



# D-STAR InfoCon 2015

at Dayton Hamvention

*Part 2 – Using D-STAR*

John Davis WB4QDX





# Getting on the Air

## • FM Repeater

- Mode - FM
- Frequency
- Offset
- CTCSS / TSQ
- Tone frequency

## • D-STAR Repeater

- Mode - DV
- Frequency
- Offset
- UR
- RPT1
- RPT2





# The Big Three

- **MY** or **MYCALL** is your own callsign and is set once in radio
- **UR** or **URCALL**: Where do I want to go?
- **RPT1**: The repeater and module I am transmitting to (ex. KJ4GGV C)
- **RPT2**: Where I want my transmission to go (normally to “G”, the Gateway)
  - *NOTE: It's a good practice to put the callsign and “G” in RPT2 even if talking local so other linked repeaters, DV Dongles and DV Access Points can hear your transmissions*



# RPT1, RPT2 Format

- Normal format (xxnxxx m)
  - Callsign is left justified
  - Module is always in 8<sup>th</sup> position
    - C=VHF
    - B=UHF
    - A=1.2 GHz
- Examples (*" " represents a space*)
  - WD4STR C
  - W4DOC C
  - W4GR C





# Basic QSO

- Sample for KJ4GGV VHF/2m Repeater  
145.2800 MHz +5.0 MHz Offset
  - MY WB4QDX
  - UR CQCQCQ
  - RPT1 KJ4GGV ■ C
  - RPT2 KJ4GGV ■ G

"■" represents a space

*Used for talking on local repeater. If repeater is linked, you are also heard on any of the linked repeaters*





# Linking to a Repeater

- Sample for KJ4GGV VHF/2m Repeater  
145.2800 MHz +5.0 MHz Offset

- MY WB4QDX
- UR WX4GPBAL (or W4DOC ■ CL, W4GR ■ ■ CL)
- RPT1 KJ4GGV ■ C
- RPT2 KJ4GGV ■ G

" ■ " represents a space

*Key once, gateway responds with voice prompt "Remote System Linked".  
Change to CQCQCQ in UR for QSO.*





# Linking to a Reflector

- Sample for KJ4GGV VHF/2m Repeater  
145.2800 MHz +5.0 MHz Offset

- MY WB4QDX
- UR REF002AL
- RPT1 KJ4GGV▣C
- RPT2 KJ4GGV▣G

"▣" represents a space

*Key once, gateway responds with voice prompt "Remote System Linked".  
Change to CQCQCQ in UR for QSO.*





# Unlinking

- Sample for KJ4GGV VHF/2m Repeater  
145.2800 MHz +5.0 MHz Offset

- MY WB4QDX
- UR ■■■■■■U
- RPT1 KJ4GGV■C
- RPT2 KJ4GGV■G

"■" represents a space

*Key once, gateway responds with unlinked voice prompt. Change to CQCQCQ in UR for QSO.*







# Memory Management

- Radios have different capabilities and number of memories
- First generation radios have standard memory locations for FM or DV
  - **Method 1** – Store commands in memory for favorite reflectors or repeaters
  - **Method 2** – Use UR memories for favorite reflectors or repeaters (uses fewer memory locations)
- Newer radios with DR mode simplify programming
  - **Method 3** – Use DR mode with repeater list and GPS for nearest repeater

# Radio Memory Management – Method 1

*Organize blocks of channels stored in memories:*

- Can be used with any D-STAR radio
- Create a group or bank of memories for each repeater
- Store commands for each function in a memory of the group

CH No	Frequency	Dup	Offset	TS	Mode	Name	Your Call Sign	RPT1 Call Sign	RPT2 Call Sign
1	145.200	DUP-	0.6	10kHz	DV	KI4SBA C	CQCQCQ	KI4SBA C	KI4SBA G
2	145.200	DUP-	0.6	10kHz	DV	UNLINK	U	KI4SBA C	KI4SBA G
3	145.200	DUP-	0.6	10kHz	DV	SBA C ID	I	KI4SBA C	KI4SBA G
4	145.200	DUP-	0.6	10kHz	DV	REF001C	REF001CL	KI4SBA C	KI4SBA G
5	145.200	DUP-	0.6	10kHz	DV	REF002A	REF002AL	KI4SBA C	KI4SBA G
6	145.200	DUP-	0.6	10kHz	DV	REF004A	REF004AL	KI4SBA C	KI4SBA G
7	145.200	DUP-	0.6	10kHz	DV	REF030A	REF030AL	KI4SBA C	KI4SBA G
8	145.200	DUP-	0.6	10kHz	DV	REF030B	REF030BL	KI4SBA C	KI4SBA G
9	145.200	DUP-	0.6	10kHz	DV	REF030C	REF030CL	KI4SBA C	KI4SBA G
10	145.200	DUP-	0.6	10kHz	DV	ECHOTEST	E	KI4SBA C	KI4SBA G

# Radio Memory Management - Talk

- Use this channel for general QSO
- No linking commands required or repeater already linked
- CQCQCQ in UR field

CH No	Frequency	Dup	Offset	TS	Mode	Name	Your Call Sign	RPT1 Call Sign	RPT2 Call Sign
1	145.200	DUP-	0.6	10kHz	DV	KI4SBA C	CQCQCQ	KI4SBA C	KI4SBA G
2	145.200	DUP-	0.6	10kHz	DV	UNLINK	U	KI4SBA C	KI4SBA G
3	145.200	DUP-	0.6	10kHz	DV	SBA C ID	I	KI4SBA C	KI4SBA G
4	145.200	DUP-	0.6	10kHz	DV	REF001C	REF001CL	KI4SBA C	KI4SBA G
5	145.200	DUP-	0.6	10kHz	DV	REF002A	REF002AL	KI4SBA C	KI4SBA G
6	145.200	DUP-	0.6	10kHz	DV	REF004A	REF004AL	KI4SBA C	KI4SBA G
7	145.200	DUP-	0.6	10kHz	DV	REF030A	REF030AL	KI4SBA C	KI4SBA G
8	145.200	DUP-	0.6	10kHz	DV	REF030B	REF030BL	KI4SBA C	KI4SBA G
9	145.200	DUP-	0.6	10kHz	DV	REF030C	REF030CL	KI4SBA C	KI4SBA G
10	145.200	DUP-	0.6	10kHz	DV	ECHOTEST	E	KI4SBA C	KI4SBA G

# Radio Memory Management - ID

- Use to see if repeater is linked or unlinked
- If linked, repeater says “Remote system linked”
- Data line will indicate where repeater or reflector linked
- Return to CQCQCQ channel to talk

CH No	Frequency	Dup	Offset	TS	Mode	Name	Your Call Sign	RPT1 Call Sign	RPT2 Call Sign
1	145.200	DUP-	0.6	10kHz	DV	KI4SBA C	CQCQCQ	KI4SBA C	KI4SBA G
2	145.200	DUP-	0.6	10kHz	DV	UNLINK	U	KI4SBA C	KI4SBA G
<b>3</b>	<b>145.200</b>	<b>DUP-</b>	<b>0.6</b>	<b>10kHz</b>	<b>DV</b>	<b>SBA C ID</b>	<b>I</b>	<b>KI4SBA C</b>	<b>KI4SBA G</b>
4	145.200	DUP-	0.6	10kHz	DV	REF001C	REF001CL	KI4SBA C	KI4SBA G
5	145.200	DUP-	0.6	10kHz	DV	REF002A	REF002AL	KI4SBA C	KI4SBA G
6	145.200	DUP-	0.6	10kHz	DV	REF004A	REF004AL	KI4SBA C	KI4SBA G
7	145.200	DUP-	0.6	10kHz	DV	REF030A	REF030AL	KI4SBA C	KI4SBA G
8	145.200	DUP-	0.6	10kHz	DV	REF030B	REF030BL	KI4SBA C	KI4SBA G
9	145.200	DUP-	0.6	10kHz	DV	REF030C	REF030CL	KI4SBA C	KI4SBA G
10	145.200	DUP-	0.6	10kHz	DV	ECHOTEST	E	KI4SBA C	KI4SBA G

# Radio Memory Management - Link

- Tune to channel and key briefly to initiate link command
- System will say “Remote system linked” if successful
- Return to CQCQCQ channel to talk

CH No	Frequency	Dup	Offset	TS	Mode	Name	Your Call Sign	RPT1 Call Sign	RPT2 Call Sign
1	145.200	DUP-	0.6	10kHz	DV	KI4SBA C	CQCQCQ	KI4SBA C	KI4SBA G
2	145.200	DUP-	0.6	10kHz	DV	UNLINK	U	KI4SBA C	KI4SBA G
3	145.200	DUP-	0.6	10kHz	DV	SBA C ID	I	KI4SBA C	KI4SBA G
4	145.200	DUP-	0.6	10kHz	DV	REF001C	REF001CL	KI4SBA C	KI4SBA G
5	145.200	DUP-	0.6	10kHz	DV	REF002A	REF002AL	KI4SBA C	KI4SBA G
6	145.200	DUP-	0.6	10kHz	DV	REF004A	REF004AL	KI4SBA C	KI4SBA G
7	145.200	DUP-	0.6	10kHz	DV	REF030A	REF030AL	KI4SBA C	KI4SBA G
8	145.200	DUP-	0.6	10kHz	DV	REF030B	REF030BL	KI4SBA C	KI4SBA G
9	145.200	DUP-	0.6	10kHz	DV	REF030C	REF030CL	KI4SBA C	KI4SBA G
10	145.200	DUP-	0.6	10kHz	DV	ECHOTEST	E	KI4SBA C	KI4SBA G

# Radio Memory Management - Unlink

- Tune to channel and key briefly to initiate link command
- System will say “Remote system unlinked” if successful
- Return to CQCQCQ channel to talk

CH No	Frequency	Dup	Offset	TS	Mode	Name	Your Call Sign	RPT1 Call Sign	RPT2 Call Sign
1	145.200	DUP-	0.6	10kHz	DV	KI4SBA C	CQCQCQ	KI4SBA C	KI4SBA G
2	145.200	DUP-	0.6	10kHz	DV	UNLINK	U	KI4SBA C	KI4SBA G
3	145.200	DUP-	0.6	10kHz	DV	SBA C ID	I	KI4SBA C	KI4SBA G
4	145.200	DUP-	0.6	10kHz	DV	REF001C	REF001CL	KI4SBA C	KI4SBA G
5	145.200	DUP-	0.6	10kHz	DV	REF002A	REF002AL	KI4SBA C	KI4SBA G
6	145.200	DUP-	0.6	10kHz	DV	REF004A	REF004AL	KI4SBA C	KI4SBA G
7	145.200	DUP-	0.6	10kHz	DV	REF030A	REF030AL	KI4SBA C	KI4SBA G
8	145.200	DUP-	0.6	10kHz	DV	REF030B	REF030BL	KI4SBA C	KI4SBA G
9	145.200	DUP-	0.6	10kHz	DV	REF030C	REF030CL	KI4SBA C	KI4SBA G
10	145.200	DUP-	0.6	10kHz	DV	ECHOTEST	E	KI4SBA C	KI4SBA G

# Radio Memory Management - Echotest

- Tune to channel, key and speak
- System will echo back your transmission
- Return to CQCQCQ channel to talk

CH No	Frequency	Dup	Offset	TS	Mode	Name	Your Call Sign	RPT1 Call Sign	RPT2 Call Sign
1	145.200	DUP-	0.6	10kHz	DV	KI4SBA C	CQCQCQ	KI4SBA C	KI4SBA G
2	145.200	DUP-	0.6	10kHz	DV	UNLINK	U	KI4SBA C	KI4SBA G
3	145.200	DUP-	0.6	10kHz	DV	SBA C ID	I	KI4SBA C	KI4SBA G
4	145.200	DUP-	0.6	10kHz	DV	REF001C	REF001CL	KI4SBA C	KI4SBA G
5	145.200	DUP-	0.6	10kHz	DV	REF002A	REF002AL	KI4SBA C	KI4SBA G
6	145.200	DUP-	0.6	10kHz	DV	REF004A	REF004AL	KI4SBA C	KI4SBA G
7	145.200	DUP-	0.6	10kHz	DV	REF030A	REF030AL	KI4SBA C	KI4SBA G
8	145.200	DUP-	0.6	10kHz	DV	REF030B	REF030BL	KI4SBA C	KI4SBA G
9	145.200	DUP-	0.6	10kHz	DV	REF030C	REF030CL	KI4SBA C	KI4SBA G
<b>10</b>	<b>145.200</b>	<b>DUP-</b>	<b>0.6</b>	<b>10kHz</b>	<b>DV</b>	<b>ECHOTEST</b>	<b>E</b>	<b>KI4SBA C</b>	<b>KI4SBA G</b>

# Memory Management – Method 2

- Can be used with any D-STAR radio
- Program one memory location per repeater with CQCQCQ in UR field
- Utilize “Your Call Sign” memories for UR field

Call Sign	U22	K4WAK BL	U52	
My Call Sign	U23	K4DSO CL	U53	
Your Call Sign	U24	K4DSO BL	U54	
Received Call Record	U25	K4DSO AL	U55	
VFO Call Sign				

- Select Memory location and change UR field for favorite linking command



# Memory Management – Method 3 (DR Mode)

- Available on ID-31, ID51, IC-7100, ID-5100
- Radios have regular memories usually used for FM
- Geocoded Repeater List / DR memories used for D-STAR
- ID-51A (Anniversary Edition or Plus) and ID-5100 Repeater List may be used for FM or D-STAR
- DR Mode introduces TO/FROM screen for easy use



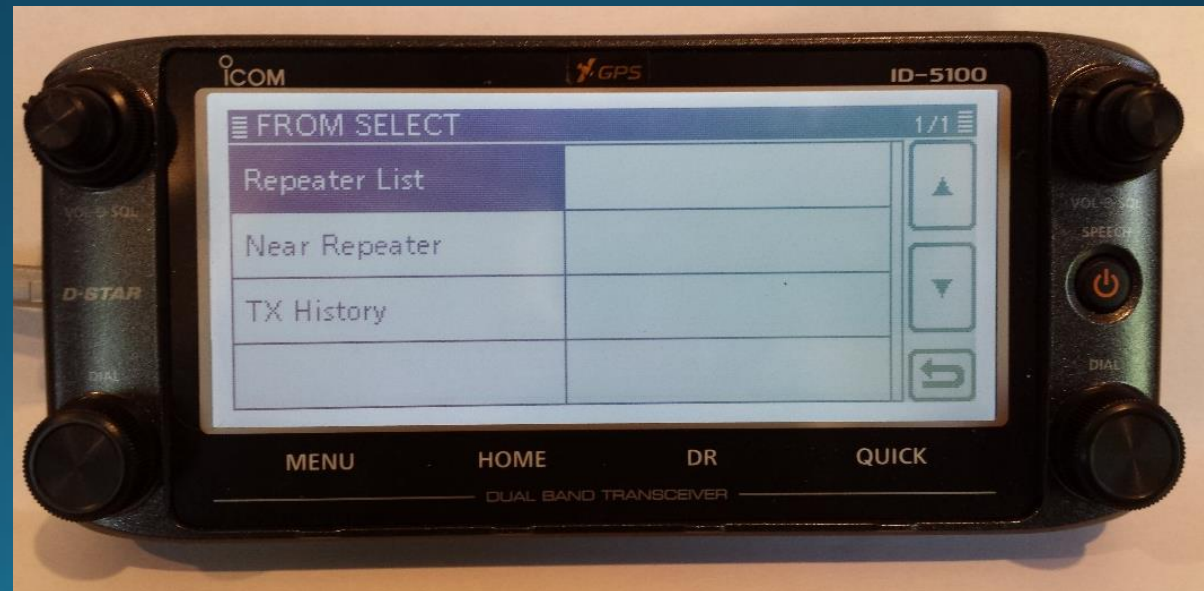
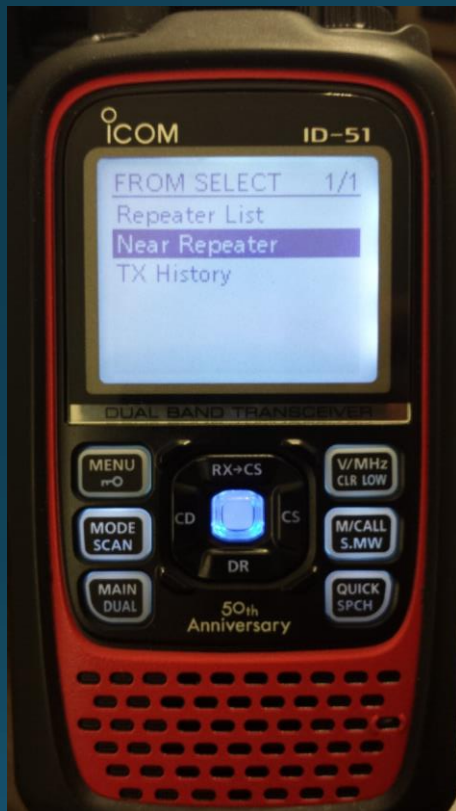
# DR Mode – Easiest to Use

- DR Mode is Digital Repeater Mode
- Current generation of radios have two sets of memories
  - Regular Memories for traditional frequency storage
  - Repeater List is geocoded for location-based lookup
- Easy to Use
  - Press DR
  - Select Source Repeater in FROM field
    - Pick by region
    - Find Nearest Repeater to current location
  - Select function in TO field
- Automatic Programming of Radio



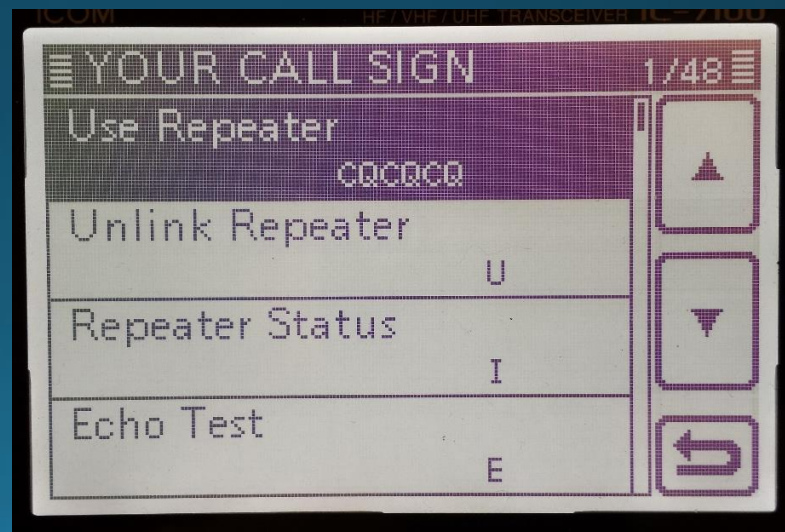
# What Repeater?

- Select FROM field:
- **Repeater List** shows region, then list of repeaters
- **Near Repeater** uses built-in GPS to show list of nearest repeaters



# Which CQ?

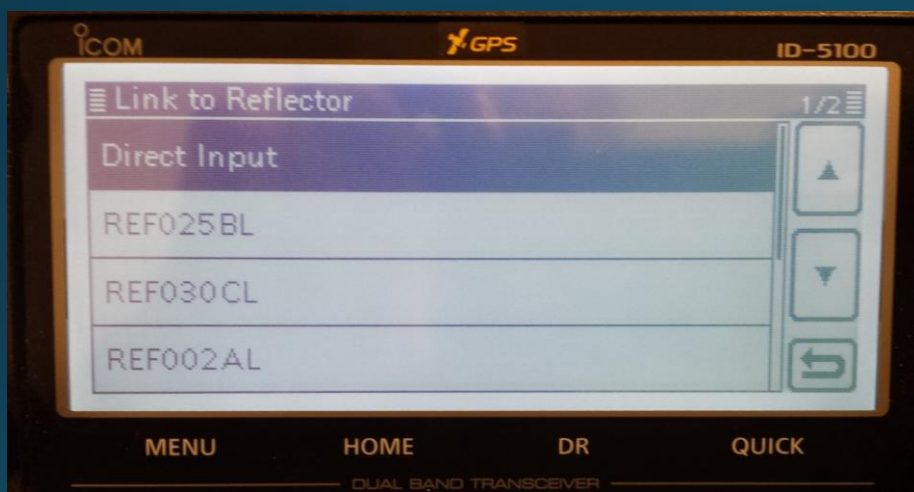
- Select TO on screen
- **DO NOT USE Local CQ**
  - Shows as CQCQCQ
- 3<sup>rd</sup> Generation (ID-31, ID-51, ID-7100)
  - Select “Your Call Sign”
  - Select “Use Repeater” to talk
- 3<sup>rd</sup> + Generation (ID-51+, ID-5100)
  - Select (“Reflector”)
  - Select (“Use Reflector”) to talk





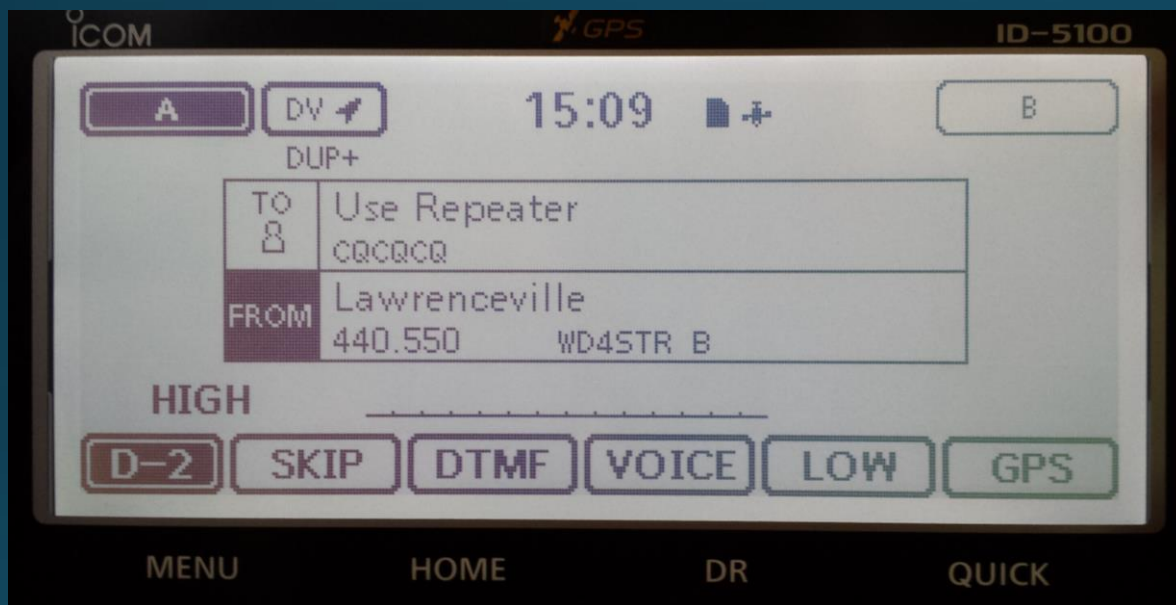
# Linking to Reflectors

- To link to a Reflector, select Reflector, Link to Reflector, Direct Input, then select Reflector and Module



*Once a Reflector has been selected, it's listed for quick selection*

# Normal DR Mode Talk Display



# Programming for a DVAP / DV Mega

- Can be programmed to standard memories

CH No	Frequency	Dup	Offset	TS	Mode	Name	Your Call Sign	RPT1 Call Sign	RPT2 Call Sign
1	145.200	Simp	0.0	10kHz	DV	KI4SBA C	CQCQCQ	DIRECT	
2	145.200	Simp	0.0	10kHz	DV	UNLINK	U	DIRECT	
3	145.200	Simp	0.0	10kHz	DV	SBA C ID	I	DIRECT	
4	145.200	Simp	0.0	10kHz	DV	REF001C	REF030CL	DIRECT	

- Use DR Memories (Repeater List) for later models

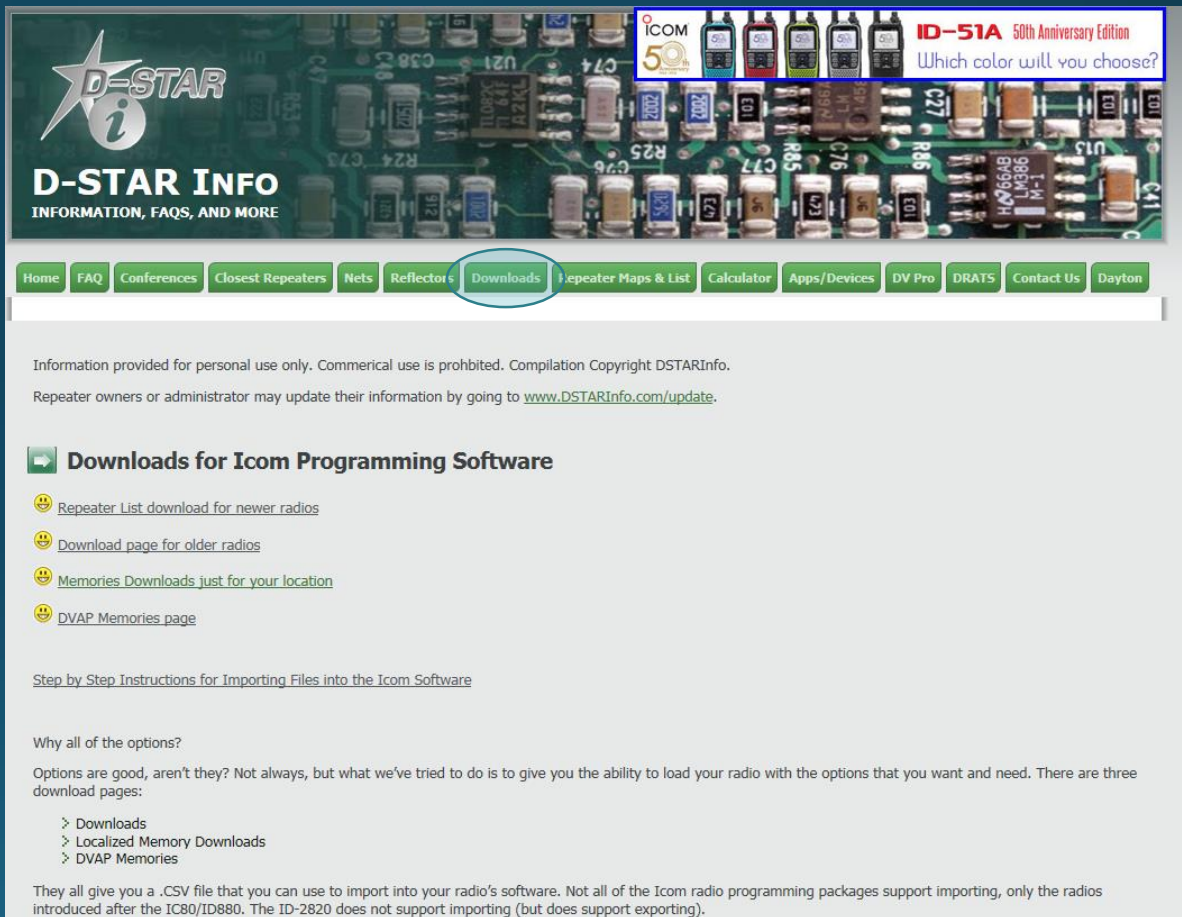
No.	Type	Name	Sub Name	Repeater Call Sign	Gateway Call Sign	Operating Freq	DUP	Offset Freq	Mode
0	DV Simplex	JD DVAP VHF		—	—	145.790000	—	—	DV
1	DV Simplex	JD DVAP UHF		—	—	441.000000	—	—	DV
2	DV Simplex	VHF DV Simplex		—	—	145.670000	—	—	DV
3	DV Simplex	UHF DV Simplex		—	—	445.670000	—	—	DV
4	DV Simplex	DVAP Default VHF		—	—	146.550000	—	—	DV
5	DV Simplex	DVAP Default UHF		—	—	446.550000	—	—	DV
6	DV Repeater	DV Mega Use		WB4QDX B	WB4QDX G	441.000000	+DUP	0.000000	DV
7	DV Repeater	DV Mega Control		RPTRCTLB	WB4QDX G	441.000000	+DUP	0.000000	DV

*Allows using TO field to select linking and other functions*



# Updating Radio Memory

- Customized, localized download files available at [www.DSTARinfo.com](http://www.DSTARinfo.com)
- Creates CSV files to import to most Icom radios
- Create updated geocoded Repeater List for DR Mode
- Build DVAP Memories



The screenshot shows the D-STAR INFO website. The header features the D-STAR logo and a banner for the ICOM 50th Anniversary Edition ID-51A radio. The navigation menu includes links for Home, FAQ, Conferences, Closest Repeaters, Nets, Reflectors, Downloads (highlighted with a red circle), Repeater Maps & List, Calculator, Apps/Devices, DV Pro, DRATS, Contact Us, and Dayton. The main content area is titled "Downloads for Icom Programming Software" and lists four download options with smiley face icons: "Repeater List download for newer radios", "Download page for older radios", "Memories Downloads just for your location", and "DVAP Memories page". Below this is a link for "Step by Step Instructions for Importing Files into the Icom Software". A section titled "Why all of the options?" explains that options are good but not always applicable, and lists three download pages: "Downloads", "Localized Memory Downloads", and "DVAP Memories". A final note states that the files are .CSV files for importing into radio software, with a caveat for the ID-2820 model.

D-STAR INFO  
INFORMATION, FAQs, AND MORE

Home FAQ Conferences Closest Repeaters Nets Reflectors Downloads Repeater Maps & List Calculator Apps/Devices DV Pro DRATS Contact Us Dayton

Information provided for personal use only. Commercial use is prohibited. Compilation Copyright DSTARInfo.  
Repeater owners or administrator may update their information by going to [www.DSTARInfo.com/update](http://www.DSTARInfo.com/update).

### Downloads for Icom Programming Software

- ☺ [Repeater List download for newer radios](#)
- ☺ [Download page for older radios](#)
- ☺ [Memories Downloads just for your location](#)
- ☺ [DVAP Memories page](#)

[Step by Step Instructions for Importing Files into the Icom Software](#)

Why all of the options?

Options are good, aren't they? Not always, but what we've tried to do is to give you the ability to load your radio with the options that you want and need. There are three download pages:

- Downloads
- Localized Memory Downloads
- DVAP Memories

They all give you a .CSV file that you can use to import into your radio's software. Not all of the Icom radio programming packages support importing, only the radios introduced after the IC80/ID880. The ID-2820 does not support importing (but does support exporting).



# Standard Memory Download

- Select Downloads, Old Downloads for ID-80, ID-880, ID-92 and all newer radios
- Select options
- Creates CSV file
- Import into radio using Icom programming software
- Edit file size in Excel to <100 entries to import by memory group

D-STAR Info Downloads Version 1.92 - 8 April 2014

For which radio?

Which type list do you want?

Select the module frequencies that you would like listed

VHF (144-150 MHz)

UHF (430-450 MHz)

UHF (1.2 GHz)

UHF (1.2 GHz) High-Speed Data

What section of the world would you like the download to cover?

Choose File Format

"," as field separator and "." as decimal mark (A model/software)

";" as field separator and "," as decimal mark (E model/software)

# Updating Repeater List (DR)

ID-31, ID-51, ID-5100

- Select Downloads, Repeater List Downloads
- Provides geocoded Repeater List centered around location
- Adjusts for number of memories by radio
- Allows empty slots for custom or DVAP entries
- Select mix of FM and DV repeaters (ID-51+, ID-5100)
- Save as multiple CSV files on SD Card for import

D-STAR Repeater Downloads Version 1.2.1 - 19 April 2015

Enter Location

We found the following location: Dayton, OH  
United States/OH  
Latitude 39.7591094970703 Longitude -84.1944427490234  
Maidenhead Grid EM79vs

Select Radio

Radio Specifications

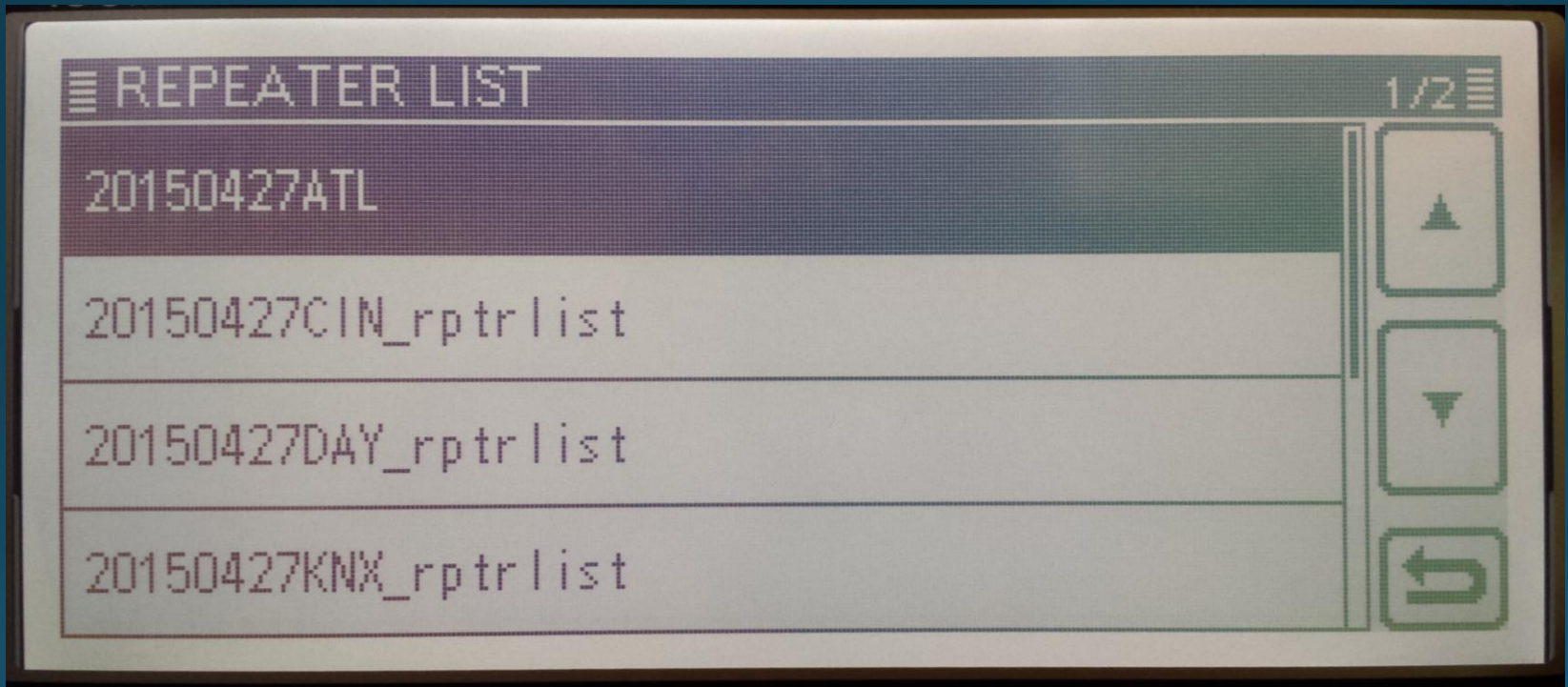
Standard Memories	1000
Repeater List Length	1200
Your Call Sign List Length	200
Name Display Length	16
Empty Repeater Slots	<input type="text" value="15"/>
Percent FM	<input type="text" value="80"/>



# Select Repeater List on SD

ID-31, ID-51, ID-5100

- Many Repeater Lists can be saved on SD Card in radio
- Have a new file for each area, import as needed



# Getting Help

- Website:  
[www.DSTARinfo.com](http://www.DSTARinfo.com)
- Email:  
[info@dstarinfo.com](mailto:info@dstarinfo.com)

**D-STAR INFO**  
INFORMATION, FAQs, AND MORE

Home FAQ Conferences Closest Repeaters Nets Reflectors Downloads Repeater Maps & List Calculator Apps/Devices DV Pro DRATS Contact Us Dayton

D-STAR Expanding...

**Newest D-STAR Repeaters**

Callsign	City	Country, State
MB6BF	Blandford Forum	United Kingdom, England
DB0LAM	Freden	Germany, Lower Saxony
NSTAM	Natchez	United States, Mississippi
GB7RN	Portsmouth	United Kingdom, England
GB7KH	Kelvedon Hatch (Ongar)	United Kingdom, England
GB7DN	Dungiven	United Kingdom, England
9A0DZG	Zagreb	Croatia (Local Name: Hrvatska)
VA3ITL	Maple	Canada, Ontario
ED7ZAE	Granada	Spain
KD0ZSA	Faribault	United States, Minnesota

**Existing Repeaters Updated**

Callsign	City	Country, State
KD0ZSA	Faribault	United States, Minnesota
W7AES	Las Vegas	United States, Nevada
W9IPA	Dayton	United States, Ohio
KG7PJV	Tucson	United States, Arizona

**Top 15 Countries (Voice)**

Country	Voice Nodes
United States	991
Germany	252

**Welcome to D-STAR Info!**

This site is dedicated to helping D-STAR users world wide. From basic information on what D-STAR is to detailed technical information, This site can hopefully solve any of your cravings!

Check out the D-STAR activities at the Hamvention.

**D-STAR @ Dayton 2015**

Watch [Icom's Live Streaming of Dayton](#)

**D-STAR Infocon @Dayton is BACK! Check it out at [DSTARInfoCon 2015](#)**

Want a great class on D-STAR? From new users to old ones. From using your radio the easy way to HotSpots, this class will cover it all!

**SE Hurricane Net**

Hurricane Net Forms (Right Click to Download form)

**New Downloads**

Includes FM repeaters for US  
D-STAR Repeater Downloads Updated  
Supports

- ID-31 (D-STAR Repeaters)
- ID-51 (D-STAR Repeaters)
- ID-7100 (D-STAR Repeaters)
- ID-5100 (D-STAR & FM)
- ID-51+ (D-STAR & FM)
- RS-M1A (D-STAR & FM)

**For New ID-51 / 31 Users**

[D-STARInfo ID-51 Quick-Start Guide](#)

Repeater owners or administrator may update their information at [www.DSTARInfo.com/update](http://www.DSTARInfo.com/update).

**AmateurLogic** has been covering a lot of information on D-STAR lately.

- [AmateurLogic 75: DV3000 Raspberry Pi Hot Spot using the NWDigital DV3000 card](#)
- [AmateurLogic 77: Using the ThumbDV with the NWDigital ThumbDV](#)

**MoenComm** has introduced their Star\*DV USB device that comes with the AMBE CODEC and a Sound Card interface

**ID-51 Anniversary Edition Radios** are starting to run out. We've added support the ID-51 Anniversary Edition and the ID-51+. Head over to [Repeater Downloads](#) to update the D-STAR database and add a lot more

**D-RATS Software**  
D-RATS 0.3.3 update