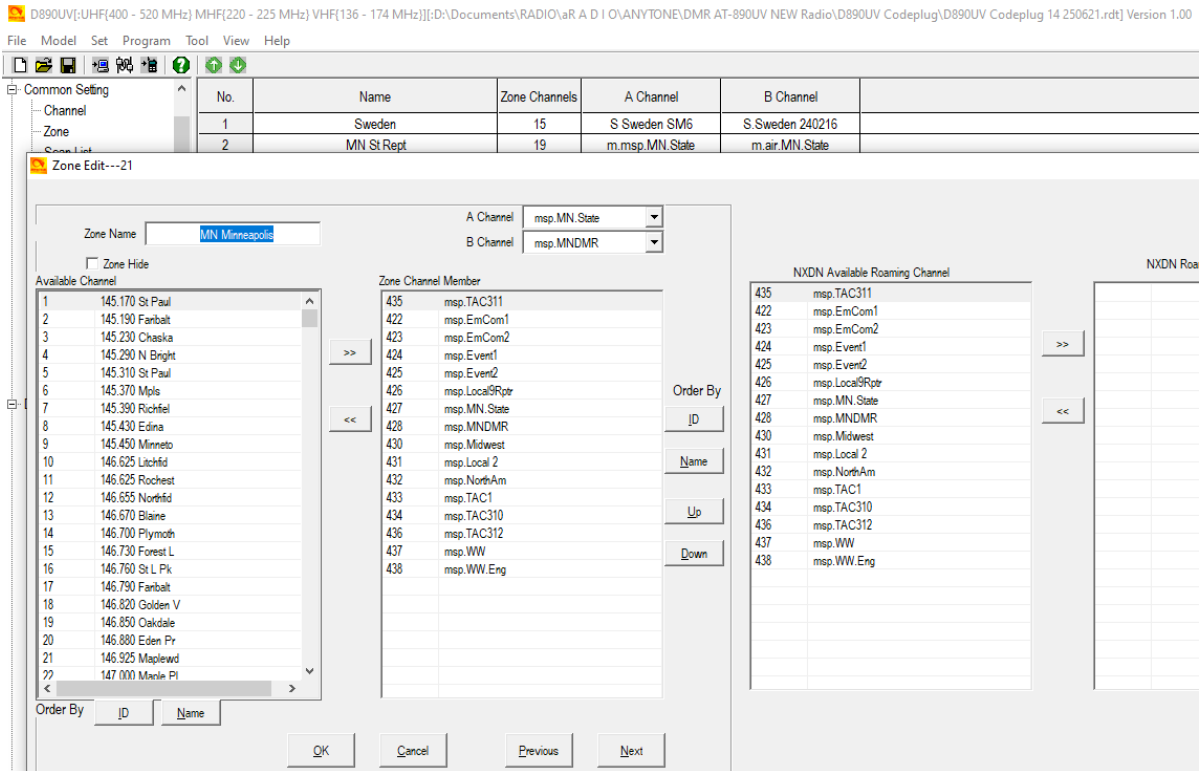
In the Zone menu, double-click on Line No.1 to open the Zone Edit window.

The **green up** and **green down** arrow in the picture below allow re-sorting the Zone list names to achieve a different order. This may help to put them in alphabetical 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 use one repeater and scans all programmed Talk Groups on that repeater.

To create a Zone name you use the repeater name or "UHF Analog". Then you see all your Channels on the left side of the open window. You have to move with the >> the Channels you want over to the right side. The A and B Channel visible on top at the right is the opening Channel for that Zone. Please note that you may hide the Zone by clicking the "Hide Zone".

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9.0 SCAN LIST

This set-up is very similar to how the CPS works. You double click on the top channel and see a new window. You name it as you find appropriate. You then drop the channels you want in this scan list by using the >> double arrows to the right to build a list on the right side of the display of the channels you want in the scan list. It is very similar of how you create zone lists. See the page in the radio manual for further descriptions.

Please note that you have selections at the bottom of the page to set up. The Revert Channels has a bit of further explanation here.

When the radio finds a signal during scanning, press Menu key on radio to stay at the channel with the signal permanently. Please note the channel might be from a different zone.

Priority Channel Select: Select Off or during scanning, press PTT to transmit at the Priority Channel.

Priority Ch. 1: Select which channel you want as the priority channel 1.

Priority Ch. 2: Select which channel you want as the priority channel 2.

Revert Channel: Select what channel you want as the TX channel

Look Back Time A: Select the time you want to stay between 0.5 and 5.0 seconds.

Look Back Time B: Select the time you want to stay between 0.5 and 5.0 seconds.

Dropout Delay Time: Select the time you need for continuing scanning; 0.1 to 5.0 sec.

Dwell Time: Select the time you want to remain on the channel; 0.3 to 5.0 sec.

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10.0 AM Air Band

Here you can program frequencies in the air band 108 to 137 MHz. Double click on the first line and enter the frequency and station name and so on. A Zone for the AM Air Band is available and has to be set up for the ability to listen and scan the various airports. Please note that to start a scan first move the scannable channels into "Zone Scan Channel Member" in the CPS under AM Zone. Then start scanning from the radio Menu, where a new menu just for the scanning appears if you are looking at the AM channel.

11.0 FM Band

Here you can program FM stations you may want to listen to between 88 to 108 MHz. As part of programming a frequency you also can add what name the station has. To listen to FM or AM channels on the radio you must go to Menu and Settings and Radio Set and then Other Func finally to AM Air/FM to select where and what you want to listen to.

12.0 OPTIONAL SETTING

The AT-D890UV radio basic configuration set-up is done in the Optional Setting window in the CPS. 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 below window shows all the 18 sub menus available in the Optional Settings. This guide tries to help in programming each of the 18 menus. Recommended settings are from the creator of this programming guide and underlined to help first time users. Please note that on the radio some Exit functions require P2 to be used instead.

12.1 Alert Tone1

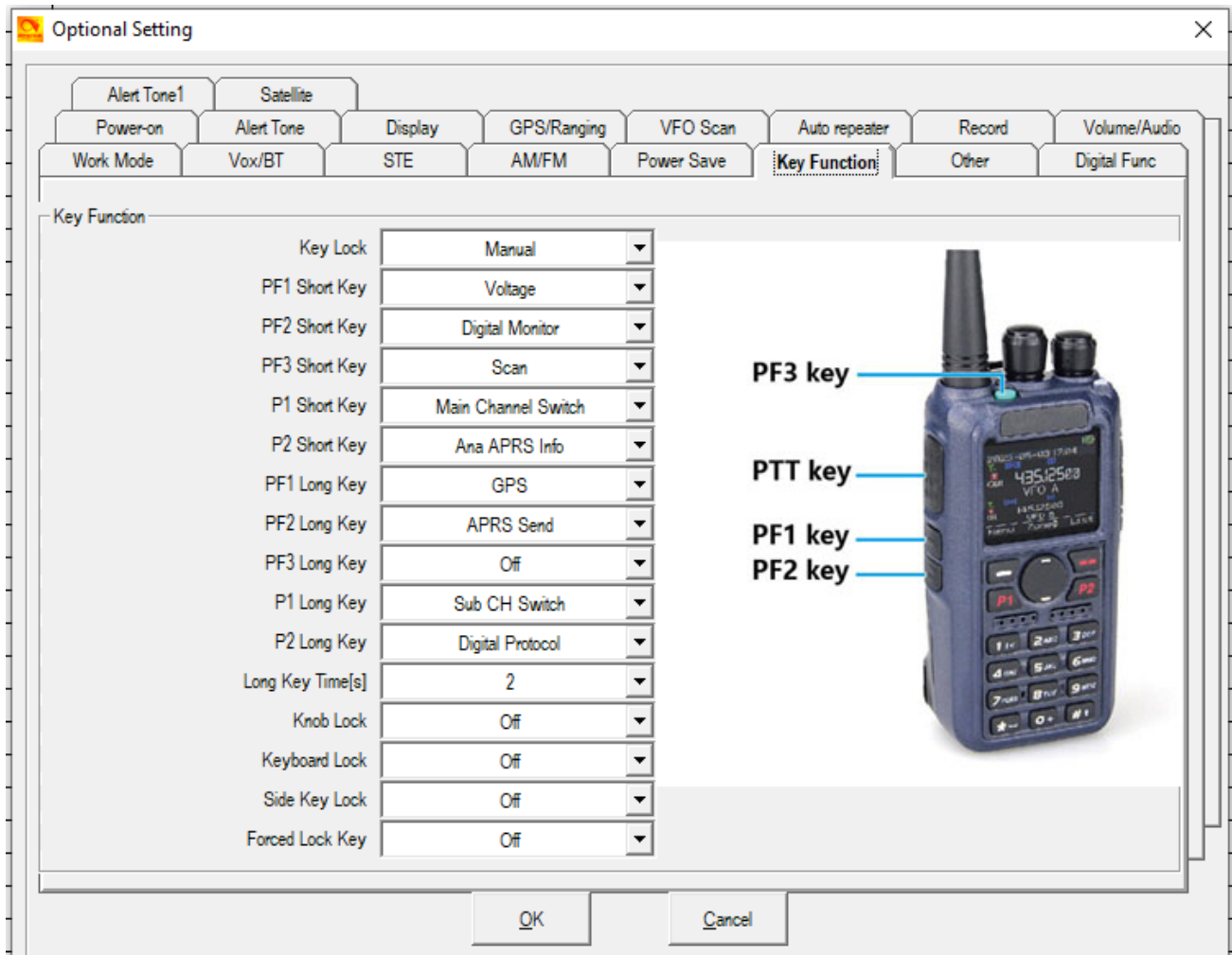
2 tones programmable at up to five tones each. Leave as they are as they don't need change.

12.2 Power On

Power-on Interface:	Select Default, <u>Custom Char.</u> or Custom Picture at start-up
Power-on Display Char.:	Enter your unique characters for the start-up display (your callsign and name for example)
Power-on Password:	Select On or <u>Off</u>
Power-on Password Ch.:	Write in keyboard characters to unlock the radio
Default Startup Chan.:	Select Off or <u>On</u> (to power on with the same channels each time)
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.
Starup GPS Test:	Select <u>Off</u> or On

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Startup Reset: Select Off or On should be “on” to allow PTT + PF1 to reset the radio after installing new firmware.



12.3 Alert Tone

Please note that the radio may consume up to 38 mS before it sounds the beginning of a tone. Therefore, make the first choice longer than 38 mS.

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, Digital, Analog or both Digital and Analog
 Key Tone: Select Off or On if you want a tone for pressing a key

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Dig. Idle Channel Tone: Select Off or one of 3 if you want a tone when a channel is idle (Type 1 selected)

Startup Sound: Select Off or On if you want a tone when powering on

Tone/Key Sound Adjust: Select Adjustable (volume knob) or a level from 1 – 15 Ana.

Ana. Idle Channel Tone: Select Off or On if you want a tone when a channel is idle.

Plug-in Recording tone: Select On or Off

Call Permit Tone

Call Tone: Select frequency and duration of this tone if you want one in front of a transmission. You can set if you want the tone above. You can hit the “play” to hear your programming of the tone in the radio.

Idle Channel Tone

Idle Channel Tone: Select frequency and duration of this tone when a channel is idle

Call Reset Tone

Call Reset Tone: Select frequency and duration or tones.

12.4 Display

Please note that red color does not show so well in a black background so other colors have been selected as shown below.

Brightness: Sets the display brightness – 5 is the brightest available

Auto Backlight Duration: Sets the time the display is on or “Always” for always on

Backlight Delay Of TX: Select Off or one of 30 times up to 60 seconds.

Menu Exit Time: Set the time the Menu selection is left on - minimum 5 sec (40)

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 Based as primary display

Call Sign Display Color: Select the color for how to display the call sign shows (green)

Display Channel No: Select how the channel should be displayed (actual Channel)

Display Current Contact: Select On or Off

Standby Char Color: Select the color for this display of characters (green)

Standby BK Picture: Select Default or one of 2 you must load (Default)

Show Last Call Launch: Select Off or On to show last heard name

Separate Display: Select On or Off if the display shows 1 or both channels

Ch Switching Last Caller: Select Off or On to show last caller name and keep last caller

A Ch Name Color: Select a color (white)

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RX Backlight Delay:	Select <u>Always</u> or 1 – 30
B Ch Name Color:	Select a color (<u>white</u>)
Zone Name A:	Select a color (<u>yellow</u>)
Zone Name B:	Select a color (<u>yellow</u>)
Display Ch Type:	Select <u>On</u> or Off
Display Time Slot:	Select <u>On</u> or Off
Display CC:	Select <u>On</u> or Off
Date Format:	Select how the date should be shown (<u>dd/mm/yyyy</u>)
Volume Bar:	Select <u>On</u> or Off

Note: The AT-D890UV if programmed for display of 1 channel the switching will show the second channel. Also note that the channel the transmitter works on if both channels are shown has a larger line under the line so that the word ANA or DIG is bigger than the channel used for listening only.

12.5 GPS/Ranging (set the Options from Section 2.0 above first)

GPS:	Select <u>Off</u> or On
Get GPS Positioning:	Select <u>Off</u> or On
Time Zone:	Set the GMT time zone for the radio (important for satellite reception and CST is -6 or summertime -5 in Minnesota)
Ranging Intervals:	Select <u>5</u> to 255
Distance Units:	Select Metric or <u>Inch System</u>
GPS Template Info.:	Select <u>Off</u> or On
GPS Mode:	Select <u>GPS</u> (for USA) or any of the other modes offered
GPS Roaming:	Selected as <u>Off</u> (the radio will change Zone to agree with CPS)

Setting up the GPS and the APRS can be done by watching the information available on the internet for example a site made for a UK AnyTone radio but changing the frequencies for US use would be a requirement.

<https://do1alx.de/2021/getting-analog-aprs-to-work-on-an-anytone-at-878uv-and-at-878uvii/>

12.6 VFO Scan

VFO Scan Type:	Select <u>TO</u> – 5 sec start after voice completes, <u>CO</u> – 2 sec start after voice completes or <u>SE</u> stops scan altogether (VFO scan only)
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

12.7 Auto Repeater

Auto Repeater A:	Select Off, Positive or Negative offset frequency for TX only
Auto Repeater B:	Select Off, Positive or Negative offset frequency for TX only

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Auto Repeater1(UHF):	Select Off (program offset in CPS under Common Setting)
Auto Repeater1(VHF):	Select Off (program offset in CPS under Common Setting)
Auto Repeater2(UHF):	Select Off (program offset in CPS under Common Setting)
Auto Repeater2(VHF):	Select Off (program offset in CPS under Common Setting)
Repeater Check:	Select On or <u>Off</u>
Repeater Check Interval:	Select 5 to 50 seconds
Repeater Check Recon.:	Select 1, 2 or 3 times
Rep. Out of Range. Not.:	Select <u>Off</u> , Bell or Voice
Rep. Out of Range Times:	Select 1 to 10 times
Auto Roaming:	Select On or <u>Off</u>
Auto Roam Start Cond.:	Select Fixed Time or Out of Range
Auto Roam at Fixed Time:	Select 1 to 256 minutes
Roaming Effect Wait T.:	Select None up to 30 seconds
Roaming Zone:	Select Zone wanted
Frequencies:	Max and Min frequency based on the Band selected for the repeater under UHF or VHF and repeater A or B.

The D890UV can be used as a cross-band repeater. The radio allows Analog, DMR or NXDN cross band (U to V) repeater or Analog, DMR or NXDN cross band (V to U) repeater. As an example, the A channel is for TX and the B channel for RX or vice versa.

Repeater Mode:	Select On or <u>Off</u> for repeater use (this setting is the basic on/off and is best turned on/off in the radio Menu instead than here)
Rep. CC Limit:	Select <u>Off</u> or Match Channel A or Channel B Color Code
Rep. Slot Path A:	Select Off or Channel A Fixed Time Slot 1 or Slot 2 (see below)
Rep. Slot Path B:	Select Off or Channel B Fixed Time Slot 1 or Slot 2

Turning on the cross-band repeater function will allow the radio to work as a small local repeater. The radio will TX on one channel, RX on the other channel.

Note: Cross-band Analog to NXDN or NXDN to Analog: Must be UHF-VHF, or VHF-UHF cross bands.

Cross-band Analog to DMR or DMR to Analog: Must be UHF-VHF, or VHF-UHF cross bands.

Cross-band Analog to Analog: Must be UHF-VHF or VHF-UHF cross bands.

When the radio is active as a repeater it is in a locked mode. You have to wait until a call is completed to turn the radio off or stop the repeater mode. An example of how to set up the radio for a single digital frequency is shown below:

**** Please Turn Off Digital Monitor when using the Cross-band repeat function. The radio has to have both the primary and the sub channel on (A and B). Turn on the repeater function in the Menu – Settings – Radio Set - DMR/NXDN Func – Repeater. Also – do not use T (highest) power as the radio may get warm.****

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Analog (A) to Digital (D) or Digital (D) to Analog (A) Cross band Repeater Setup

- a. To set the channels or frequencies you will want to use with cross band operation, the radio must be set to display both the Main Channel (VFO A) and the Sub-Channel (VFO B).
- b. Set the analog channel with simplex or repeater frequency, and set the digital channel with simplex frequency only.
- c. Turning the Repeater function ON in the Radio Settings menu (Settings, Radio Set, DMR/NXDN Function, Repeater and select On – it will tell you if the set-up is accepted).

12.8 Record

Record Function:

Select Off or On to record each TX and RX internally from both analog and digital voices sent or received. You could set up PF1 and PF2 to be the start and stop of recording by using Record Switch (enable/disable) and Record (start/stop) not to have to use the radio menu each time. You have the option in the radio to record up to 14 hours of voice and that is every call with the AT-D890UV radio if you have “Record” in the radio menu set to ON. You can listen to all those recordings on the radio, which are the best method, by using the radio menu. Use the round Zone switch on the radio to go forward or backwards when you listen.

You can also listen to the recording on your computer by using the TOOL menu and using the Radio Recording feature which is offered there. Make sure the correct COM port has been selected first. Please note that the CPS must be directly on the C drive and not in Program Files – see the NOTE on page 3 above. **“Get File List”** and follow the bottom clickable questions. If you have long recordings, it may take some time to access them. Note: You may have to increase the computer volume to hear the recording at normal level. Exporting the files may consume up to several minutes and you could open the “temp” folder in the same folder you installed the CPS to find the recordings. A klick on the “close X” of the window will return the radio to normal operation again.

Please note - When the radio is uses as a cross-band repeater, the recording function is not working. Recording is compressed 16 times and may not sound as good as the original sound.

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12.9 Volume/Audio

Maximum Volume:	Select 1 - <u>8</u> for higher max volume – 8 is the max
Min Volume Type:	Select <u>Preset</u> or Minimum
Min Volume:	Select 0 – 15 (<u>5</u>) (for power-on sound level until the volume button is used)
Max Headset Volume:	Select Indoor, or 1 - 8 for max volume for a headphone (<u>3</u>)
DMR Mic Gain:	Allows increasing the mic sensitivity from 1 to 5 or <u>Auto</u> .
Enhanced Sound Qual.:	Set to <u>On</u> for increased high pitch voice or Off for normal.
Ana Mic Gain:	Set for analog microphone gain 1 - 5 or <u>Auto</u> .
DRC Dynamic Range:	Set <u>On</u> or Off for Automatic Gain Control (AGC) of strong signals to make overmodulated signals weaker.
NXDN Mic Gain:	Select 1 to 5 or <u>Auto</u> (this is possibly low and then use a 5)
Note: Mic Gain may not make much of an effect thru a hot spot as it also adjusts the gain.	
RX Noise Reduction:	Select <u>Off</u> or 1 - 5
TX Noise Reduction:	Select <u>Off</u> or 1 – 5
Sub Spk in TX	Select <u>Off</u> or On if you want the unused RX channel Off during TX.

12.10 Work Mode

Display Mode:	Defines what the radio display will show when in receive mode – frequency or <u>channel</u> 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 <u>A</u> or B for radio startup
Sub-Channel Mode:	Select <u>On</u> or Off (allows both channel A and B to be displayed)
Chose Working Mode.:	Select <u>Amateur</u> or Professional Mode (in professional mode you can lock keys in “Key Function” of Optional Settings and only allow the channel and volume control to be used – see Appendix B for more details for Professional Mode.)
Weather Alerts:	Select On or <u>Off</u>
Weather Channel:	Select <u>1</u> to 10

12.11 VOX / BT (Voice Operated Transmit / Bluetooth if selected under TOOL/Options)

VOX On/Off:	Select <u>Off</u> or On
VOX Delay:	Select how many seconds of delay after a transmission end
VOX Detection:	Select <u>built-in mic</u> or external mic or both
BT On/Off:	Select On, Off or KISS TNC (BT stands for Bluetooth)
Install Mobilinkd TNC Config on your phone and get more info from https://mobilinkd.s3.amazonaws.com/TNC4/MobilinkdTNC4.pdf for KISS TNC (Keep It Simple Stupid = KISS and Terminal Node Controller = TNC)	

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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)
BT Nr Before:	Select <u>Off</u> or 1 through 5 (Nr = Noice Reduction)
BT Nr After:	Select <u>Off</u> or 1 through 5

12.12 STE (Squelch Tail Eliminate) for simplex radio to radio in analog mode only

STE Type CTCSS:	Select <u>Off</u> , Silent or a selected tone phase shift
STE When No Signal:	Select <u>Off</u> or 55.2 Hz or 259.2 Hz
STE Time:	Set the time for analog and note recommendation (<u>250 mS</u>)

12.13 AM/FM

AM/FM Function:	Select Off, FM, AM(A) or AM(B) which must be on for other functions below to work. (A and B are the top or the bottom receiver). Please note that you must select AM or FM to get the below items to work.
FM VFO/MEM:	Select VFO or <u>Memory</u>
FM Work Channel:	Select the FM channel to listen to (after set-up done)
FM Monitor:	When in FM mode select <u>On</u> if the radio shall receive calls
AM VFO/MEM:	Select VFO or <u>Memory</u>
AM Work Zone:	Select the AM channel to listen to (after set-up is done)
AM Offset:	Select Positive or Negative
AM Squelch Level:	Select Off or <u>1</u> through 5

12.14 Power Save

Auto Shutdown:	Select <u>Off</u> or 10 to 120 minutes before auto shut-down
Power Save:	Select <u>Off</u> or 1:1 or 2:1 for saving power
Auto Shutdown Type:	Select Is or <u>Not affected by call</u>

12.15 Key Functions

Key Lock:	Select " <u>Manual</u> " or "Auto" (auto = keys will lock automatically)
PF1 Short Key:	Select Off or one of many functions listed below (quick key)
PF2 Short Key:	Select Off or one of many functions listed below (see above)
PF3 Short Key:	Select Off or one of many functions listed below (see above)
P1 Short Key:	Select Off or one of many functions listed below (see above)

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P2 Short Key:	Select Off or one of many functions listed below (see above)
PF1 Long Key:	Select Off or one of many functions listed below (1 sec and a beep is heard)
PF2 Long Key:	Select Off or one of many functions listed below (see above)
PF3 Long Key:	Select Off or one of many functions listed below (see above)
P1 Long Key:	Select Off or one of many functions listed below (see above)
P2 Long Key:	Select Off or one of many functions listed below (see above)
Long Key Time(s):	Select 1 – 5 seconds for holding the PF1, PF2 and PF3
Knob lock:	Select On or <u>Off</u> (used for professional mode)
Keyboard Lock:	Select On or <u>Off</u> (used for professional mode)
Side Key Lock:	Select On or <u>Off</u> (used for professional mode)
Forced Lock Key:	Select On or <u>Off</u> (set ON to prevent keys from being unlocked)

The choices for PF1 and PF2 are many and are listed below:
Off, Voltage, Power, Talk Around, Reverse, Digital Encryption, Call, VOX, V/M, Scan, AM/FM, Record Switch, Record, SMS, Dial, Main Channel Switch, Hot Key 1 – 6, Work Alone, Nuisance Delete, Digital Monitor, Sub CH Switch, Priority Zone, VFO Scan, MIC Sound Quality, Last Call Reply, Channel Type Switch, Ranging, Roaming, Max Volume, Slot Switch, Zone Select, Timed Roaming Set, Mute Timing, CTC/DCS Set, Bluetooth Wireless, GPS, Ch. Name, CDT Scan, APRS Send, Analog APRS Info, GPS Roaming, DIM Shut, Satellite Predicting, Squelch Level, WX Alarm, CH Setting, RX NR, TX NR, Relay Mode, Digital Protocol, and Freq. Sync.

12.16 Other

Address Book...:	Select On or <u>Off</u>
TOT:	Max Total Time of Transmit (TOT) or <u>Off</u> (no time limit on TX)
Language:	Select <u>English</u> or Germain
Frequency Step:	In VFO mode, selects the frequency steps (2.5k, <u>5k</u> , 6.25k, 8.33k, 10k, 12.5k, 20k, 25k, 30k and 50kHz)
SQL Level A:	Set the squelch level for the “upper” channel – set at <u>1</u>
SQL Level B:	Set the squelch level for the “down” channel – set at <u>1</u>
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! (<u>1000 Hz</u>)
Analog Call Hold Time:	Select how long a call is held for Analog reception. (<u>0</u>)
Call Channel Maintained:	Set to <u>Off</u> or On to allow 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 <u>1 minute</u> to 256 minutes
Encryption Type:	Select <u>Common</u> or AES/ARC4
TOT Predict:	Select On or <u>Off</u> as the radio beeps 5 sec before the TOT time

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TX Power AGC:	Select On or <u>Off</u> and the transmitter will send with a lower power level if the received signal is strong
NOAA Moni:	Select On or <u>Off</u>
NOAA Scan:	Select On or <u>Off</u>
NOAA Alert:	Select On or <u>Off</u>
NOAA Channel:	Select <u>1</u> through 10

12.17 Digital Function

Group Call Hold Time:	Select hang time for a Group Call (<u>1</u> to 30 sec, 30 min or infinite)
Person Call Hold Time:	Select hang time for a Private Call (<u>1</u> to 30 sec, 30 min or infinite)
Manual Dial – Group:	Select hold time for group TG 1 sec to 30 min (<u>Infinite</u>)
Manual Dial- Private:	Select hold time for private TG 1 sec to 30 min (<u>Infinite</u>)
Voice Header Repetition:	Select 2 to 8 (<u>3</u>) allows you to set the voice header repeat time
TX Preamble Duration:	Select time and note the suggestion (<u>120 mS</u>)
Filter own ID in miss call:	Select <u>Off</u> or On then the radio will not remind of a miss call when receiving a call with same ID.
Digital Remote Kill:	Select <u>Off</u> or On to allow remote shut-down of a radio (see page 41)
Digital Monitor:	Select Off or <u>Single</u> or Dual Slot to allow promiscuous mode
Digital Monitor CC:	Select Any or <u>Same</u> to allow same Color Code monitor
Digital Monitor ID:	Select Any or <u>Same</u> to allow monitor for a DMR ID
Monitor Slot Hold:	Select <u>Off</u> or <u>On</u> to monitor Slot continuously
Remote Monitor:	Select <u>Off</u> or On to allow other radio to check this radio
SMS Format:	Select SMS format as option is given below: Select <u>M-SMS</u> (Motorola) or H-SMS (Hytera) or DMR Standard format for SMS message
Dig Protocol:	Select <u>DMR</u> or NXDN (important setting) This change can also be made from the radio under MENU Settings (Radio Set, Other Func., Protocol which is 33)
Reset Digi. Protocol:	Select Off, <u>DMR</u> or NXDN (when resetting the radio it will start in the here selected protocol)

12.18 Alert Tone 1

Call End Tone:	Program as you like and test with Play
Call All Tone:	Program as you like and test with Play

12.19 Satellite

Satellite Location	Select <u>GPS</u> or any of the fixed locations 1 through 8
Sate TX Power	Select the radio power level for satellite communication (<u>Turbo</u>)
Sate Ana Squelch	Select the level of squelch wanted when receiving (0 – 5 <u>0</u>)
Sate AOS Limit	Select <u>0</u> – 30 to set up the elevation degrees for the satellite

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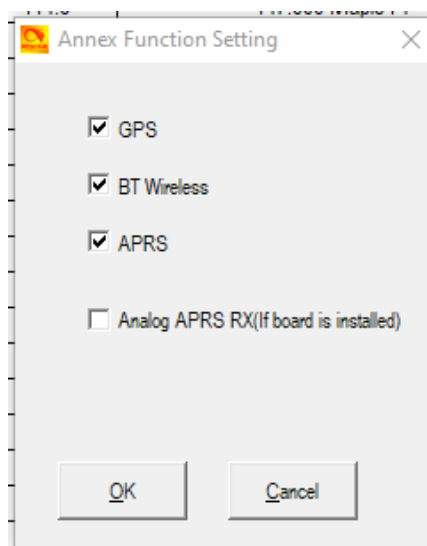
13.0 APRS SET-UP

The radio offers APRS set up in a window all by itself. We recommend using a web site for local set-up of this page like:

<https://pnwdigital.net/wp-content/aprs/aprs-d.html>

<https://www.m0pqa.com/2020/05/making-aprs-work-on-anytone-at-d878uv.html>

D890UV has two receiving paths, in the radio menu: APRS-Analog or APRS Info - Decode path, and you need to select a path for the analog APRS to do the decoding. Here is what is required to get the APRS to work. First in the CPS under the TOOL Menu go to Options and set APRS as active by checking the box shown below:



Then under Channels select a repeater frequency for digital reception and program as shown on the next page. What is important for the Digital APRS channel is to set up Brandmeister SelfCare Settings on their web site correctly, and also to make the following selections:

APRS RX	Select checked in the small square
APRS Report Type:	Type: Select Digital
Digital APRS PTT Mode:	Select On
Digital APRS Report Ch.:	Select 1 for this first channel (referenced on APRS set-up page)
Contact/Talk Group:	Set up the TG (APRS 1) for APRS which is 310999 for the US

For Analog APRS select the following:

Rx and TX Frequency:	Select 144.3900 if located in the US
APRS Report Type:	Type: Select Analog
Analog APRS PTT Mode:	Select Start of Transmission (or End of Transmission).

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Please also make sure the GPS is turned on in the Optional Settings in the CPS or via the Menu on the radio itself. Turning ON/OFF APRS can be done at *APRS Auto TX Intervals* in the CPS by setting it to Off or set a time for automatically sending a position or the radio *Menu*.

Channel Information Edit---442

Channel Name: msp.APRS1

Receive Frequency: 442.65000
Transmit Frequency: 447.65000
Correct Frequency[Hz]: 0

Channel Type: D-Digital
Transmit Power: High
Band Width: 12.5K
TX Permit: Always
Scan List: None

APRS Report Type: Digital
Analog APRS PTT Mode: Off
Digital APRS PTT Mode: On
Digital APRS Report Channel: 1
Exclude channel from roaming: off
DMR MODE: Repeater
Analog APRS Report Freq: 1
DMR CRC Ignore: Off

PTT Prohibit: ☐
Talk Around(Simplex): ☐
APRS RX: ☒
Idle TX: ☐
Work Alone: ☐
DataACK Disable: ☐
Auto Scan: ☐

DMR

Contact/Talk Group: APRS 1
Radio ID: My Radio
RX Color Code: 2
TX Color Code: 2
Slot: Slot1
Receive Group List: None
Digital Encryption: Off
Extend Encryption: AES
ARC4 Encryption Code: Off
AES Digital Encryption: Off
Multiple Key: Off
Random Key: Off
SMS Forbid: On
TX Interrupt: Off

Call Confirmation: ☐
Ranging: ☐
Slot Suit: ☐
SMS Confirmation: ☐

On the left side of the CPS select APRS and a new window opens up as shown below:

APRS

Manual TX Interval[s]: 60
APRS Auto TX Interval[s]: 75
Support For Roaming: Off
Fixed Location Beacon: Off
APRS Alt Data: Meter
APRSDisTime: 5S

Latitude: 0.00000
North or South: N
Longitude: 0.00000
East or West Hemisphere: E
Satellite Fix PointName 2:

Fix1: Fix2: Fix3: Fix4: Fix5: Fix6: Fix7: Fix8:

Digital

No.	Report Channel	Report Slot	APRS TG	Call Type
1	msp.APRS1	Slot1	310999	Private Call
2	mtk.APRS1	Slot1	310999	Private Call
3	uom.APRS1	Slot1	310999	Private Call
4	S.APRS	Slot1	310999	Private Call
5	Current Channel	Channel Slot	0	Private Call
6	Current Channel	Channel Slot	0	Private Call
7	Current Channel	Channel Slot	0	Private Call
8	Current Channel	Channel Slot	0	Private Call

Repeater Activation Delay[ms]: 600

Analog

Transmission Frequency1[MHz]: 144.39000
Transmission Frequency2[MHz]: 144.39000
Transmission Frequency3[MHz]: 144.39000
Transmission Frequency4[MHz]: 0.00000
Transmission Frequency5[MHz]: 0.00000
Transmission Frequency6[MHz]: 0.00000
Transmission Frequency7[MHz]: 0.00000
Transmission Frequency8[MHz]: 0.00000
PASS ALL: Off

Ana Aprs Dec Path: A Path
Transmit Delay[ms]: 1200
Send Sub Tone: Off
CTCSS: 100.0
DCS: D000N
Prewave Time[ms]: 1200
Transmit Power: Turbo

APRS TX Tone: Off
TOCALL: APAT81
TOCALL SSID: -7
Your Call Sign: KD0PNQ
Your SSID: -7
APRS Symbol Table: /
APRS Map Icon: &
Digipeater Path: WIDE1-1,WIDE2-1
Enter Your Sending Text: Anytone D890UV
Ana APRSTx: Wide

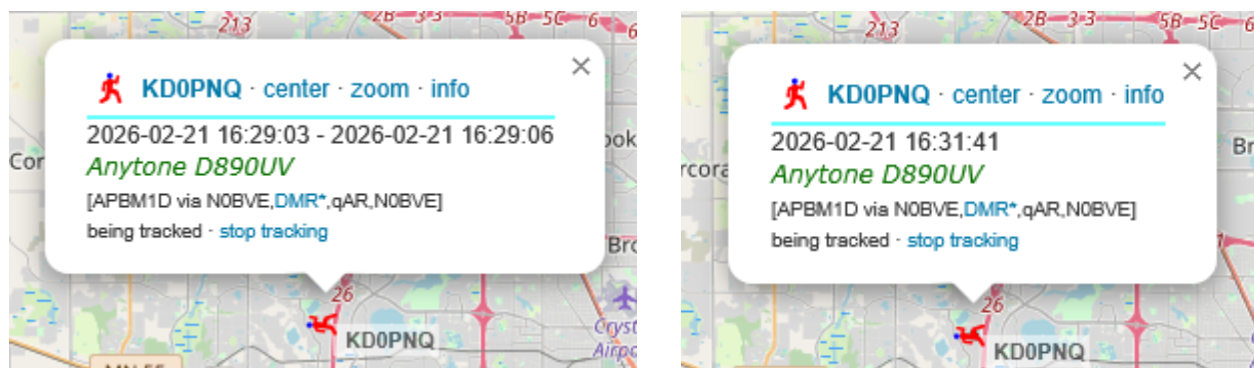
OK Cancel

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Hopefully you can read the pictures on previous page and program your radio the same way.

Also – in the radio Menu set up A or B as the APRS source. Then select if you want Analog or Digital APRS and typically the rest of the programming comes from what you inputted via the CPS. You may have to play with the many set-ups in the radio menu to be successful.

You then should be able to log into the website aprs.fi and do a search for your amateur license as done with the digital and analog location to be shown as below:



14.0 NXDN PROGRAMMING (Next Generation Digital Narrowband)

First if the radio is to be used for DMR and Analog functions this section can be left alone.

Note that RAN (Random Access Number) for NXDN is similar to CTCSS encoding used for analog systems. Select NXDN in the CPS on the left side and program of the following items (see page 8 above at the bottom if NXDN is not showing up in the CPS):

NXDN Encryption Code	This page do not normally need any entries
NXDN State MSG	This page do not normally need any entries
NXDN Settings	A new window opens and you need to program the following:
Unit ID (Own)	NXDN ID number (get it from www.radioid.net)
Base ID	Use "NT" as default
Base ID Type	Select <u>Unit ID</u> or Group ID (Unit ID is for individual radios and Group ID is for repeaters)
Unit ID Encode Block	Write <u>1 – 65519</u> (65519 is max that can be used)
Air Alias Name	Show your amateur license text in <u>8 characters max</u> (KD0PNQ)
Alert Tone Restriction...	Select Off
Call Alert Prohibited...	Select Off
Ignore Group Calls...	Select Off
Transmit Busy Wait...	Select <u>0.5</u> to 60 sec
Number of Retries	Select <u>0</u> to 8 times
Maximum ACK Wait...	Select <u>0.5</u> to 60 sec (Acknowledgement that TX reached the RX)

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Data Transmission Mod...	Select <u>0</u> to 6000 sec
ACK Delay Time	Select <u>0</u> to 127 sec (Acknowledgement that TX reached the RX)
Singel Call Req. Tone	Select <u>Off</u>
Call Progress Delay...	Select <u>0</u> to 6 sec
Automatic Response	Select <u>Off</u>
Roam Stay Time	Select <u>1</u> through 200 sec
NXDN Moni	Select <u>On</u>
NXDN Moni RAN	Select <u>Any</u> or Same (see note about RAN above)
NXDN Moni ID	Select <u>Any</u> or Same

NXDN Receive Group... This page do not normally need any entries

NXDN Cont./Talk Group: This is the Talk Groups for NXDN where for example one line should be as below:

ID = 65000, Name = 65000, Tx Forbid = Off, Attribute (Atr) = Group Call (Wide World Talk Group) You can find more NXDN TG's from the Internet if you do a search.

NXDN Digital Cont. List: Import under TOOL the NXDN Digital Contact List available from <https://radioid.net/database/dumps> and get the NXDN.csv file there

Please note that the radio has to be in **NXDN protocol** for **importing all NXDN Digital Contacts**. Sometimes the CPS may report an error when importing the NXDN.csv file. Solution is to save the NXDN.csv file and then import the re-saved file, and it should work.

Digital NXDN Channel (under "Channel" on the top left of the CPS)

After the details of using NXDN you need to program other sections in the CPS.

On the **Channel** setting you need to program the NXDN channels that are to be used:

Setting	Value
Contact/Talk Group	World Wide,
Band Width	6.25K
Optional Signaling	NXDN ID
Squelch Mode	RAN & NXDN ID
Tx Busy	Off
PTT ID	On
RAN Encode	1
RAN Decode	1
NX Encryption	Off
Recevice Group List	Off
Send Status Information Numb	Off

See page 12 for programming suggestions for channel set-up. Please note that 65000 is the Talk Group for Wide World and is mostly used.

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14.1 NXDN Zone

In the Zone you also need to program any NXDN channels. Follow the Zone set-up for DMR and enter a Zone name and then move over the channels you want in each zone.

If you are using NXDN please remember to switch the MENU Protocol from DMR to NXDN.

14.2 NXDN Talk Group ID

Talk Group setting is part of the frequency setting as the picture above shows (World Wide is TG 65000 and North America is TG 10200).

NOTE: A local hotspot such as openSPOT or a Pi-Stare may be very sensitive of the frequency setting as NXDN uses such a narrow frequency so that hay have to be adjusted to make NXDN work. The BER (Bit Error Rate) reading on openSPOT or Raspberry Pi should be as close to 0 as possible (use Advanced Mode for openSPOT under Modem to make adjustments as you find necessary).

Also please note that setting up a Pi-Star hotspot you should, when using an AnyTone radio, set the Control Software of the Pi-Star as Simplex Node and not try Duplex Repeater, It is easier to get it to work that way.

Frequency Save

Modem receive frequency (MHz):	441.025000
Modem receive frequency offset (Hz):	400
NXDN Radio Access Number (RAN):	0
Modem transmit frequency (MHz):	441.025000
Transmit power:	<input type="range"/> 13 dBm (19.95 mW)

Please note that when you see “delete” and no way to get back to where you were then **P2** is the key on the radio to use – it becomes the Exit or Back key (see User Manual).

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15.0 SATELLITE RECEPTION

The AT-D890UV radios has a new GPS included but you can also use a “fixed” position to instead of a GPS signal (if you are indoors for example) get set-up for satellite reception. To get started first use the menu under TOOL and Options and select APRS to get it to show up as a menu item on the left side under the CPS menu. In the APRS window, that you now can open, look for the latitude and longitude and put in your location (the example below shows a location in Minnesota).

This will place the radio in the correct position related to the satellites. There are 8 such positions available for different radio locations to select for the radio. Make sure the radio time is set correct or your satellite times when to listen may be off.

Also make sure the UTC time (-6.00 hours for Minnesota and -5 hours for summer time) is set correct as part of the **Optional Settings** and **GPS/Ranging** shown in the CPS. Also make sure TX power and squelch is set correctly in this window – see “satellite” set-up below. The TX power is shown in red color in the upper right corner of a satellite display together with the green signal strength bar. The TX power can also be changed during satellite reception by using the “*” button on the front of the radio bottom right.

Satellite Location: Select GPS Beacon or FIX 1 through FIX 8 manual positions being set on the radio itself.

Satellite: After a short while you will see the available satellites on the radio LED display and the time when it passes displayed is UTC time.

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Please note that the magazine QST have an article in the March 2025 issue on page 30 – 32 about satellite reception using a small portable radio. See also the writer's webpage all related to satellite reception: www.deloach.net/satellite

A brief education on azimuth and elevation is given here. Azimuth is 0° for direct north, east is 90°, south is 180° and west is 270°. Elevation is the vertical angel between you (the local horizon) where you are located and the satellite. The radio circle and the red dot should tell you where the satellite is located and if the elevation is negative, it is below the horizon and any communication with the satellite is not possible.

The next step is to go to the radio menu and select "satellite". If there is a good GPS reception of your location use that. You can also select "location" and then "fixed" you will see the latitude and longitude position as you entered it under APRS above – select that instead of the true GPS position. Please make sure it is correct. You also will see your location as a 6-letter version for amateurs called Grid Square Locator (or Maidenhead Locator System) as mine was EN35GB.

Please note that you can send out an APRS transmit under satellite menu by pressing PTT + PF2 button if set up correctly in the APRS set up menu in the CPS and also under TOOL, GPS Satellite Data Update where you set the APRS frequency.

In the menu of the radio, you then can go to "satellite" and it may take a short time during "Predicting" and you will see a list of satellites with the nearest satellite in time are highest up on the list. Once you select a satellite, the picture may look like the ones below:



By using the **Zone button** in the center, you can go between the three pictures shown above. The **channel knob** on top of the radio will control the squelch so you can cancel the squelch function and hear the satellite and with the noise it creates (it is almost required to use no squelch when listening to a satellite). You may hear amateur voices just when the satellite is in the right position and the red dot is in the center of display to the left above. If you try to transmit (**PTT**) when the satellite is not accessible you will hear the radio beep at you.

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The middle picture above describes when in UTC time when the satellite will pass at what elevation and for how long. The third display above tells the current azimuth and elevation the satellite is as well as the transmit and receiver frequencies and any CTC code required.

When you are on the second picture above the round ZONE key will show the different passes when the satellite will pass in your area. The times in UTC will also be shown so you may know how long you have to wait for other passes.

Wait for the time displayed to go to 0. It also will show the signal strength with the green bar on the right. Use the PTT to transmit to the satellite when the satellite is in position and you have the indication that you can do so. It is only a short time for each satellite. When you transmit it will show how many seconds you do it on the display and the frequency you transmit on (145.84698 MHz in the example below and varies a little due to the doppler effect) – as shown below. Wait and see if you hear another amateur from the satellite, you just transmitted to. A different antenna (directional) is required to give a result like the one shown in this YouTube video with voices via satellites on an AnyTone radio:

https://www.youtube.com/watch?v=QvBr44P02_4



The satellite data (new data as the satellites are updated) can be accessed from the TOOL menu and there under “Satellite Data Updating”. New satellite data can be downloaded from the website indicated in an amateur.txt format as shown below as “Select Satellite http URL”. By clicking on “HTTP Download” the display is updated with the current data from the web in a TLE format. A few more options are given. The radio is updated with the correct and most current data from the website by clicking on “Write Data to Radio”.

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GPS Satellite Data Update

☐ Write ALL

ID	Write	Name	RX Freq(Hz)	TX Freq(Hz)	CTC/DCS RX	CTCSS	DCS	CTC/DCS TX	CTCSS	DCS	Aprs Tx Freq(Hz)	Arm Tx Cdt	Arm Ctc	Arm Dcs
1	No	OSCAR 7 (AO-7)	0	0	Off			Off			0	Off		
2	No	PHASE 3B (AO-10)	0	0	Off			Off			0	Off		
3	No	UOSAT 2 (UO-11)	0	0	Off			Off			0	Off		
4	No	LUSAT (LO-19)	0	0	Off			Off			0	Off		
5	Yes	EYESAT A (AO-27)	43679500	14585000	Off			Off			0	Off		
6	No	ITAMSAT (IO-26)	0	0	Off			Off			0	Off		
7	No	RADIO ROSTO (RS-15)	0	0	Off			Off			0	Off		
8	No	JAS-2 (FO-29)	0	0	Off			Off			0	Off		
9	No	TECHSAT 1B (GO-32)	0	0	Off			Off			0	Off		
10	Yes	ISS (ZARYA)	43780000	14599000	CTCSS	67.0		CTCSS	67.0		0	Off		
11	No	PCSAT (NO-44)	0	0	Off			Off			0	Off		
12	Yes	SAUDISAT 1C (SO-50)	43679500	14585000	CTCSS	67.0		CTCSS	67.0		0	Off		
13	No	CUTE-1 (CO-55)	0	0	Off			Off			0	Off		
14	No	CUBESAT XI-IV (CO-57)	0	0	Off			Off			0	Off		
15	No	MOZHAYETS 4 (RS-22)	0	0	Off			Off			0	Off		
16	No	CUBESAT XI-V	0	0	Off			Off			0	Off		
17	No	CUTE-1.7+APD II (CO-65)	0	0	Off			Off			0	Off		
18	No	SEEDS II (CO-66)	0	0	Off			Off			0	Off		

Select Satellite Http Url Other

Please note that in the Optional Settings you can program Key Functions of either PF1, PF2 or PF3 to be "Satellite Prediction" so you can access that easy instead of going through the menu on the radio and down to Satellite and so on.

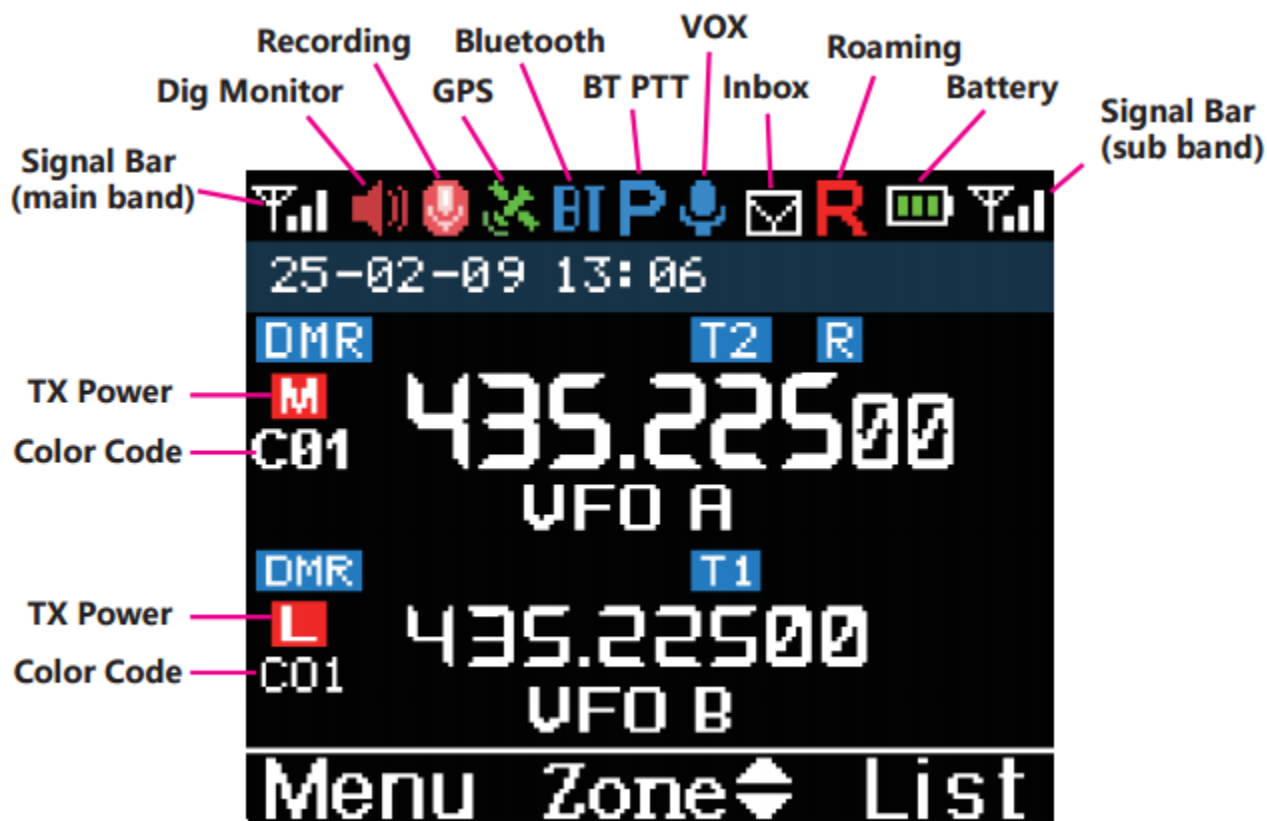
If you are looking for a phone application to monitor all the amateur satellites with a repeater onboard you may try **Satellite Tracker** by Star Walk which has a subscription fee of \$0.99 per month. There you can see where the satellite is in comparison to you location.

The website <https://celestrak.org/NORAD/elements/amateur.txt> and what each line of a satellite means can be found on <https://celestrak.org/columns/v04n03/#FAQ01> and another clarification on <https://celestrak.org/NORAD/elements/table.php?GROUP=amateur&FORMAT=tle>. You can also use site www.amsat.org/tle/dailyle.txt for the .txt file as it seems to be updated more frequent than the celestrak list.

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16.0 DISPLAY CHARACTERS

The LED display uses many special characters and here is an explanation of them.



Please note that a **gray** symbol may indicate that the function is on but has not yet locked on – for example the GPS function being **gray** instead of **green** indicates that a GPS signal is not yet registered by the radio.

The radio has Bluetooth and APRS capabilities which are not covered by this Programming Guide as those functions are not part of getting the radio to work. The radio User Manual should be the go-to document for those functions as well as all the other functions not part of getting the radio to operate as a regular ham radio.

Note: The radio menu, under Radio Set, Voice Function, TX and RX Noise Filter which should be set to OFF as it may distort the sound from the speaker in the radio.

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17.0 FINAL STEP - WRITE YOUR CODEPLUG TO YOUR RADIO

The first thing to do is to check that your Comm Port is selected correctly. You can do that on the sign between reading from and sending 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 for 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-D890UV 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-D890UV 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 D890UV radio (Firmware 4.0 stopped using satellite reception due to a memory limitation in the D878UV 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 3 sites with a lot of data:

<https://anytonetechzone.byethost7.com/878techmods.htm?i=2>

<https://www.hamradiosouthernrepeaters.co.uk/anytone-dmr.html/>

and for checking the DMR sound use the PLAYER in the top right corner of the following site:

<https://hose.brandmeister.network/?subscribe=2406>

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18.0 SATELLITE EXPLANATION

Satellite	Norad No.	uplink	downlink
LILACSAT CAS-3H	NORAD ID 40908	145.825	144.390
AO-27 EYESAT-1	NORAD ID 22825	145.850	436.795
ISS SPACE STATION			
SO-50 SAUDISAT 1C	NORAD ID 27607	145.850	436.795
AO-91 FOX-1B	NORAD ID 43017	435.250	145.960
PO-101 DIWATA-2	NORAD ID 43678	437.500	145.900
AO-7 OSCAR 7	NORAD ID 7530	432.125-432.175	145.975-145.925
AO-10 OSCAR-10	NORAD ID 14129	435.0	145.0
UO-11 OSCAR 11	NORAD ID 14781		145.825
LO-19 OSCAR-19	NORAD ID 20442	145.840-145.900	437.125/437.150
IO-26 OSCAR-26	NORAD ID 22826	145.875-145.950	435.822/435.867
FO-29 OSCAR-29	NORAD ID 24278	145.900-146.000	435.900-435.800
IO-86 OSCAR-86	NORAD ID 40931	145.880/145.825	435.880/145.825
AO-73 FUNcube-1	NORAD ID 39444	435.130-435.150	145.970-145.950
JO-97 JY1Sat	NORAD ID 43803	CW only	
XW-2B CAS-3B	NORAD ID 40911	435.090-435.110	145.750-145.730
MO-122 OSCAR-122	NORAD ID ?	145.910-145.940	435.810-435.840

More data for amateur satellite data and frequencies can be found on this site:

<https://www.amsat.org/amateur-satellite-index/>

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APPENDIX A

Understanding Exposure Rules for Handheld Radios

The February 2026 issue of the QST magazine, on page 55, have a very important article on what is important to know regarding the Specific Absorption Rate (SAR) exposure a human may be subject to from handheld radios if held incorrectly near the brain. The article was written by Gregory Lapin (N9GL) and is definitely worth reading and following.

The article references a tool available on the ARRL website www.arrl.org/rf-exposure-calculator.

The article has several recommendations to controlling your exposure. It recommends to: lower your power, to move away from the transmitter, and to limit your talk time. Be aware of how to minimize the exposure to yourself if using a handheld radio like the AnyTone new D890UV radio this Programming Guide is made for.

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APPENDIX B

Professional Mode programming of the D890UV radio

This section, in addition to the basic set-ups in this Guide, shows how to set up the D890UV radio for professional use. The first thing to do for DMR, NXDN or Analog use is to program (in the Computer Program Software, CPS) the “*Optional Settings*” under “*Work Mode*” at the bottom: **Professional Mode**. Also set the “*Main Channel Set*” to **A** and the “*Sub-Channel Mode*” to **On** or **Off**. Having it in the On position allows two channels to be received at the same time. They both will be displayed on the LED display. The second thing in the same area (Optional Settings) is to, under “*Key Functions*” select PF2 key as the change between the two receivers set to **Main Channel Switch** to allow transmission to switch between channel A and B. The programing described above for Channel etc. are also required. On page 3 it mentions how to make the front keyboard non-working for the radio so that only the channel knob and volume knob on top together with the switches on the side are functional.

If the radio is to be used for DMR or NXDN function it would then allow the front LED screen to show who is calling if a look-up table is created. **For DMR** use do the following. In the CPS under the “Radio ID List” on the left to assign either the employee number or start with for example 1000 and up for how many radios are to be used You can also use the FCC License number as the Name. Then make a look-up table in excel (.csv file) as shown as an example below (with the headings shown on line 1 required for it to work):

	A	B	C	D	E	F	G	H	I	J
1	No.	Radio ID	Callsign	Name	City	State	Country	Remarks	Call Type	Call Alert
2	1	1000	KAA719	Bradley	Mpls	MN	USA			
3	2	1001	KAA719	Andy	Mpls	MN	USA			
4	3	1002	KAA719	Ralph	Mpls	MN	USA			
5	4	1003	KAA719	Stefan	Mpls	MN	USA			
6	5	1004	KAA719	Bob	Mpls	MN	USA			
7	6	1005	KAA719	Claude	Mpls	MN	USA			
8	7	1006	KAA719	Clifford	Mpls	MN	USA			
9	8	1007	KAA719	Bruce	Mpls	MN	USA			
10	9	1008	KAA719	Jim	Mpls	MN	USA			
11										

In the CPS under TOOL on the top row select “IMPORT” and import the .csv file you created under the listing “DMR Digital Contact List” and you now have a look-up table in the radio for every user. The LED display will show the caller every time. The look-up table has to conform to the programmed “Radio ID List” for DMR or to the NX numbers list under the “NX Setting” and “Unit ID” number to show the name on the LED display of the radio. If not, it will show the number assigned instead and not the name.

If you want to be able to track the radio location you can turn on the GPS and APRS for each radio. First under TOOL on the top line of the CPS and there the OPTIONS checkmark the GPS and APRS. GPS is turned on under “Optional Settings” and the **GPS/Ranging** tab. APRS is a separate setting on the left side of the CPS. Follow the set-up described in Section 13 on page 27 above.

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If you are using the D890UV radio **for NXDN** you have the programming of the channels first. There is a column on the left side of the CPS for NXDN. Under “NX Setting” a window opens up where you need to program specifics for the radio. In “Unit ID (Own)” you need to assign say 1000 and upwards for each radio. The radio license number goes under “Air Alias Name” and for further details see programming on page 29

If you are using the NXDN function the same feature applies as follows. Create the look-up table as seen below (with the headings as shown in line 1 required):

	A	B	C	D	E	F	G	H
1	Radio	Callsign	First_Name	Last_Name	City	State	Country	
2	1000	KAA720	Executive		Mpls	MN	USA	
3	1001	KAA720	Sales 1		Mpls	MN	USA	
4	1002	KAA720	Sales 2		Mpls	MN	USA	
5	1003	KAA720	Warehouse		Mpls	MN	USA	
6	1004	KAA720	Administ.		Mpls	MN	USA	
7	1005	KAA720	Clerc		Mpls	MN	USA	
8	1006	KAA720	Truck		Mpls	MN	USA	
9	1007	KAA720	Spare		Mpls	MN	USA	

Please note that last name don't have to be used and for example department or anything else can there be used under each heading but the headings must stay as shown. Import this .csv file under TOOL and IMPORT and then “NX Digital Contact List”.

For Analog use of the D890UV radio it seems straight forward to program channels and then following this Guide for all other set-ups. The DMR and NXDN programming can then be ignored. Any unique CTCSS or DCS code is set up as part of the channel list. Other Analog features can be programmed in the CPS under Analog features at the bottom of the left column.

The AnyTone D890UV is the most versatile radio to have in inventory as it offers both VHF and UHF capability with so many other features as described above. AnyTone also offers lower cost radios for the Analog, DMR and NXDN protocols. Further details on any of these radios can be provided by trygves@aol.com in the US or the manufacturer AnyTone at zsxqlx6833@qxdz.cn

Please note that for a stolen radio there is a function called “**Kill**” and “**Wake**” described in the User Manual on page 18 (a STUN feature). This means you have to set, in the CPS *Optional Settings – Digital Func* set “*Digital Remote Kill*” to **On** in at least 2+ radios. If set to Off it will not work. Then go to radio **Menu** and select **Talk Group** and **Manual Dial** and there enter the radio ID to be “Killed” (can also be done by entering 0 and # at simultaneously). In the **Options** menu you see several stolen radio statuses and find **Kill** and **Wake** as the last 2 entries.

When the D890UV radio is used in **Professional Mode** (programmed in *Optional Settings – Work Mode*) several of the Menu items described in Appendix C below are not available to the user. It further limits some settings of the radio programming. The items not available are shown as (not shown in Professional Mode).

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APPENDIX C

MENU Items available on the D890UV Radio

Most of the radio **menu** items are set up via the Computer Programming Software (CPS) but there may be a few items possibly needing your attention. First when you start the **menu** items they are divided as follows:

Book (For Analog channels only)

Talk Group (TG's) (see page 41 above for a radio status or **Kill** and **Wake** commands usage)

Messages (the radio can send SMS messages to other radio ID's)

Call Log (Not shown if NXDN channels selected)

Zone (Group of channels which must be set in the CPS)

Scan

Roaming (**not shown in Professional Mode**)

Settings (Programming of several radio parameters) (**Cannel Set not shown in Professional Mode**)

Record (Recording of all calls in and out)

NOAA (Weather reports)

GPS

Satellite (**not shown in Professional Mode**)

Digi Moni (Digital Monitor) (**not shown in Professional Mode**)

BT (Bluetooth)

APRS

Book

1. Book List

Contact 1 (as entered in the CPS under Analog Address Book)

1. View Book (as programmed in the CPS)

2. Edit Book

1. Edit ID

2. Edit Name

3. Save

3. Del Book

2. New Book

1. Input ID

2. Input Name (change between ab, AB or 12 by hitting the **#** key on the keyboard)

3. Save

3. Manual Dial

1. Input ID

Talk Group list in the radio has the following set-ups available:

1. TG List (will show all the Talk Groups programmed via the CPS)

2. New Contact (will allow the input of a new contact name etc. with Save at the end)

3. Manual Dial (enter the radio ID or # (TG) to where you want to send a message)

4. Talker Alias (allows TX and RX to be set On or Off)

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Messages in the radio has the following set-ups.

1. New Msg (gives space to enter a new message – # to changes between. ab, AB or 12)
2. Inbox (shows Inbox List or Delete All)
3. Outbox (shows Outbox List or Delete All)
4. Quick Text (allows text set up via the CPS to be shown; P2 is exit if no Exit button)
5. Draft (shows Draft List or Delete All)

Call Log in the radio has the following set-ups

1. Last Call (Last Call List and Delete All)
2. Sent (Sent List or Delete All)
3. Answered (Answered List or Delete All)
4. Missed (Missed List or Delete All)

Zone in the radio has the following set-ups

1. Shows the zones programmed via the CPS and allows to add a zone at the end)

Scan in the has the following set-ups

1. Scan On/Off (allows you to have the active A or B for scan On or Off)
2. CDT Scan (scanning if the CDT is correct as On or Off)
3. Scan List (shows the scan lists made via the CPS with “Add Scan List” at the end)

Roaming in the radio has the following set-ups (**not shown in Professional Mode**)

One Time Roaming (only works if programmed in CPS and for repeaters)

1. Roaming Zone (Roaming Zone and Add Zone is available)
2. Auto Roaming (Select On or Off and times of roaming and Start)
3. Repeater Check (Select On or Off and Intervals as well as reconnection times)
4. Out Range Note (Select type of reminder for radio and how many times it can remind)
5. Effect Wait (select Off or how many seconds you wait 1-30 Sec.)

Setting in the radio has the following set-ups

1. Radio Set
 1. Voice Func
 1. Key Tone (select On or Off)
 2. Digi Idle (select Off or Type 1-3)
 3. Ana Idle (select On or Off)
 4. Start Up Sound (select On or Off)
 5. Talk Permit (select Off or Digital, Analog or both)
 6. D-Reset Tone (select On or Off)
 7. Max Vol Level (select 1 – 8)
 8. Ear Max Vol (select indoor or 1 – 8)
 9. Enhanced Sound (select Normal or Mic Enhanced)
 - 10.SMS Notify (select Off or Ring)
 - 11.Call Ring (select Off or Ring)
 - 12.Dig Mic Level (select 1 - 8 or Auto)
 - 13.Ana Mic Level (select 1 – 8 or Auto)
 - 14.Fix Time Mute (select On or Off)
 - 15.TX NR Filter (select Off or 1 – 5)
 - 16.RX NR Filter (select Off or 1 – 5)
 - 17.RX DRC (select On or Off)

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18. Sub Spk in TX (select On or Off of the RX audio not used for TX on a channel)
2. Display Func
 1. Back Light (select 1 – 5)
 2. Night Mode (select On or Off)
 3. Light Time (select Always or 5, 10, 15 seconds up to 1 hour)
 4. Ch Name (select channel name or frequency)
 5. Language (select English or Chines)
 6. Menu Exit Time (select 5 seconds up to 60 seconds)
 7. Start Display (select Picture, Character or Custom Picture)
 8. Ch Background (select Default Picture, Customer Picture 1 or 2)
 9. CHG Font Color (select between colors listed)
 10. Ch Color A (select from listed colors for channel A)
 11. Ch Color B (select from listed colors for channel B)
 12. Zone Color A (select from listed colors for channel A)
 13. Zone Color B (select from listed colors for channel B)
 14. Main Channel (select channel A or B)
 15. Sub Ch Hide (select On or Off)
3. Key Func
 1. Key Lock (select Manual or Auto)
 2. Key PF1 Short (select one of many options given for this key)
 3. Key PF2 Short (select one of many options given for this key)
 4. Key PF3 Short (select one of many options given for this key)
 5. Key P1 Short (select one of many options given for this key)
 6. Key P2 Short (select one of many options given for this key)
 7. Key PF1 Long (select one of many options given for this key)
 8. Key PF2 Long (select one of many options given for this key)
 9. Key PF3 Long (select one of many options given for this key)
 10. Key P1 Long (select one of many options given for this key)
 11. Key P2 Long (select one of many options given for this key)
4. DMR Func (if the DMR protocol is selected – see 5.33. below)
 1. SMS Format (select one of the 3 formats given)
 2. TX Preamble (select from 0 mS. to 2400 mS.)
 3. Voice Hdr Rpt (select from 2 to 10)
4. NXDN Fun (if the NXDN protocol is selected – see 5.33. below)
 1. Own ID (confirm ID shown or change it or select P2 key for Exit)
 2. Own Name (confirm ID or change it or select P2 key for Exit)
 3. Station Type (select Group ID or Private ID)
 4. Station ID (confirm ID or change it or select P2 key for Exit)
 5. TG While Pri (select On or Off)
 6. Data Ack (select On or Off)
 7. Ack Delay (select 100 mS up to 1,000 mS)
5. Other Func
 1. Auto Power Off (select Off or 10 to 120 minutes)
 2. TX Timer (select Off or 30 to 240 Seconds)

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3. TOT Predict (select On or Off)
4. TX Pow AGC (select On or Off)
5. Freq Step (select 5k, 6.25k, 8.33k, 10k, 12.5k, 20k, 25k, 30k or 50k)
6. Ana Sq Level (select Ana SQ Off, Ana SQ 1 through Ana SQ 5 in analog mode)
7. Power Save (select Off or 1:1 or 2:1)
8. TBST Sel (select 1000Hz, 1450Hz, 1750Hz, or 2100Hz)
9. VOX (select On or Off)
10. VOX Delay (select 0.5 to 3.0 seconds)
11. Scan Mode (select TO, CO or SE)
12. DTMF Speed (select 50 mS to 500 mS)
13. AM Air/FM (select Off or FM Mode, AM Air on A or AM Air on B)
14. Radio Moni (select On or Off)
15. AM Offset (select Positive or Negative)
16. AM Sq Level (select Off or 1 – 5)
17. AM Steps (select 2.5k to 50k)
18. Man Down (select On or Off)
19. Start Up Pwd (select On or Off)
20. Auto Rptr A (select Off or Positive or Negative)
21. Auto Rptr B (select Off or Positive or Negative)
22. VFO Sc-MinU (select the start UHF frequency or P2 is the Exit key)
23. VFO Sc-MaxU (select the stop UHF frequency or P2 is the Exit key)
24. VFO Sc-MinV (select the start VHF frequency or P2 is the Exit key)
25. VFO Sc-MaxV (select the stop VHF frequency or P2 is the Exit key)
26. CTC Ste (select Off, Silent or 120, 180 or 240 degrees, or 55Hz)
27. DCS Ste (select 134.4Hz or 55.2Hz)
28. No-Signal Ste (select Off or 55.2Hz or 259.2Hz)
29. Time Zone (select the correct time zone you are located in)
30. Time Display (select On or Off to see the time on the LCD display)
31. Date Time (select Time Set, GPS Check or Dis Format)
32. Repeater (select Repeater On or Off and several other repeater functions)
33. Protocol (select the digital protocol for the radio as DMR or NXDN)
2. Chan Set (Analog = [this color](#), NXDN = [this color](#) or black for the 3 protocols or DMR)
(not shown in Professional Mode)
 1. New Channel (select the Channel Number or Exit with P2 key)
 2. Delete Channel (press select if you want to delete the channel)
 3. Channel Type (select Analog, Digital, Analog and Digital or Dig and Ana)
 4. TX Power (select between Lo, Mi, Hi or Turbo power)
 4. TCDT (select Off, CTC or DCT)
 5. Offset (select in Hz how much you want the TX to be – used with Hotspot)
 5. RCTD (select Off, CTC or DCT)
 6. Band Width (select what is offered)
 6. RTCDT (Select Off, CTC or DCT)
 7. RX Freq (confirm or enter a new frequency as required – use P2 to Exit)
 7. Optional Signal select Off, DTMF, 2TONE, 5TONE or QDC1200)

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8. TX Freq (confirm or enter a new frequency as required – use P2 to Exit)
8. TX Power (select Lo, Mi, Hi or Turbo)
9. Talk Around (select On or Off to change the RX and TX frequencies)
9. Offset (select the offset in Hz)
9. RX RAN (for NXDN protocol only, select Null or 1 through 63)
10. Name (confirm the name of the current channel or change it)
10. Squelch Mode (select SQ, CDT, Tone, C&T or CIT)
10. TX RAN (for NXDN protocol select Null or 1 through 63)
11. TX Allow (select Always, Channel Free, Different CC, or Same CC)
11. Band Width (select Narrow or Wide)
11. Talk Around (for NXDN protocol select On or Off)
12. TX Prohibit (select On or Off)
12. Reverse (Select REV Off or REV On)
12. Name (confirm the name shown or change it or Exit with the P2 key)
13. Radio ID (select the radio ID or add one new ID)
13. Compander (select Off or On)
13. Busy Lock (NXDN select Off, Squelch Only, Error RAN, Right RAM, Any RAN)
14. RX CC (select what the Color Code should be between 1 and 15)
14. Scrambler (select Off, 3.5k, 3.39k, 3.3k, 3.29k, 3.2k, to 3.45k or User defined)
14. TX Prohibit (for NXDN select On or Off)
15. TX CC (select what the Color Code should be between 1 and 15)
15. RX Freq (confirm or change the shown value – Exit with P2)
15. Optional Signal (for NXDN select Off or NXDN ID)
16. R&T CC (select what the Color Code should be between 1 and 15)
16. TX Freq (confirm or change the shown value – Exit with P2)
16. Squelch Mode (for NXDN protocol select RAN mode)
17. Time Slot (select 1 or 2 for Time Slot)
17. Talk Around (select Off or On)
17. PTT Call (for NXDN protocol select On or Off)
18. Didi Encryption (select Off or 1 through 32)
18. Name (confirm or change the name – Exit with P2)
19. RX Group List (select Off or add RX Group List)
19. Busy Lock (select Off, Different CDT or Channel Free)
20. Work Alone (select On or Off)
20. TX Prohibit (select Off or On)
21. Ch Ranging (select On or Off)
21. Own ID (enter a number if required)
22. APRS Receive (select On or Off)
22. DTMF Enc (select DTMF1 through DTMF16)
23. SMS Forbid (select On or Off)
23. 2tone Enc (change the value if required)
24. Data Ack Forbid (select On or Off)
24. 2tone Dec (see value or it may be empty)
25. DMR Mode (select DMO/simplex, Repeater, DCDM/Dual TS, DCDM TS Split)

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- 25.5tone Enc (see value or change it)
- 26.TX Interrupt (select Off, Low or High Priority)
- 26.5tone BOT (see value or change it)
- 27.Digi TX Idle select On or Off)
- 27.5tone EOT (see value or change it)
- 28.Slot Suit (select On or Off)
- 28.QDC Enc (empty or program a value in CPS)
- 29.CRC Ignore (select On or Off)
- 29.PTT ID (select Off, Begin, End or Both)
- 30.Work Alone (select Off or On)
- 31.APRS Receive select Off, On or On with mute)

3. Device Info

This area shows the Radio ID, the Radio Name, the Frequency Range, the Firmware Version, the Hardware Version, the Radio Data Version, the Picture Version, the Language Version, the Dealer Code (if entered it the CPS) the SCT 3288 Version, the APRS/Nr. Version and BT Software Version. No entries can be done here as it is just to check the radio status.

Record in the radio has the following set-ups

1. Record Switch (select On or Off)
2. Record List (select the record list shown to be listened to – can be many. Once you select one of the lists many records typically are selectable)
3. Record Delete (select if you want to delete all files recorded)

Please note that you may listen to the files in the CPS under TOOL if the radio is connected.

NOAA in the radio has the following set-ups

1. NOAA Alert select On or Off)
2. NOAA Chan (select one of the 10 frequencies listed)
3. NOAA Moni (select On or Off)
4. NOAA Scan (select On or Off)

GPS in the radio has the following set-ups

1. GPS On/Off (select On or Off for using GPS)
2. GPS Mode (select one of the modes offered for your country)
3. GPS Roaming (select On or Off)
4. GPS Info (if the GPS is set to On then this page shows the exact position you are)

Satellite in the radio has the following set-ups (not shown in Professional Mode)

- 1.Location (select if you want to use GPS or a fixed position programmed in the CPS)
- 2.Satellite (you must download the most current satellite positions in the CPS and then to the radio. This menu will then show what/when the specific satellites are available.)

Digi Moni in the radio has the following set-ups (not shown in Professional Mode)

1. DigMoni Switch (select Off or Single or Double Slot)
2. DigMoni CC (select Off or Single or Double Slot)
3. DigMoni ID (select Any ID or Same ID)
5. Slot Hold (select On or Off)

BT Bluetooth in the radio has the following set-ups

1. BT On/Off (select On or Off)

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2. BT Pairing (select Seek BT, Available BT, Paired List or Disconnect BT)
3. BT Names (shows what this radio are called; it can be Confirmed or Exit with P2)
4. Paired Names (shows what the radio has been paired with)
5. BT Hold Time (select Off or 1 sec to 120 sec or Infinite)
6. BT RX Delay (select 30 mS to 5.5 Sec)
7. BT + Int Spk (select On or Off)
8. BT Mic Gain (select 1 – 5 as required)
9. BT Spk Gain (select 1 – 5)
10. BT NR BEL (select 1.00 to 2.00)
11. BT NR AFL (select 0.00 to 1.00)
12. BT Pin Code (edit pin code or select the P2 key to Exit)
13. BT PTT Pair (select PTT Pair, hold, name, Sleep or Battery Voltage)

APRS in the radio has the following set-ups

1. Upload Type (select None, Analog APRS or Digital APRS)
2. Ana APRS
 1. PTT Upload (select Off or Start or End of TX)
 2. Upload Power (select Lo, MI, Hi or Turbo)
 3. Upload W/N (Select Wide or Narrow)
 4. Upload Freq (select one of 8 frequencies entered in the CPS)
 5. Signal Path (confirm what was entered via the CPS or Exit with the P2 key)
 6. Upload Text (confirm text added via the CPS or Exit with the P2 key)
3. Ana APRS SMS
 1. New SMS (enter text desired or Exit with the P2 key)
 2. Outbox (see Outbox List or Delete All)
 3. Inbox (see Inbox List or Delete All)
4. Ana APRS Info
 1. Info Filter (select On or Off for the many report styles shown)
 2. Decode Path (select channel path A or B)
 3. Ana APRS Info
 4. Delete All
 5. APRS Pass All (select On or Off)
5. Digi APRS
 1. PTT Upload (select On or Off)
 2. Report Channel (select one of the many channels shown)
 3. Upload Slot (select Slot 1 or 2)
 4. Upload ID (confirm Input ID or Exit with the P2 key)
6. Digi APRS Info
 1. Digi APRS Info
 2. Delete All
7. Intervals Set
 1. Select Off or 75 sec to 3870 sec in several steps
8. Upload Beacon
 1. GPS Beacon
 - 2-8. Fix 1-8 (as set in the CPS)