

A black and white photograph of three tall, lattice-structured radio towers standing on a grassy hill. In the background, a two-story building with a central entrance is visible. The sky is overcast. A dark horizontal band is overlaid across the middle of the image, serving as a background for the text.

Operating with D-STAR

Silvercreek Amateur Radio Association
Jason McCormick N8JDM

What is D-STAR?

Digital **S**mart **T**echnologies for **A**mateur **R**adio or D-STAR is a digital voice and data protocol specification for amateur radio. The system was developed in the late 1990s by the Japan Amateur Radio League and uses minimum-shift keying in its packet-based standard.

- Digital voice
- Text messaging
- Digital data
- Location and ID information

Why D-STAR?

- It's fun!
- Programming is much simpler than DMR

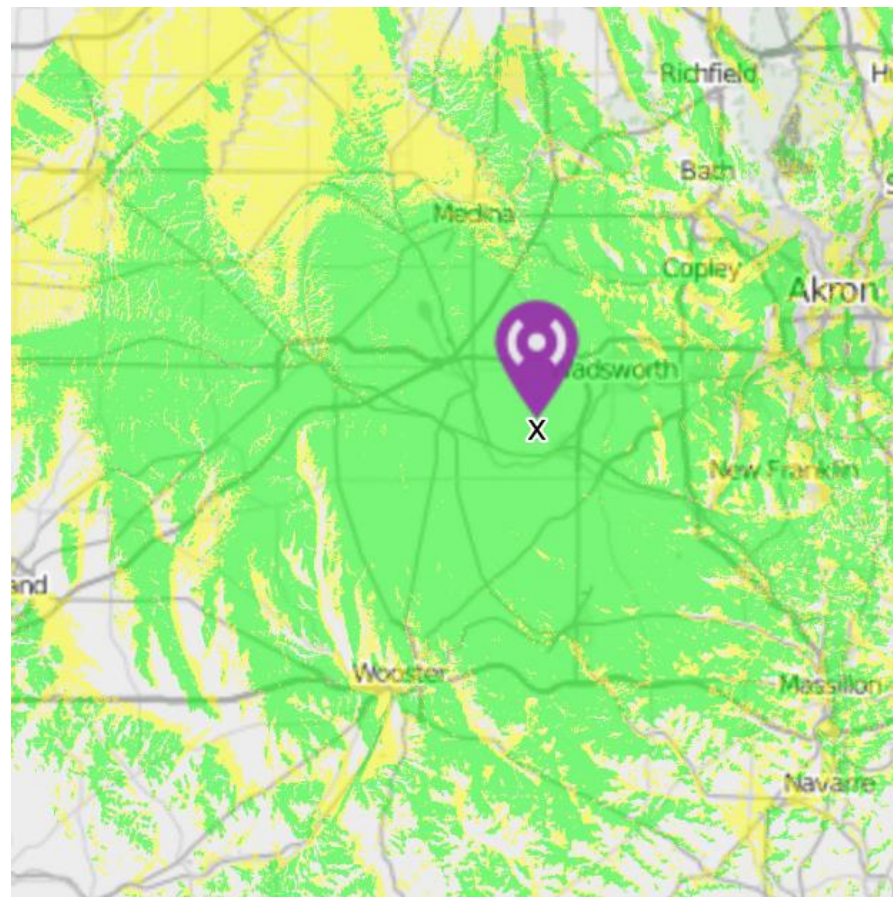
See *Digital Voice Modes* by John Wagner N8CD for a detailed look at how D-STAR works over the air.

Ref: <https://w8wky.org/presentations-talks/>

Area D-STAR Activity

442.375+ WW8TF – Wayne Technical Fanatics

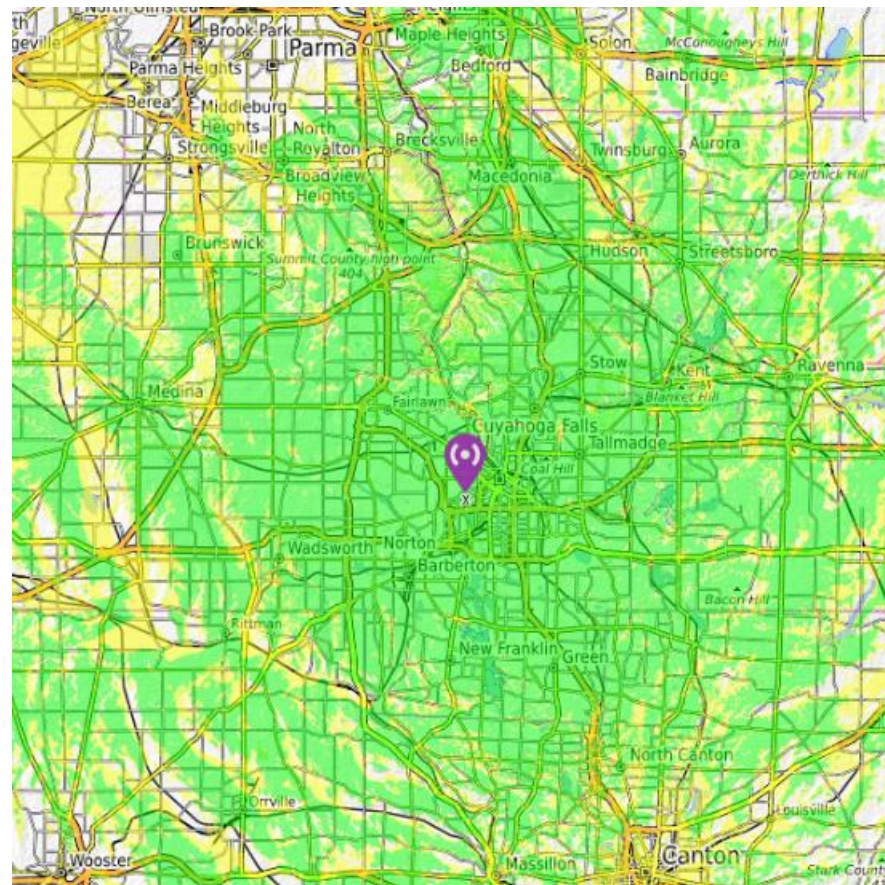
- Multimode repeater with D-STAR the primary mode supporting DPlus and DExtra traffic.
- Covers Rittman, western side of Wadsworth, north to Medina, south to just north of Wooster, west to the Wayne/Ashland Co. line



Area D-STAR Activity

442.5125+ KE8LDH – Wayne Technical Fanatics

- Multimode repeater with D-STAR the primary mode supporting DPlus and DExtra traffic.
- **MOVING SUNDAY 3/24 to Spring Hill!** Will cover Akron, west to Wadsworth, south to Green, east to Portage Co line, and north to Brecksville



Area D-STAR Activity

146.985- N8DXE – DX Engineering

- Converting from analog FM in April to Icom D-STAR
- Supports at least DPlus reflectors (DExtra Ken??)
- High profile machine with great coverage across Summit and Portage counties



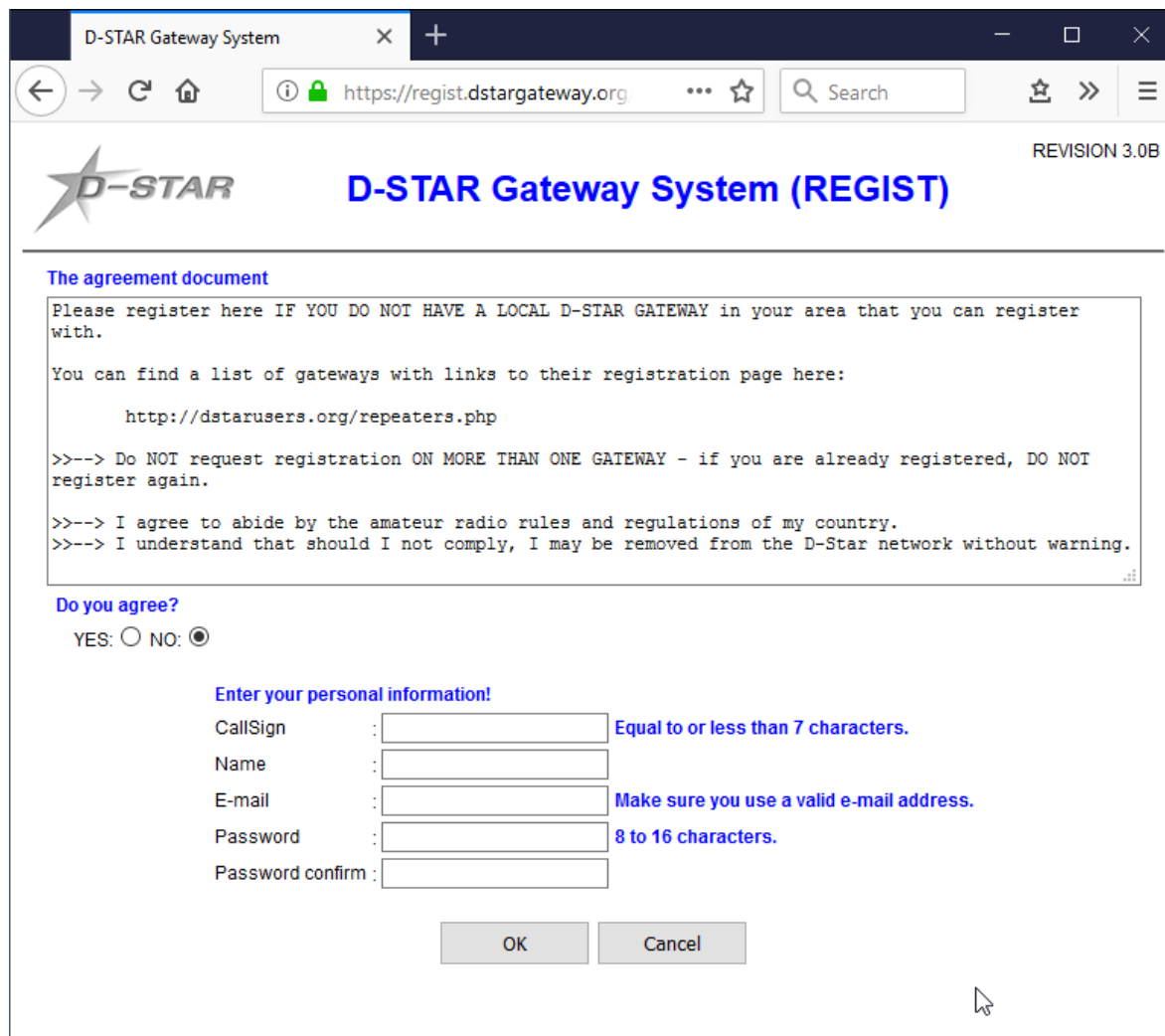
D-STAR Gateway Annoyance

- D-STAR has a “gateway” registration requirement
- Gateways can only be operated by Icom repeater hardware owners (Boooo!)
- Registering to the D-STAR network is incredibly annoying, but it’s a one time annoyance
- Don’t fool around with the “local” repeater directions:
 - <https://regist.dstargateway.org/> (DStarGateway Group)
 - <https://w8heq.dstargateway.org/> (DARA)
- You don’t need a radio to register. If you think you’re getting a D-Star radio, go register in advance!

Registration Steps

1. Register to the D-STAR network at a gateway
2. WAIT
3. Login to the gateway system and ensure that your profile is setup correctly

Registration Steps



The screenshot shows a web browser window titled "D-STAR Gateway System" with the URL "https://regist.dstargateway.org". The page features the D-STAR logo and the title "D-STAR Gateway System (REGIST)". It includes a "The agreement document" section with registration instructions and a "Do you agree?" section with radio buttons for "YES" and "NO". Below this is a form titled "Enter your personal information!" with fields for "CallSign", "Name", "E-mail", "Password", and "Password confirm", each with associated validation instructions. "OK" and "Cancel" buttons are at the bottom.

D-STAR Gateway System

https://regist.dstargateway.org

REVISION 3.0B

D-STAR Gateway System (REGIST)

The agreement document

Please register here IF YOU DO NOT HAVE A LOCAL D-STAR GATEWAY in your area that you can register with.

You can find a list of gateways with links to their registration page here:

<http://dstarusers.org/repeaters.php>

>>--> Do NOT request registration ON MORE THAN ONE GATEWAY - if you are already registered, DO NOT register again.

>>--> I agree to abide by the amateur radio rules and regulations of my country.

>>--> I understand that should I not comply, I may be removed from the D-Star network without warning.

Do you agree?

YES: ☐ NO: ☒

Enter your personal information!

CallSign : Equal to or less than 7 characters.

Name :

E-mail : Make sure you use a valid e-mail address.

Password : 8 to 16 characters.

Password confirm :

OK Cancel

- All D-STAR gateways are operated by volunteer individuals or clubs
- Choose your password wisely and write it down somewhere

D-STAR Station Setup

After receiving your registration approval notice, log in to the same gateway and click *Personal Information*

If the station has multiple radios, Target CS are distinguished by initial(last character) of a space or special english letter. Definition character as follows..... (G)is a gateway. (S)is a local server. Usually RPT(Repeater) isn't checked, initial AreaRPT CS is the port A of Zone. If RPT is checked, AreaRPT CS is the same as Target CS.

	Initial	RPT	local IP	pcname	Del
<input type="checkbox"/> 1: N8JDM		<input type="checkbox"/>	10.233.167.56	n8jdm-dstar	<input type="checkbox"/>
<input type="checkbox"/> 2: N8JDM	Z	<input type="checkbox"/>	10.233.167.57	n8jdm-4100-terminal	<input type="checkbox"/>
<input type="checkbox"/> 3: N8JDM		<input type="checkbox"/>	10.233.167.58		
<input type="checkbox"/> 4: N8JDM		<input type="checkbox"/>	10.233.167.59		
<input type="checkbox"/> 5: N8JDM		<input type="checkbox"/>	10.233.167.60		
<input type="checkbox"/> 6: N8JDM		<input type="checkbox"/>	10.233.167.61		
<input type="checkbox"/> 7: N8JDM		<input type="checkbox"/>	10.233.167.62		
<input type="checkbox"/> 8: N8JDM		<input type="checkbox"/>	10.233.167.63		

Check item and change a set value.

Update

In entry 1, ensure that you have your "space" entry where the *Initial* field is a single space

In entry 2, create your "Z" entry which is for terminal data. Even if you don't plan on using it, there's no harm in creating it

Key D-STAR Terms for Radios

Term	Purpose
Own Callsign 1	The transmitter's callsign - e.g. N8JDM. This field <u>must</u> be the callsign registered to the D-STAR Gateway Network.
Own Callsign 2	Any modifier to the callsign; transmitted as /TEXT. This is commonly used to send a name or location designator - e.g. /QTH, /M. (4 chars)
UR -or- URCALL	Where the transmission is directed
RPT1	The callsign and module of the local repeater
RPT2	The gateway exit for network traffic from the local repeater

UR / URCALL

The UR field is the **Companion Callsign** field in a D-STAR transmission. Think of this field as “Who am I telling to listen to this transmission?”

D-STAR transmissions always have a UR set, even when communicating simplex!

D-STAR-ese for “everyone” is the string CQCQCQ

The UR string is also how to issue commands to a D-STAR repeater

The UR string is eight characters wide and is **position dependent – spaces are important!**



RPT and UR/URCALL Writing Conventions

Depending on who wrote information you will see many conventions that all mean the same thing:

- Quoted Spaces: “WW8TF B”
- Underscores: WW8TF__B
- Carats: WW8TF^^B
- Monospace Type: WW8TF B

All try to be helpful, but at the end of the day, you have to remember that the RPT or URCALL has to be exactly 8 character long - 7 characters of identity with space padding and 1 character of command or module

Different Forms of UR/URCALL

Position in the URCALL Field								Meaning
1	2	3	4	5	6	7	8	
C	Q	C	Q	C	Q			General traffic (no command)
X	R	F	3	3	0	A	L	Link to reflector XRF330, module A
							U	Unlink current reflector
							E	Echo-back mode ("Parrot")
							I	Play current repeater status
W	W	8	T	F			L	Link local repeater to the WW8TF Repeater directly (This is frowned upon unless you own/control both repeaters)

RPT1

Think of RPT1 as equivalent to a PL/CTCSS tone.

To talk on a repeater, you must set the RPT1 field to the callsign of the repeater and its module. D-STAR supports a concept of “modules” to support the same controller directing radios on multiple bands.

In general, a 70cm repeater is “B”, 2m is “C”, and 23cm is “A”. Usually “D” refers to a data-only access module. Standard repeaters use this convention; hotspots may vary but are often “B” or “D”.

The field is 8 characters wide and position dependent
– follows the same rules as URCALL

RPT1

Position in RPT1 Field								Meaning
1	2	3	4	5	6	7	8	
W	W	8	T	F			B	Repeater is WW8TF, module B
K	E	8	L	D	H		B	Repeater is KE8LDH, module B
W	8	W	K	Y			C	Repeater is W8WKY, module C
N	8	C	D				D	N8CD digital access module D

Most D-STAR repeaters are listed at <http://www.dstarusers.org/repeaters.php> and list the module(s) available by frequency.

Frequency Information

2 Meters (Usually "C" Node): N/A

70 Centimeters (Usually "B" Node): 442.51250MHz +5.000

23 Centimeters Voice (Usually "A" Node): N/A

23 Centimeters Digital Data N/A

Frequency Information

2 Meters (Usually "C" Node): 145.39000MHz -0.600

70 Centimeters (Usually "B" Node): 442.65000MHz +5.000

23 Centimeters Voice (Usually "A" Node): 1285.00000MHz -12.000

23 Centimeters Digital Data 1298.00000MHz



RPT2

RPT2 (in it's common use) is essentially saying that the traffic into the repeater should be delivered to the worldwide D-STAR network.

Leaving RPT2 blank will cause the local repeater to work but traffic will not be sent through the gateway, including any commands. For repeaters linked to a reflector, you can hear remote sites but they can't hear you.

Unless there is compelling need and it's clear what you're doing, always match RPT1 and RPT2 - swapping the module letter A, B, C, or D with a G.

RPT2

Position in RPT2 Field								Meaning
1	2	3	4	5	6	7	8	
W	W	8	T	F			G	Repeater is WW8TF
K	E	8	L	D	H		G	Repeater is KE8LDH
W	8	W	K	Y			G	Repeater is W8WKY
N	8	C	D				G	Hotspot N8CD

Putting it all Together – An Example

Item	Setting	Meaning
Own Call 1	N8JDM	I am N8JDM
Own Call 2	QTH	“This is my QTH radio”
UR	CQCQCQ	Traffic is destined for all listeners
RPT1	WW8TF B	Repeater’s callsign is WW8TF and is on module B (70cm)
RPT2	WW8TF G	Send my traffic out the gateway to the network



Note the two spaces!

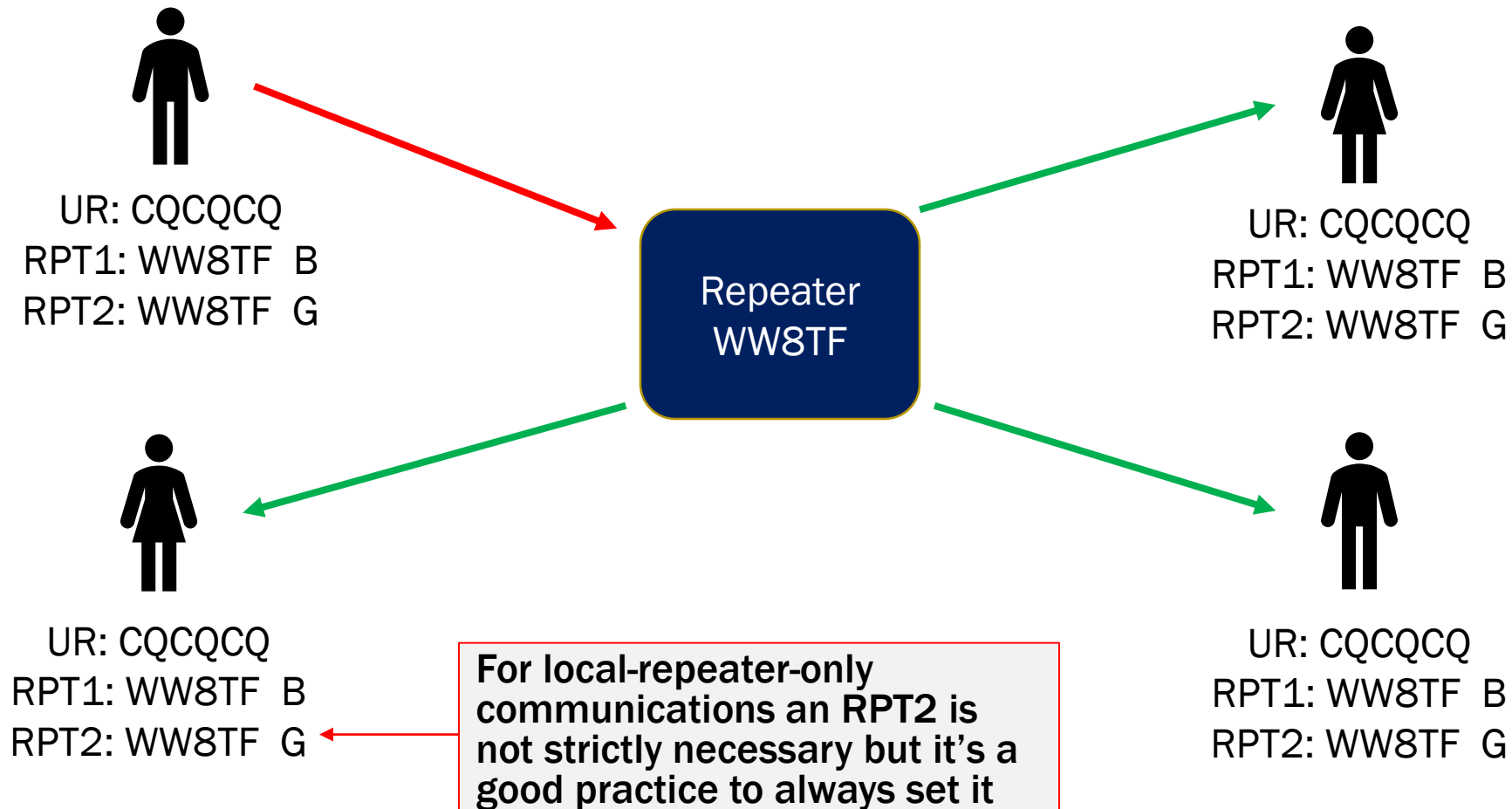
Radio Operation

Radio programming practice is to store one memory with “CQCQCQ”, one with each of the commands (i.e. ‘E’, ‘I’, ‘U’), and then linking commands for various reflectors.

If the repeater is already in the mode you want (or you don’t care), just transmit on the “CQCQCQ” memory setting. This is equivalent to talking on a standard analog repeater.

If you want to test your audio quality or your RF strength, transmit into the ‘E’ command memory, unkey, and your transmission will be played back.

Basic D-STAR Operations



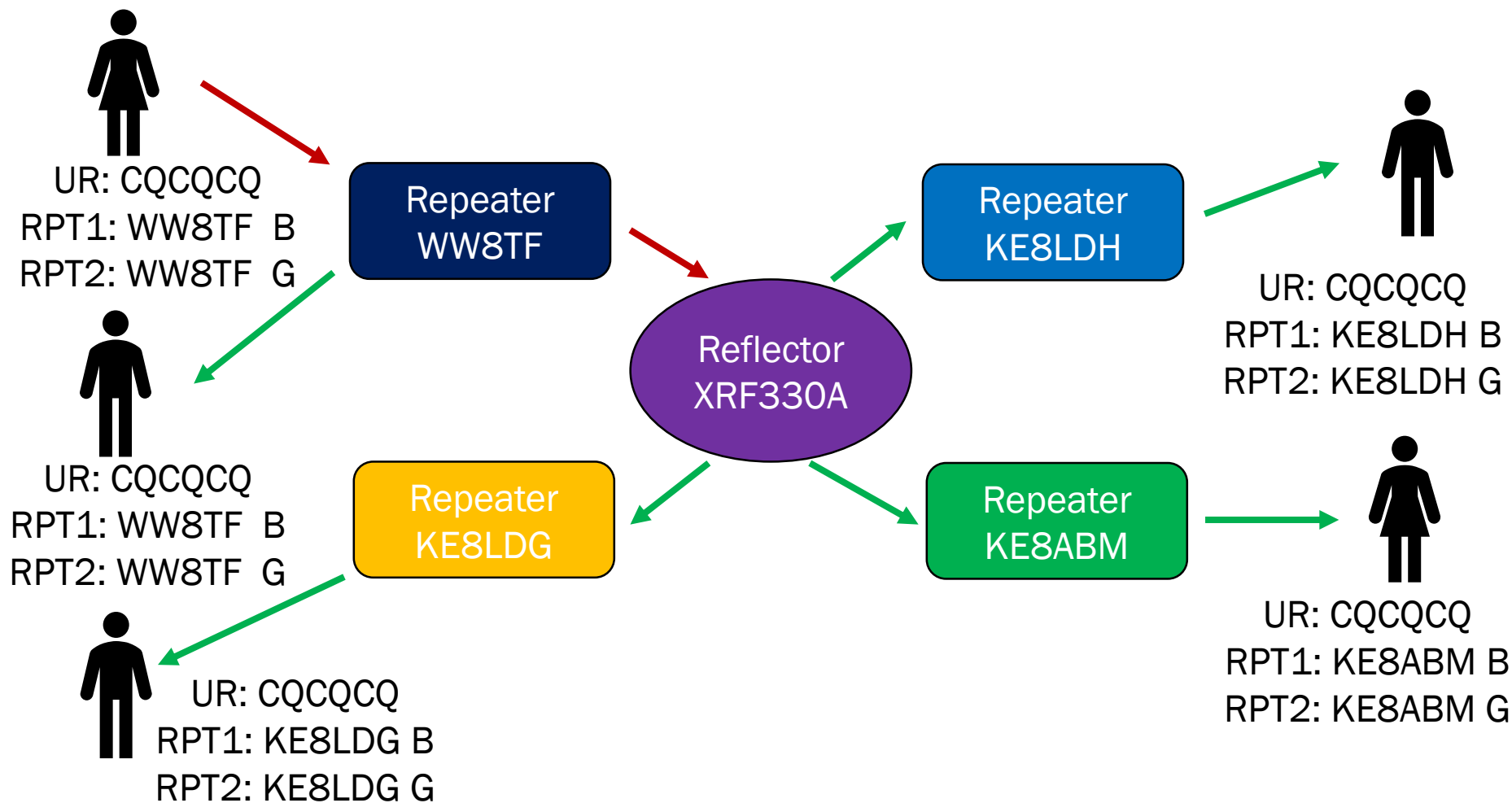
Reflectors

A reflector is exactly what it sounds like – it reflects back out the transmissions sent to it.

Reflectors are network-based and can either be private networks or public/Internet networks.

D-STAR operates exclusively on a “star” topology model – all repeaters are connected to exactly one reflector at a time and all communication travels to the reflector and then back out from it.

Reflector Diagram



Reflector Types

Just like DMR with DMR-MARC vs. Brandmeister, D-STAR has multiple “networks” but unlike DMR, they are not mutually exclusive on the repeater:

- REF – uses the DPlus protocol for repeater-reflector communications; original reflector type
- DCS – uses the DCS protocol for repeater-reflector communications; country-centric organization for D-STAR/DMR transcoding
- XRF – uses the DExtra protocol; very decentralized community model

Basically you need to find the organization you want to talk on/to and use their published reflector information

Reflectors Aren't Needed for D-STAR

D-STAR originally had no concept of reflectors! D-STAR was designed for digital voice and text

D-STAR provides for site-to-site connectivity and callsign-to-callsign connectivity

- **Site-to-site is rarely used in practice but is an option for hotspot and small repeater users**
- **Callsign-to-callsign routing is almost never used because it leads to poor amateur practice by not knowing the remote station's location and repeater status. IRCDDDB-based hotspots make this okay for cross-hotspot comms – but know first!**

Reflector Linking Process

‘ I ’

- Test the repeater configuration with the ‘I’ command

‘XRF330AL’

- Assuming the repeater is not linked to a reflector, transmit briefly on the memory slot for the reflector you want.
- Repeater will usually state when it connects.

‘CQCQCQ’

- Switch to your ‘CQCQCQ’ memory slot and transmit a normal QSO. Do not keep transmitting on the reflector memory slot – you’ll keep sending link commands!

‘ U ’

- When finished, transmit the unlink command from that memory slot. It is considered polite to re-link to any reflector you disconnected. If the repeater is known to be usually connected to the reflector you selected, don’t unlink it.

Other Neat Features of D-STAR

- Most radios can transmit your location (GPS or fixed config). Depending on type and need, you can also send elevation, antenna type, etc.
- Most radios will transmit a “message” along with your audio text – e.g. “Jason in NE Ohio”
- Many repeaters and most reflectors have a status board to show their linking state and who is talking:
 - <https://ww8tf.ww8tf.club>
 - <https://ke8ldh.ww8tf.club>
 - <http://hub.megalink.network/xlx>

Pi-Star-based Dashboard

Hostname: ke8ldh

Pi-Star:3.4.16 / Dashboard: 20190310

Pi-Star Digital Voice Dashboard for KE8LDH

[Dashboard](#) | [Admin](#) | [Configuration](#)

Modes Enabled

D-Star	DMR
YSF	P25
YSF XMode	NXDN
DMR XMode	POCSAG

Network Status

D-Star Net	DMR Net
YSF Net	P25 Net
YSF2DMR	NXDN Net
YSF2NXDN	YSF2P25
DMR2NXDN	DMR2YSF

Radio Info

Trx	Listening
Tx	442.512500 MHz
Rx	447.512500 MHz
FW	MMDVM:20180723
TCXO	12.0000 MHz

D-Star Repeater

RPT1	KE8LDH B
RPT2	KE8LDH G

D-Star Network

APRS	texas.aprs2.net
IRC	group2-irc.iredc
Linked to XRF330 A (DExtra Outgoing)	

Gateway Activity

Time (EDT)	Mode	Callsign	Target	Src	Dur (s)	Loss	BER
12:38:17 Mar 14th	D-Star	N8JDM/M	CQCQCQ	RF	5.7	0%	0.0%
08:00:04 Mar 14th	D-Star	N8JDM/M	CQCQCQ via XRF330 A	Net	5.7	0%	0.0%
07:38:54 Mar 14th	D-Star	N8CD/JOHN	CQCQCQ via XRF330 A	Net	3.9	1%	0.0%
03:49:53 Mar 14th	D-Star	KE8LDH/INFO	CQCQCQ via XRF330 A	Net	6.6	0%	0.0%
21:00:02 Mar 13th	D-Star	N8JDM/QTH	I	RF	1.5	0%	0.0%

Local RF Activity

Time (EDT)	Mode	Callsign	Target	Src	Dur (s)	BER	RSST
12:38:17 Mar 14th	D-Star	N8JDM/M	CQCQCQ	RF	5.7	0.0%	S9+50dB
21:00:02 Mar 13th	D-Star	N8JDM/QTH	I	RF	1.5	0.0%	S9+50dB



XLX-Based Reflector



The Megalink Network



<https://megalink.network>

XLX330 v2.2.2 - Dashboard v2.4.0 / Service uptime: 77 days 03:33:06

Users / Modules














Repeaters / Nodes (3)

Peers (0)

Reflectorlist

D-Star live

Traffic statistics

#	Flag	Callsign	Suffix	DPRS	Via / Peer	Last heard	
1		N8JDM	M		KE8LDH B	14.03.2019 16:38	A
2		N8CD	JOHN		WW8TF B	14.03.2019 11:38	A
3		KC8ZKI	2820		KE8LDG B	06.03.2019 21:18	A
4		K9WLW	D74A		K9WLW D	06.03.2019 01:17	A
5		KE8JNH			KE8JNH D	01.03.2019 23:09	A
6		K1Δ1 7X	ΔMRF		K1Δ1 7X R	26.02.2019 19:29	R

Megalink
English
A

KE8LDG-B

KE8LDH-B

WD8KND-B



Programming Radios

All current-model Icom radios use versions of the same “CS” software, each model with its own version

- You cannot copy configurations between software
- You CAN export most of the important pieces as CSV files, manipulate them, and re-import them into the CS software – including across versions
- I have an ID-51A, ID-4100A, and an ID-5100. All three have the same memory configs thanks to CSV file imports

Kenwood obviously has different software.



General D-STAR Programming

- Setup Own Callsign
- Setup UR Callsigns
- Setup Repeaters
- Create memory items using the above
- Create banks (as desired)

URCALL Programming

Untitled - CS-4100

File View COM Port Clone Option Help

ID-4100

- Memory CH
- CALL CH
- Program Scan Edge
- Program Scan Link
- 1 Memory
- 2 Digital
 - Your Call Sign
- Repeater List
- My Station
 - Call Sign
 - Message
- Transmitted Call Record
- Received Call Record
- Digital Setting
- GPS
- Common Setting

Your Call Sign (Remain 278 memories)

No.	Name	Call Sign
1	CQCQCQ	CQCQCQ
2	D-Star MegaRptr	REF001CL
3	SDiego PAPA 12A	REF012AL
4	WCoast Rpt 14B	REF014BL
5	WCoast Rpt 14C	REF014CL
6	Widearea 30C	REF030CL
7	Ohio ARES 38A	REF038AL
8	WPA Rpt 63C	REF063CL
9	Ohio X38A	XRF038AL
10	Constaln 310A	XRF310AL
11	Constaln 310D	XRF310DL
12	DStar RndTbl 555	XRF555AL
13	KingODig XLX313A	XRF313AL
14	KingODig XLX313B	XRF313BL
15	KingODig XLX313C	XRF313CL
16	KingODig XLX313D	XRF313DL
17	KingODig XLX313E	XRF313EL
18	KingODig XLX313F	XRF313FL
19	Echo/Parrot E	E
20	Repeater Info I	I
21	Unlink U	U
22	Megalink A	XRF330AL
New		

Callsign

Untitled - CS-4100

File View COM Port Clone Option Help

ID-4100

- Memory CH
- CALL CH
- Program Scan Edge
- Program Scan Link
- DTMF Memory
- Digital
 - 1 Your Call Sign
 - 2 Repeater List
 - 3 My Station
 - Call Sign
 - Message
 - Transmitted Call Record
 - Received Call Record
 - Digital Setting
- GPS
- Common Setting

My Call Sign

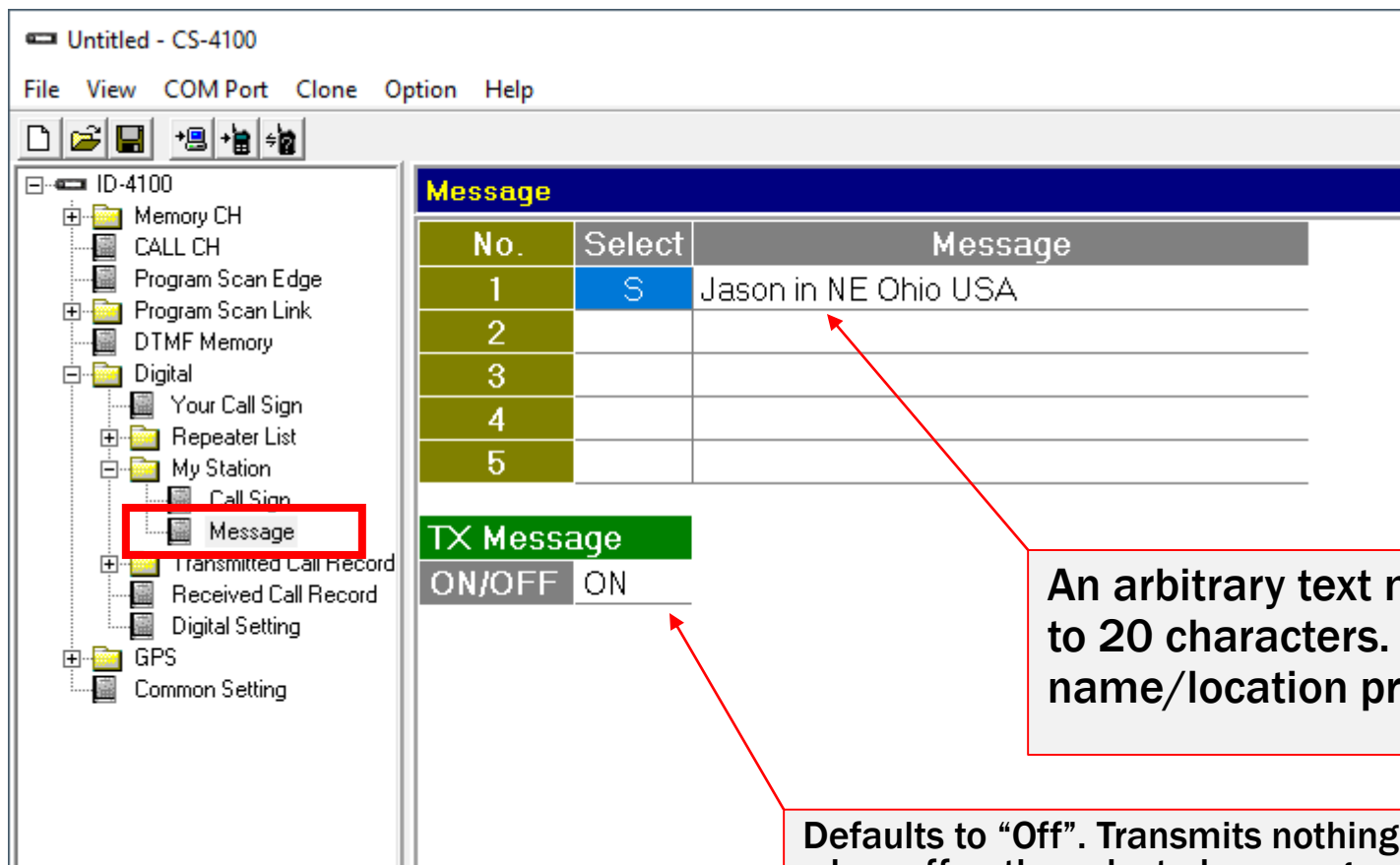
No	Select	Call Sign	/
M01	S	N8JDM	QTH
M02			
M03			
M04			
M05			
M06			

Four character suffix – M, P, QTH, etc. Some people put their name here – John. The slash is always assumed and transmitted properly – you don't have to list it.

This is always your callsign with no prefix or suffix. Eight characters maximum here.

You can keep multiple entries here and swap between them on the radio if you want. For programming, pick your default and mark is "Select" in the *Select* column

Transmission Message



An arbitrary text message of up to 20 characters. Commonly a name/location provided.

Defaults to "Off". Transmits nothing when off or the selected message when "On". Can be easily toggled on the device for on/off and selection.

Digital Repeater Setup

Untitled - CS-4100

File View COM Port Clone Option Help

ID-4100

- Memory CH
- CALL CH
- Program Scan Edge
- Program Scan Link
- DTMF Memory
- Digital
 - Your Call Sign
 - Repeater List
 - Group Name
 - 01: Akron
 - 02:
 - 03:
 - 04:
 - 05:

01: Akron (Remain 1497 memories)

No.	Type	Name	Sub Name	Call Sign		Frequency					To
				Repeater Call Sign	Gateway Call Sign	Operating Freq	DUP	Offset Freq	Mode		
0	DV Repeater	KE8LDG		KE8LDG B	KE8LDG G	442.737500	+DUP	5.000000	DV	—	
1	DV Repeater	KE8LDH		KE8LDH B	KE8LDH G	442.512500	+DUP	5.000000	DV	—	
2	DV Repeater	WW8TF		WW8TF B	WW8TF G	442.375000	+DUP	5.000000	DV	—	
New											

This is identical to setting up a normal memory channel. You can list FM and DV (D-STAR) repeaters here. It's very helpful to reduce typing in Memory Channels. It's not very useful for FM analog repeaters.

Memory Channel Setup

Untitled - CS-4100

File View COM Port Clone Option Help

ID-4100

- Memory CH
 - All
 - 0 - 99
 - 100 - 199**
 - 200 - 299
 - 300 - 399
 - 400 - 499
 - 500 - 599
 - 600 - 699
 - 700 - 799
 - 800 - 899
 - 900 - 999
- Bank CH
- CALL CH
- Program Scan Edge
- Program Scan Link
- DTMF Memory
- Digital
 - Your Call Sign
 - Repeater List
 - My Station
 - Call Sign
 - Message
 - Transmitted Call Record
 - Received Call Record
 - Digital Setting
- GPS
- Common Setting

Memory CH							
Frequency							
CH	Operating Freq	DUP	Offset Freq	TS	Mode	Name	Skip
128	442.375000	+DUP	5.000000	25k	DV	WW8TF CQCQCQ	
129	442.375000	+DUP	5.000000	25k	DV	WW8TF Info	Skip
130	442.375000	+DUP	5.000000	25k	DV	WW8TF Unlink	Skip
131	442.375000	+DUP	5.000000	25k	DV	WW8TF Megalink	Skip
132	442.375000	+DUP	5.000000	25k	DV	WW8TF DStar Meg	Skip
133	442.375000	+DUP	5.000000	25k	DV	WW8TF SD PAPA12	Skip
134	442.375000	+DUP	5.000000	25k	DV	WW8TF WCstR14B	Skip
135	442.375000	+DUP	5.000000	25k	DV	WW8TF WCstR14C	Skip
136	442.375000	+DUP	5.000000	25k	DV	WW8TF Wideare3C	Skip
137	442.375000	+DUP	5.000000	25k	DV	WW8TF OHARES38A	Skip
138	442.375000	+DUP	5.000000	25k	DV	WW8TF WPA-RPT63	Skip
139	442.375000	+DUP	5.000000	25k	DV	WW8TF OH X38A	Skip
140	442.375000	+DUP	5.000000	25k	DV	WW8TF OH X38B	Skip
141	442.375000	+DUP	5.000000	25k	DV	WW8TF OH X38C	Skip
142	442.375000	+DUP	5.000000	25k	DV	WW8TF OH X38D	Skip
143	442.375000	+DUP	5.000000	25k	DV	WW8TF OH X38E	Skip
144	442.375000	+DUP	5.000000	25k	DV	WW8TF Cnsth31A	Skip
145	442.375000	+DUP	5.000000	25k	DV	WW8TF Cnsth31D	Skip
146	442.375000	+DUP	5.000000	25k	DV	WW8TF DStrRndTb	Skip
147	442.375000	+DUP	5.000000	25k	DV	WW8TF KODXLXA	Skip
148	442.375000	+DUP	5.000000	25k	DV	WW8TF KODXLXB	Skip
149	442.375000	+DUP	5.000000	25k	DV	WW8TF KODXLXC	Skip
150	442.375000	+DUP	5.000000	25k	DV	WW8TF KODXLXD	Skip
151	442.375000	+DUP	5.000000	25k	DV	WW8TF KODXLXE	Skip
152	442.375000	+DUP	5.000000	25k	DV	WW8TF KODXLXF	Skip
153	442.375000	+DUP	5.000000	25k	DV	WTF-KE8LDH Link	Skip
154	442.375000	+DUP	5.000000	25k	DV	WTF-KE8LDG Link	Skip
155	442.375000	+DUP	5.000000	25k	DV	WW8TF Echo	Skip

- Memory programming is largely the same as analog FM except the mode is "DV"
- Memory label is 16 characters long
- Mark all your "command" memories with Skip

Memory Channel Setup

Untitled - CS-4100

File View COM Port Clone Option Help

ID-4100

Memory CH

100 - 199

CH	TSQF Freq	DTCS	DTCS Polarity	Digital		Call Sign		
				DSQF	Code	Your	RPT1	RPT2
128	88.5	023	Both N		00	CQCQCQ	WW8TF B	WW8TF G
129	88.5	023	Both N		00	I	WW8TF B	WW8TF G
130	88.5	023	Both N		00	U	WW8TF B	WW8TF G
131	88.5	023	Both N		00	XRF330AL	WW8TF B	WW8TF G
132	88.5	023	Both N		00	REF001CL	WW8TF B	WW8TF G
133	88.5	023	Both N		00	REF012AL	WW8TF B	WW8TF G
134	88.5	023	Both N		00	REF014BL	WW8TF B	WW8TF G
135	88.5	023	Both N		00	REF014CL	WW8TF B	WW8TF G
136	88.5	023	Both N		00	REF030CL	WW8TF B	WW8TF G
137	88.5	023	Both N		00	REF038AL	WW8TF B	WW8TF G
138	88.5	023	Both N		00	REF063CL	WW8TF B	WW8TF G
139	88.5	023	Both N		00	XRF038AL	WW8TF B	WW8TF G
140	88.5	023	Both N		00	XRF038BL	WW8TF B	WW8TF G
141	88.5	023	Both N		00	XRF038CL	WW8TF B	WW8TF G
142	88.5	023	Both N		00	XRF038DL	WW8TF B	WW8TF G
143	88.5	023	Both N		00	XRF038EL	WW8TF B	WW8TF G
144	88.5	023	Both N		00	XRF310AL	WW8TF B	WW8TF G
145	88.5	023	Both N		00	XRF310DL	WW8TF B	WW8TF G
146	88.5	023	Both N		00	XRF555AL	WW8TF B	WW8TF G
147	88.5	023	Both N		00	XRF313AL	WW8TF B	WW8TF G
148	88.5	023	Both N		00	XRF313BL	WW8TF B	WW8TF G
149	88.5	023	Both N		00	XRF313CL	WW8TF B	WW8TF G
150	88.5	023	Both N		00	XRF313DL	WW8TF B	WW8TF G
151	88.5	023	Both N		00	XRF313EL	WW8TF B	WW8TF G
152	88.5	023	Both N		00	XRF313FL	WW8TF B	WW8TF G
153	88.5	023	Both N		00	KE8LDHBL	WW8TF B	WW8TF G
154	88.5	023	Both N		00	KE8LDGBL	WW8TF B	WW8TF G
155	88.5	023	Both N		00	E	WW8TF B	WW8TF G

- However, instead of Tone, etc. you program D-STAR information
- One unskipped channel for “CQCQCQ” the remaining for your linking commands

D-STAR Memory Channel Close-Up

Memory CH								
Frequency								Ton
CH	Operating Freq	DUP	Offset Freq	TS	Mode	Name	Skip	
128	442.375000	+DUP	5.000000	25k	DV	WW8TF CQCQCQ		

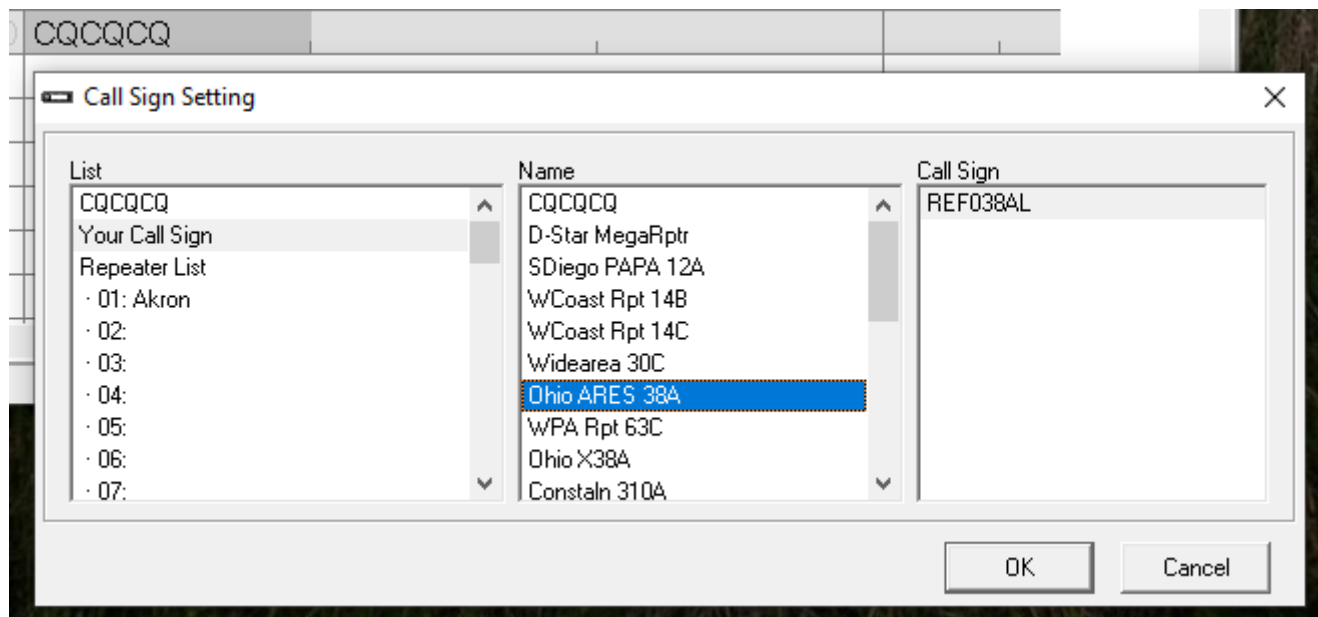
Standard radio info: RX frequency, offset direction and size, tune step, mode, alphanumeric label and skip

Call Sign			
Your	RPT1	RPT2	C
0 CQCQCQ	WW8TF B	WW8TF G	

D-STAR URCALL, RPT1 field, and (optional) RPT2 field

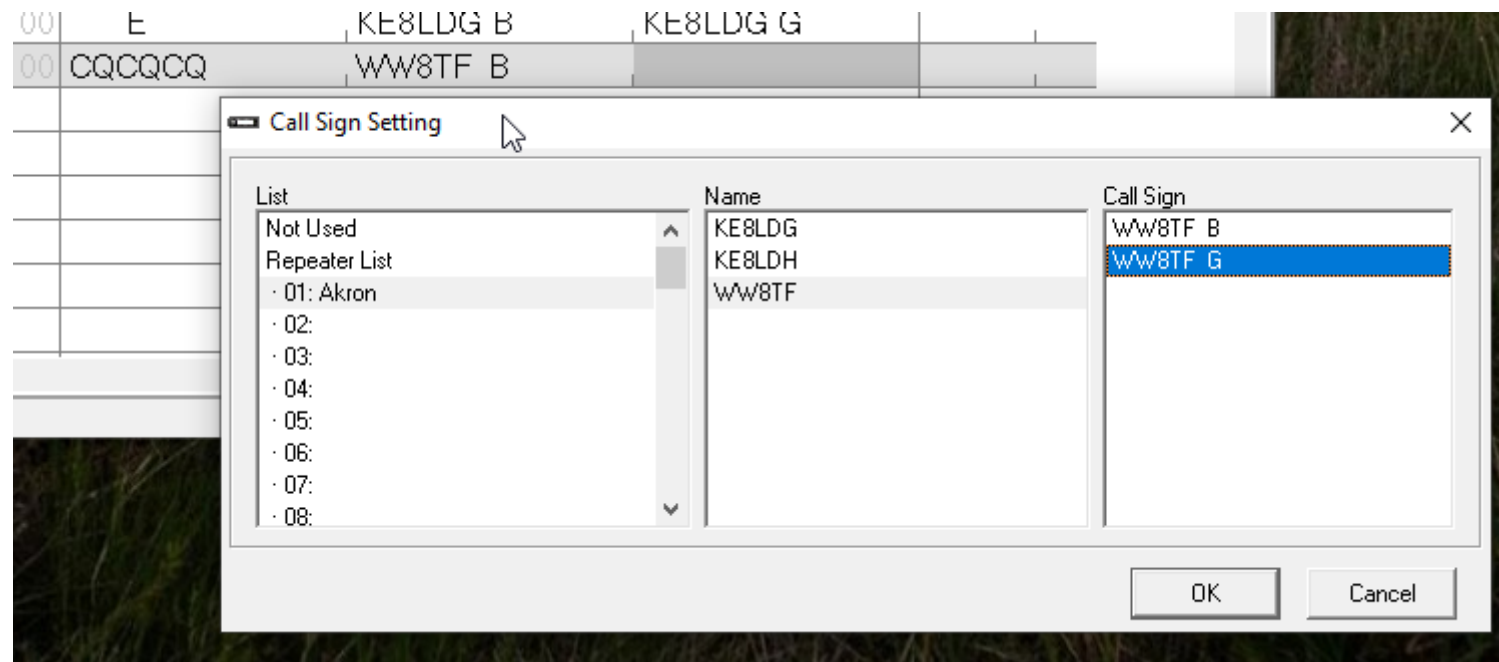
Entry Shortcuts

Right-click on the *Your* field, choose **Select**, and you can pick from the various items you set (i.e. allows you to reuse!). Select one and it fills in the URCALL field.



Entry Shortcuts

The same applies to filling in the repeater settings.



Caller Information, BER, etc.

- D-STAR radios sent information about your contact, including callsign, GPS location, and more depending on the radio types at both ends
- Icom D-STAR radios record your Rx history so you can recall who you were talking to and their information if you need it
- D-STAR provides some signal quality telemetry in the form of a Bit Error Rate (BER)

Helpful D-STAR Links

- <http://dstarinfo.com>
- <http://www.dstarusers.org>
- <http://dstargateway.org>
- <http://ww8tf.club/repeaters/multi-mode-repeater-how-to/>
- <http://hub.megalink.network/xlx>
- <https://ww8tf.ww8tf.club>