# DMR for Beginners



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## What DMR Equipment Should I Buy?

- What features are you looking for?
  - Memories (Contacts & Channels)
  - Availability of Programming Software

- HT vs Mobile
  - Hotspot?
  - Repeater?

- USB Dongle

- What's your budget?

| Manufacturer | Model | Price |
|---|---|---|
| Baofeng | DM-1702 | $ 69.99 |
| Retevis | RT3S | $ 94.99 |
| TYT | MD-380 | $ 102.99 |
| Radioddity | GD-88 | $ 189.99 |
| Connect Systems | CS7000 M17 GPS (Used) | $ 199.00 |
| Anytone | AT-D168UV | $ 199.99 |
| Connect Systems | CS7000 M17 | $ 299.00 |
| Btech | DMR-6x2 Pro | $ 299.89 |
| Anytone | AT-D878UVII Plus | $ 349.99 |
| Connect Systems | CS7000 M17 GPS | $ 399.00 |
| Connect Systems | CS7000 M17 Plus | $ 499.00 |
| Rfinder | M6 | $1,049.00 |
| Rfinder | B1+ | $1,249.00 |
| Rfinder | P10 Tablet | $1,549.00 |

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## Hotspots?

- ZUMradio ZUMspot Mini ($175)
- ZUMradio ZUMspot Elite ($250)
- AMBE+2 Board or USB Dongle * BlueDV Software ($140)
- TGIFSpot ($389.00)
- Bridgecom SkyBridge MAX ($434.99)
- Hamspot 4 ($175)
- SharkRF OpenSpot 4 (Pro) ($370 US)
  - The "Pro" version has transcoding
- Generic, Cloned and Custom MMDVM Boards – Less $

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## What is Pi-Star?

- https://www.pistar.uk
  - First update in 3 years, January 2024



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## The WPSD Project

- https://w0chp.radio/wpsd/
  - Updates almost every week



W0CHP.radio

THE WPSD PROJECT

Welcome to the *official* web page of the WPSD Project.

WPSD is a **next-generation** digital voice software suite for amateur radio use, enjoyed by many thousands of hams around the globe. It is used for personal hotspots and repeaters alike. It supports M17, DMR, D-Star, Yaesu System Fusion (YSF/C4FM), P25, NXDN digital voice modes & POCSAG data/paging.

WPSD is available as installable disk images, and multiple platforms & devices are supported. The WPSD Project is free and open-source software (FOSS).

**Table of Contents:**
- Getting Help/Support
- Download WPSD
- Installing WPSD
- Updating WPSD

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## What's the Frequency Kenneth?

### Hot Spot
- Ever heard of Southeastern Repeater Association?
- They are the frequency coordinator for the State of Mississippi.

- Avoid 432.0000 to 433.0000 (GSB & Weak Signal)

- SERA Frequency Utilization Plan for 420-450 MHz

### Simplex
- They also recommend simplex frequencies for digital

| | | |
|---|---|---|
| 440.9125 | 441.0375 | 441.1625 |
| 440.9250 | 441.0500 | 441.1750 |
| 440.9375 | 441.0625 | |
| 440.9500 | 441.0750 | |
| 440.9625 | 441.0875 | |
| 440.9750 | 441.1000 | |
| 440.9875 | 441.1125 | |
| **441.0000** | 441.1250 | |
| 441.0125 | 441.1375 | |
| 441.0250 | 441.1500 | |

**Remember: You are responsible for not causing interference to other stations. Especially on coordinated frequencies!**
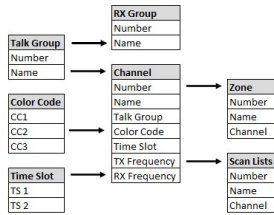
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## SERA Frequencies for Digital Hotspots

- 440.9250
- 440.9500
- 440.9750
- 441.0250
- 441.0500

- 441.0750
- 441.1000
- 441.1250
- 441.1500
- 441.1750

**Note: These frequencies should be valid in Mississippi, Georgia, Kentucky, North Carolina, South Carolina, Tennessee, Virginia and West Virginia. You are responsible for not interfering when you travel out of state.**

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## How Do I Program My Radio?

**RX Group**
Number
Name

**Talk Group**
Number
Name

**Channel**
Number
Name
Talk Group
Color Code
Time Slot
TX Frequency
RX Frequency

**Color Code**
CC1
CC2
CC3

**Time Slot**
TS 1
TS 2

**Zone**
Number
Name
Channel

**Scan Lists**
Number
Name
Channel

- Create your talk groups
- Create your channels
- Create zone(s)
- Add your channels to zones

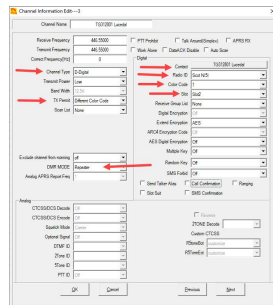Putting the pieces together…

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## Programming Your Channel(s)

The Important Things:
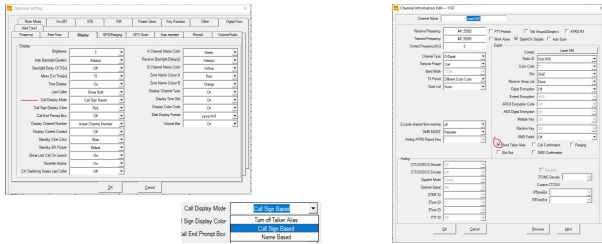
Channel Type
Transmit Power
TX Permit

Contact
Radio ID
Color Code
Slot

DMR Mode

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## Talker Alias



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## Talker Alias

➢This does not replace the necessity to properly ID.

➢Contrary to popular belief, AnyTone's support for Talker Alias does not cause problems for Motorola Radios

➢Motorola Radios need to update their firmware to support TA

  * Motorola has not updated the firmware to support TA for all radios

➢Motorola repeaters that are on the DMR SE C-Bridge network are not compatible with Talker Alias - in that it causes distortion and drop-outs.
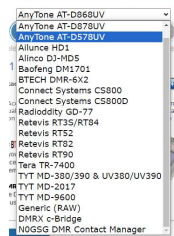
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## Programming Made Easier

Make Your Own Lists (Excel, Google Sheets, etc)
* Contacts List
* Talk Group List
* Zone List
* Scan Lists

Saving Time

* https://www.pistar.uk/downloads/anytone/
* http://www.dmrcontacts.com/
* https://amateurradio.digital/  ($12/year)
  * Picture to right →



Digital Contacts Wizard

AnyTone AT-D868UV
AnyTone AT-D878UV
AnyTone AT-D578UV
Ailunce HD1
Alinco DJ-MD5
Baofeng DM1701
BTECH DMR-6X2
Connect Systems CS800
Connect Systems CS800D
Radioddity GD-77
Retevis RT3S/RT84
Retevis RT52
Retevis RT82
Retevis RT90
Tera TR-7400
TYT MD-380/390 & UV380/UV390
TYT MD-2017
TYT MD-9600
Generic (RAW)
DMRX c-Bridge
N0GSG DMR Contact Manager

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## Programming Tips

- Programming Lucedale Talk group 312801
  - Using the talk group:
    - For the repeater is one channel
    - For your hot spot, it is another channel
- Use Zones to your advantage.
  - Create a Zone for the Lucedale Repeater or (George County) (Stone County)
  - Create a Zone for the Petal Repeater
  - Create a Zone for the Biloxi Repeater
  - Create a Zone for your hot spot
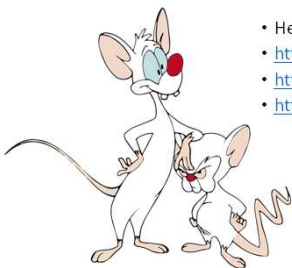- Create Disconnect and Parrot channels in each zone.

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## Operating Tips

- Remember to ID!
  - First transmission, last transmission and every 10 minutes in between.
  - Your Brandmiester ID is not ID'ing. Neither is Talker Alias

- Do not quick key - Leave a pause between transmissions
  - There can be up to a 6 second delay between networks
  - We have timed a 4.5 second delay between the Lucedale repeater and a Brandmeister Hot Spot.

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## Where Can I Get Info / Help?

- Here at our meeting!
- https://amateurradionotes.com/pi-star.htm *
- https://www.dmrfordummies.com
- https://sera.org

\* Good information, but is no longer being updated.

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A Few Good Resources:

- https://dmr-marc.net
  - https://dmr-marc.net/media/Amateur_Radio_Guide_to_DMR_Rev_I_20150510.pdf
  - https://dmr-marc.net/media/DMR_MARC_Best_Practice_Guide_Rev_BB.pdf
- https://github.com/ni5i
- https://pistar.uk
- https://radioid.net
- https://w0chp.radio/wpsd

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