

A decorative graphic on the left side of the slide consisting of white and light blue lines and circles, resembling a circuit board or a network diagram, extending from the top to the bottom.

# INDIANA DMR

NETWORKS, REPEATERS, TALKGROUPS, AND CODEPLUGS

© 2021, JAY M. FARLOW, W9LW, FORT WAYNE, INDIANA, USA

# INTRODUCTION TO DMR

© 2021, JAY M. FARLOW, W9LW, FORT WAYNE, INDIANA, USA

# DIGITAL MOBILE RADIO

- Digital audio (as are D-Star and Yaesu Fusion)
- Commercial roots
- Internet connections
- ID numbers issued via [www.radioid.net](http://www.radioid.net)
- Time-division multiple access: Two 30ms time slots per radio frequency



# TALKGROUPS

- Virtual channels
- Names and numbers (Indiana Statewide, 3118)
- Designated for geographic areas or purposes (Military Vets, 98008)
- Parrot
- Static vs. dynamic
- “Private” vs. Group



# NETWORKS

- Multiple networks available, not fully interconnected
  - Brandmeister
  - c-Bridge (Crossroads, Chicagoland)
  - DMR Plus (Tri-State)
  - TGIF (No Indiana Repeaters, few, if any, connections to other networks)

# C-BRIDGE NETWORKS (CROSSROADS, CHICAGOLAND)



- Networking device
- Original Indiana DMR networks
- Repeater owners choose talkgroups to carry
- Repeater owners specify time slots for each talkgroup
- Mostly use talkgroups from the [DMR-MARC list](#)
- “Parrot” is a **group** call to 9998 on time slot 1
- Crossroads website: [www.idhr.info](http://www.idhr.info)
- Chicagoland website: [chicagoland-cc.org/](http://chicagoland-cc.org/)

# BRANDMEISTER



- Any talkgroup on [Brandmeister list](#) (1,500 choices)
- Any Brandmeister talkgroup on any time slot
- Some talkgroups cross networks.
  - Indiana statewide (3118) linked with Crossroads (3118) and Tri-State (Ref. 4607)
  - Tactical talkgroups (e.g., 310, 311) linked with Crossroads and Tri-State (same numbers)
  - “Crossroads” talkgroup (31189) linked with Crossroads (8710)
  - “Midwest” 3169 linked with Crossroads (3169) and Tri-State (Ref. 4640)
  - “North America” (93) and “Worldwide” (91) **not** cross linked.
- “Parrot” is a **private** call to 9990 or a group call to 31000 (either time slot)



# DMR PLUS (TRI-STATE)



- Crown Point, LaPorte, Valparaiso
- DMR-MARC talkgroups (time slot 1) plus D-Star-style reflectors (time slot 2)
- “Parrot” is **group** call to 9990 on time slot 1
- Tri-State website:  
[www.tristatedmr.org](http://www.tristatedmr.org)

## Connecting to Reflectors on DMRPlus is Easy

Step 1: Check status of repeater

TS2 TG5000  
“Status”

Step 2: Connect to a reflector

TS2 TG 4xxx  
“Connect to Reflector”

Step 3:  
Begin your QSO

TS2 TG9  
“Talk”

Step 4: Unlink reflector at end of QSO

TS2 TG4000  
“Unlink”



# TGIF

- Recently created network
- No Indiana repeaters (yet)
- Mostly used by individuals on DMR hotspots
- Few (if any) cross-links to other networks
- “Parrot” is a group or private call to 9990 or 31000
- TGIF website: [tgif.network](https://tgif.network)

# PREPARING TO PROGRAM A DMR RADIO

© 2021, JAY M. FARLOW, W9LW, FORT WAYNE, INDIANA, USA

# OBTAIN A DMR ID NUMBER

- Every user must have DMR ID number
  1. Obtain actual copy of license (FCC ULS), not “reference copy”
  2. Go to [www.radioid.net](http://www.radioid.net)
  3. Sign up for account, follow instructions to get DMR ID.
  4. Most users need only one ID, even with multiple radios.



# OBTAIN REPEATER INFO

- For each repeater, you need:
  - Frequency
  - “Color” code
  - Network
  - Static & dynamic talkgroups per time slot



DMR Base Stations & Repeaters | DMR Tier 2 compatible repeaters | QT/DQT/Colour Code signalling

# INDIANA DMR REPEATER MATRIX

- Popular online references (RepeaterBook, RFinder) unreliable
- Google Sheets (don't download): <https://tinyurl.com/vr4rkerf>

Indiana DMR Repeaters										Time Slot 1	Worldwide (1)	Local (2)	North America (3)	TriState / Regional (8)	WW English (13)	Worldwide. (91)	North America. (93)	UA English 1 (113)	TAC 310 (310)	TAC 312 (312)	TAC 313 (313)	TAC 314 (314)	TAC 315 (315)
Status	Location	Network	NT	M	Rptr ID	Call Sign	Frequency	Offset	CC	Prefix													
ON AIR	La Porte, IN*	Tri-State DMR	DP	D	311826	N9IAA	444.67500	+5	1	LaPorte				FT									
ON AIR	LaGrange, IN	Crossroads DMR	CB	D	311835	NT9M	443.67500	+5	1	LaGrnge	PT		FT		PT			PT	PT				
ON AIR	Lynn, IN	Crossroads DMR	CB	D	311804	N9CZV	441.17500	+5	1	LynnB				FT									
ON AIR	Marion, IN	Brandmeister	BM	D	311813	KB9CRA	442.75000	+5	1	Marion						BM	BM		BM	BM	BM	BM	BM
ON AIR	Mitchell, IN	Brandmeister	BM	M	310876	W9QYQ	444.05000	+5	1	Mitchel		BM				BM			BM	BM	BM	BM	BM
ON AIR	Montpelier, IN *	Crossroads DMR	CB	D	311827	N9CZV	441.47500	+5	1	Montplr				FT									
OFF AIR	Muncie, IN *	Brandmeister	CB		311834	N9ALD	441.28750	+5	1	MuncieA		FT			PT			PT					
ON AIR	Muncie, IN	Crossroads DMR	CB	D	311807	N9CZV	441.30000	+5	1	MuncieB				FT									

# INDIANA DMR REPEATER MATRIX

## Indiana DMR Repeaters

See bottom row for important information on using this matrix.

Chicagoland DMR ([www.chicagoland-cc.org](http://www.chicagoland-cc.org))  
 Crossroads DMR ([www.idhr.info](http://www.idhr.info))  
 Brandmeister ([www.brandmeister.network](http://www.brandmeister.network))  
 Southern Indiana Network ([www.w9win.net](http://www.w9win.net))  
 Tri-State DMR ([www.tristatedmr.org](http://www.tristatedmr.org))

Status	Location	Network	NT	M	Rptr ID	Call Sign	Frequency	Offset	CC	Prefix	Worldwide (1)	Local (2)	North America (3)	TriState / Regional (8)	WW English (13)	UA English 1 (113)	TAC 310 (310)	TAC 312 (312)	TAC 317 (317)	Nationwide (1776)	Nationwide (3100)	California (3106)	Georgia (3113)
ON AIR	Galveston, IN	Brandmeister	BM		311805	W9SMJ	441.85000	+5	1	Galvstn		BM					BM	BM	BM		BM	BM	BM



# INDIANA DMR REPEATER MATRIX

## Indiana DMR Repeaters

See bottom row for important information on using this matrix.

Chicagoland DMR ([www.chicagoland-cc.org](http://www.chicagoland-cc.org))  
 Crossroads DMR ([www.idhr.info](http://www.idhr.info))  
 Brandmeister ([www.brandmeister.network](http://www.brandmeister.network))  
 Southern Indiana Network ([www.w9win.net](http://www.w9win.net))  
 Tri-State DMR ([www.tristatedmr.org](http://www.tristatedmr.org))

Status	Location	Network	Wisconsin (3155)	Allstar 1 (3167)	Midwest Region (3169)	Mid Atlantic Region (3173)	Mountain Region (3177)	Northeast Region (3172)	Southeast Region (3174)	Southern Region (3175)	Southwest Region (3176)	Local 1 (3181)	Crossroads (8710)	Collegiate (9500)	Audio Parrot. (9990) (Private)	Audio Parrot (9998)	Audio Test (9999)	IL-Fusion (31171)	IN TAC (31180)	IN Link (31181)	WA9RN OPS (31182)	IN WX Ops (31183)	Parke-Vermillion CO (31184)	IN SIN (31188)	Crossroads. (31189)	R5AUXCOMM (31673)	EchoLink-IRLP (63951)	Florence Local (312186)	DCI Comm 1 (3777215)	Prefix
ON AIR	Galveston, IN	Brandmeister	BM	BM	BM	BM	BM	BM	BM	BM	BM			BM	BM			BM	FT	FT	BM	FT	BM	BM	BM	BM				Galvstn

# INDIANA DMR REPEATER MATRIX

## Indiana DMR Repeaters

See bottom row for important information on using this matrix.

Chicagoland DMR ([www.chicagoland-cc.org](http://www.chicagoland-cc.org))  
 Crossroads DMR ([www.idhr.info](http://www.idhr.info))  
 Brandmeister ([www.brandmeister.network](http://www.brandmeister.network))  
 Southern Indiana Network ([www.w9win.net](http://www.w9win.net))  
 Tri-State DMR ([www.tristatedmr.org](http://www.tristatedmr.org))

[illegible]

# CONFIGURING A DMR RADIO

WRITING A WORKING “CODEPLUG”

© 2021, JAY M. FARLOW, W9LW, FORT WAYNE, INDIANA, USA

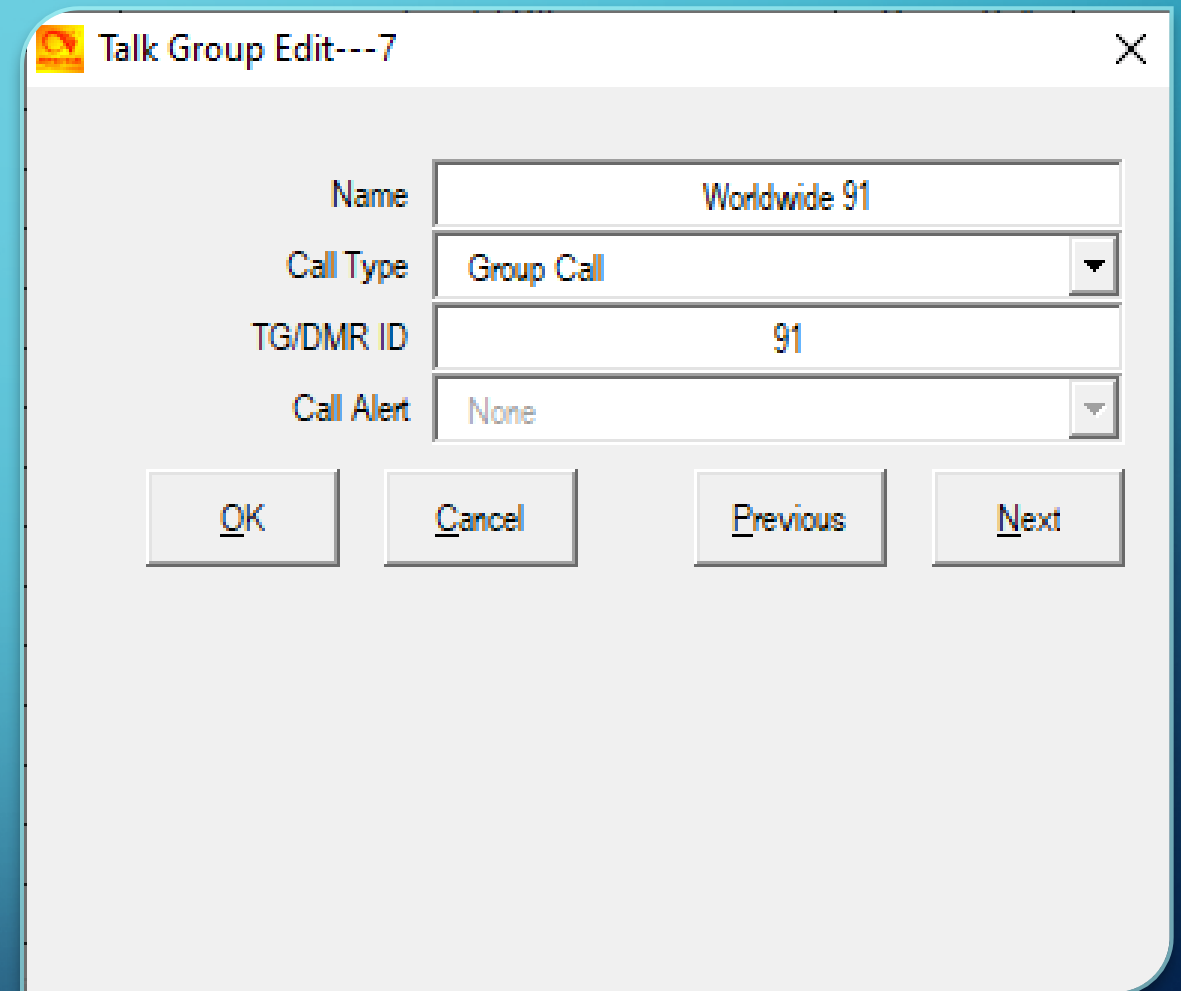


# BACKGROUND AND TIPS

- Use customer programming software (CPS) created for that radio.  
(Can't use CHIRP)
- Match CPS and firmware version
- Resulting file is called “codeplug”
- “Save as” to new name before any change  
E.g., W9LW-ATD878UV-202108282105.rdt

# CODEPLUG WRITING PROCESS

1. Enter personal DMR ID
2. Enter talkgroup names & numbers  
Tip: Include talkgroup number in name field.



Talk Group Edit---7

Name	Worldwide 91
Call Type	Group Call
TG/DMR ID	91
Call Alert	None

OK Cancel Previous Next

# SOME TALKGROUP SUGGESTIONS

- Brandmeister

- Local 2 (TS 1 and 2)
- Indiana Statewide 3118
- Indiana Weather 31183
- Crossroads 38819
- Midwest 3169
- U.S. 3100
- North America 93
- Worldwide 91

- Crossroads

- Local-1 3181 (TS 1)
- Local-2 3166 (TS 2)
- Indiana Statewide 3118
- Crossroads 8710
- Midwest 3169
- North America 3
- Worldwide 1



# CODEPLUG WRITING PROCESS

3. Create one channel per talkgroup per repeater.

Tip: Identify the repeater & talkgroup in the channel name.

The screenshot shows the 'Channel Information Edit' window for a channel named 'Galvstn WW'. The window is divided into several sections for configuring channel parameters.

**Channel Name:** Galvstn WW

**Frequency Settings:**

- Receive Frequency: 441.85000
- Transmit Frequency: 446.85000
- Correct Frequency[Hz]: 0

**Channel Type and Power:**

- Channel Type: D-Digital
- Transmit Power: High
- Band Width: 12.5K
- TX Permit: Different Color Code
- Scan List: None
- APRS Report Type: Off
- Analog APRS PTT Mode: Off
- Digital APRS PTT Mode: Off
- Digital APRS Report Channel: 1
- Exclude channel from roaming: off
- DMR MODE: Repeater

**Advanced Settings (Checkboxes):**

- ☐ PTT Prohibit
- ☐ Talk Around(Simplex)
- ☐ APRS RX
- ☐ Work Alone
- ☐ DataACK Disable
- ☐ Auto Scan
- ☐ Ana Aprs Mute

**Digital Section:**

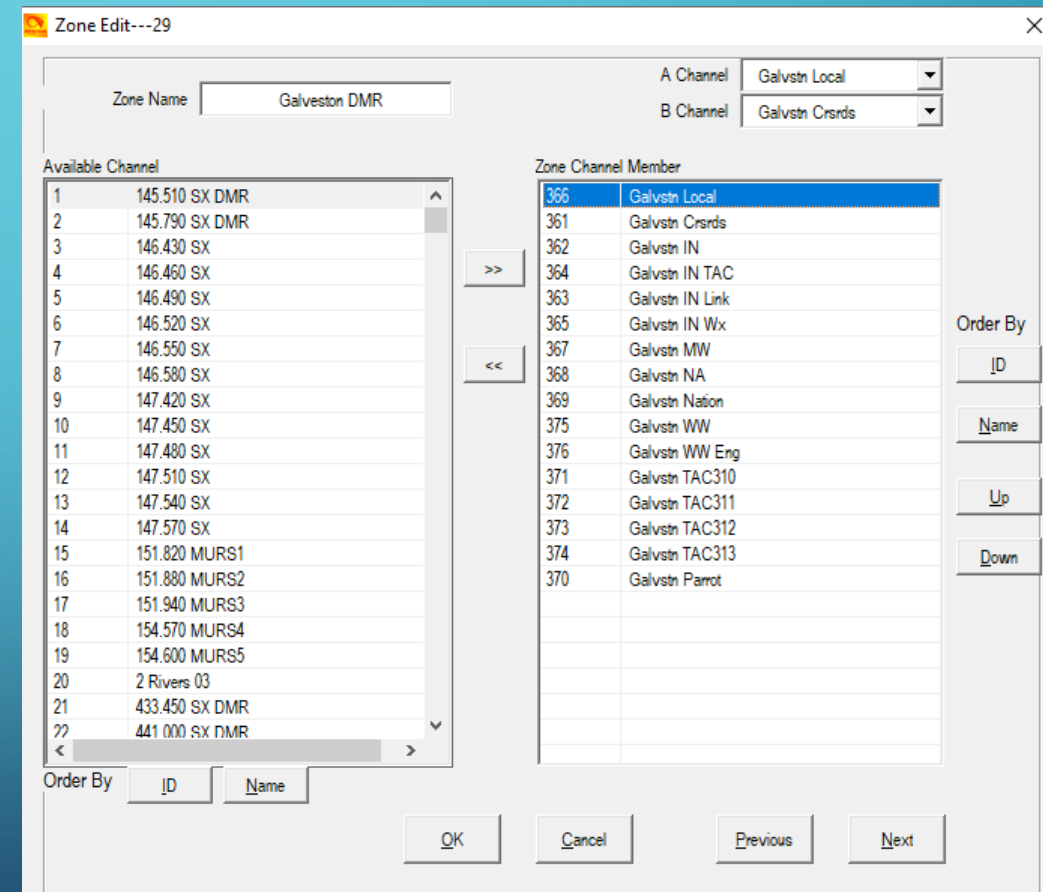
- Contact: Worldwide 91
- Radio ID: W9LW Jay
- Color Code: 1
- Slot: Slot1
- Receive Group List: Hoosier DMR
- Digital Encryption: Off
- AES Digital Encryption: Off
- Multiple Key: Off
- Random Key: Off
- SMS Forbid: Off

**Additional Settings (Checkboxes):**

- ☐ Call Confirmation
- ☐ Ranging
- ☐ Slot Suit
- ☐ SMS Confirmation

# CODEPLUG WRITING PROCESS

4. Create at least one zone  
(Tip: One zone for each DMR repeater, identify repeater in zone name)
5. Save codeplug to computer
6. Write codeplug to radio



# OPERATING DMR

© 2021, JAY M. FARLOW, W9LW, FORT WAYNE, INDIANA, USA



# TEST YOUR CODEPLUG

- Select desired zone
- Select desired channel. (Start with parrot)
- If channel's TG is static on repeater, monitor for activity
- If channel's TG is dynamic, "kerchunk," then monitor for activity.
- Make a test transmission. Listen for echo
- Pause between PTT and speaking

# DMR OPERATING BEST PRACTICES

- Before transmitting, listen to the **time slot**, not just a single talkgroup
- Use the talkgroup carried by fewest number of repeaters
- Avoid rag chewing on wide-area talkgroups. QSY to a TAC group
- Brandmeister: Don't dynamically activate a TG on time slot 2 if it's static on time slot 1

# W9LW CODEPLUG-WRITING GUIDES

- [Radioditty RD-5R / Baofeng DM-5R](#)
- [TYT MD-380](#)
- [Anytone AT-D878UV](#)



# JAY FARLOW, W9LW

w9lw@arrl.net

[w9lw.farlowconsulting.com](http://w9lw.farlowconsulting.com)

© 2021, JAY M. FARLOW, W9LW, FORT WAYNE, INDIANA, USA