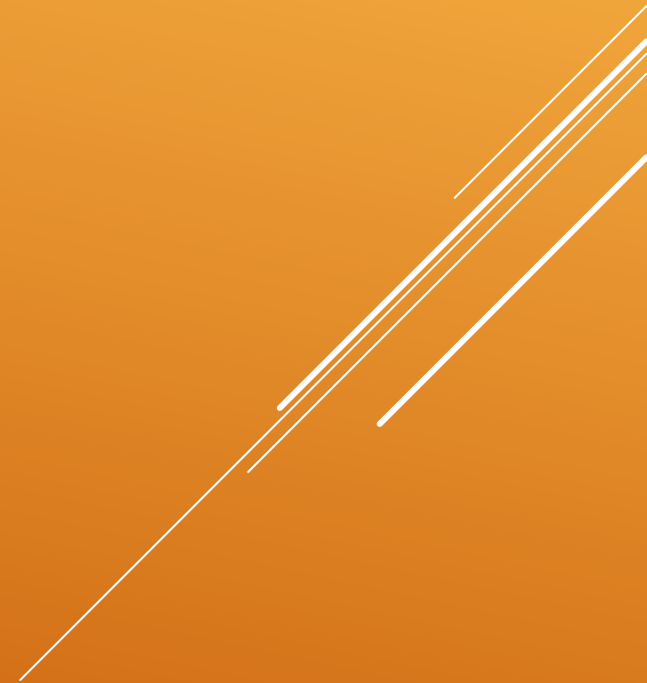


DONGLES, HOT SPOTS AND RADIOS FOR THE DIGITAL HAM

How to use the digital modes when there's no
repeater.

- ▶ Dstar
- ▶ DMR
- ▶ Fusion
- ▶ P25
- ▶ NXDN

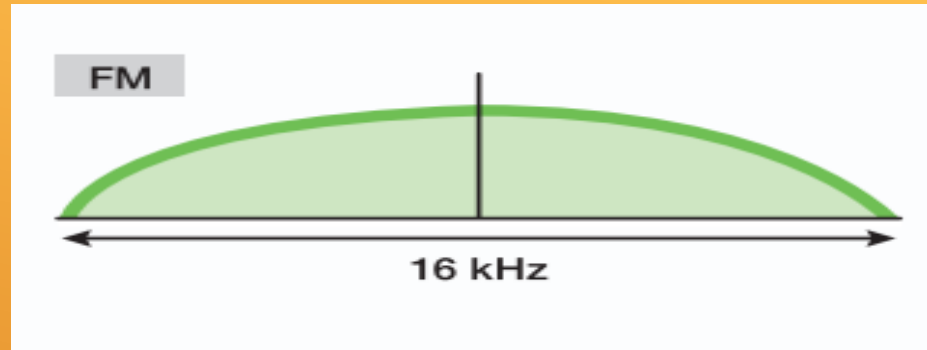
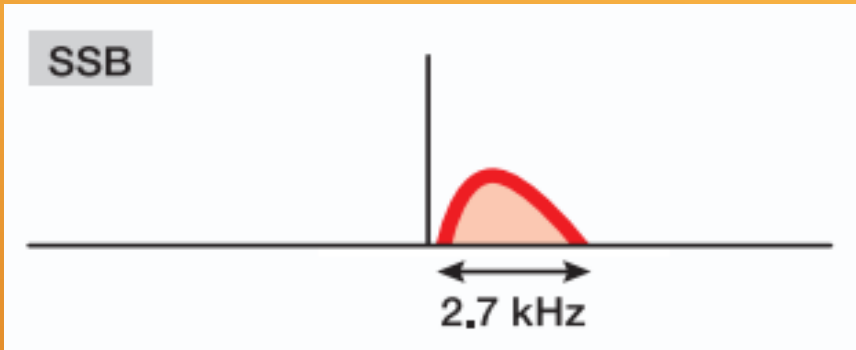
DIGITAL MODES



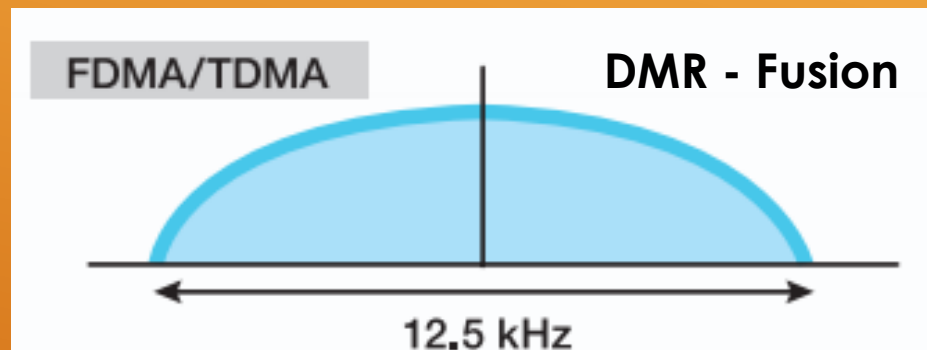
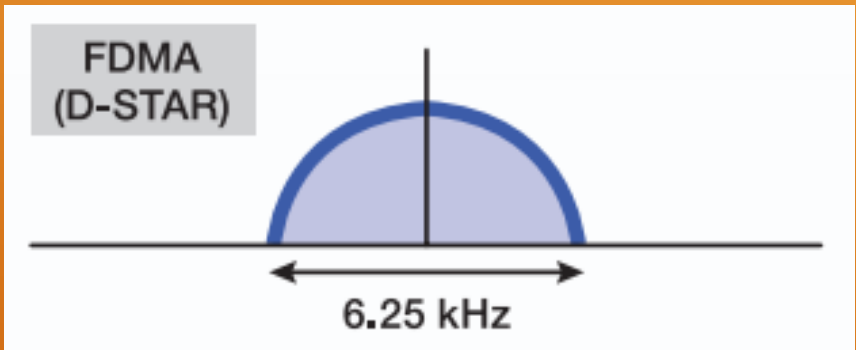
- ▶ Narrower Transmission
 - ▶ Conserves Spectrum – makes more channels available
- ▶ Voice and Data on same channel
 - ▶ Text messaging
 - ▶ Pictures
 - ▶ APRS / GPS
 - ▶ Other information – name, QTH, information about your radio
- ▶ Less noise – clearer transmissions
- ▶ Linked networks
 - ▶ Worldwide
 - ▶ Nationwide
 - ▶ Regional / Local

WHY USE DIGITAL?

Analog



Digital



NARROWER CHANNELS



COMPARISON OF COVERAGE AND READABILITY

Registration
Gateway
Reflectors
R2D2
Talk Groups
Individual ID
Code Plug
Last Heard
Dashboard

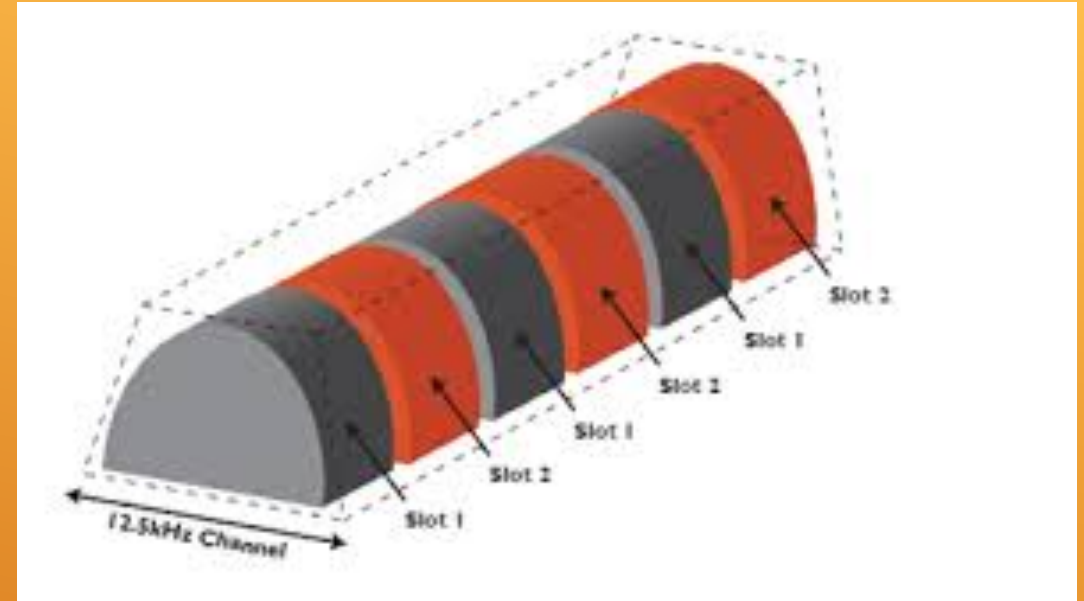


TERMS

- ▶ JARL Standard
- ▶ ICOM, Kenwood
- ▶ Oldest Amateur Digital Mode
- ▶ Registration required www.nu7ts.com
- ▶ Worldwide Networks
 - ▶ Dplus
 - ▶ XREF
- ▶ Reflectors – Voip Conference Bridge
- ▶ Easy Routing to other Reflectors around the world
- ▶ Routing between Gateways – Repeater Stacks
- ▶ Callsign routing between individual hams
- ▶ DVDongles – adapter to use your computer without a radio
- ▶ DVAPs – Low Power personal Hot Spots

DSTAR

- ▶ International digital radio standard developed by the European Telecommunications Standards Institute (ETSI), and first ratified in 2005.
- ▶ Two voice paths per channel
- ▶ Manufactures
 - ▶ Connect Systems, Hytera, Tytera
 - ▶ Motorola (MotoTrbo), Tait, Kenwood, Others
- ▶ Programming Software
- ▶ Networks
 - ▶ DMR-MARC
 - ▶ C-Bridge
 - ▶ Fixed Talk Groups
 - ▶ Brand Meister
 - ▶ Routable Talk Groups
 - ▶ Internet based servers



DMR - DIGITAL MOBILE RADIO

Continued:

- ▶ Hose Line - <https://hose.brandmeister.network/>
 - ▶ Online DMR Scanner - <https://hose.brandmeister.network/scan/>
- ▶ Tait Radio Academy
 - ▶ www.taitradioacademy.com/topic/what-is-dmr-1/
- ▶ Lots of ways to get on DMR
- ▶ Inexpensive Rados
 - ▶ MD380 / MD390 – free programming software
 - ▶ Connect Systems – free programming software
 - ▶ DMR Utah - <http://dmr-utah.net/>

DMR - DIGITAL MOBILE RADIO

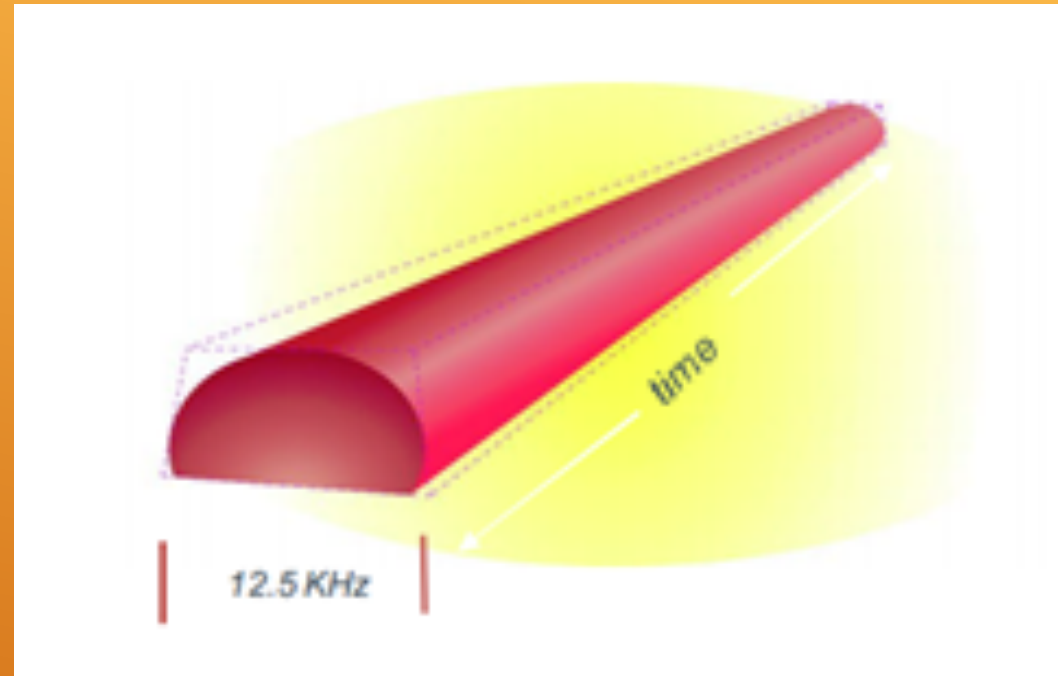
- ▶ Fusion Networks

- ▶ YSF – Yaesu System Fusion
- ▶ FCS – Frame Check Sequence
- ▶ Wires X – HRI 200

- ▶ Conventional Repeaters

- ▶ One voice path per repeater
- ▶ Fusion repeaters in Utah

FDMA



YAESU

- ▶ Apco Standard – Association of Public-Safety Communications Officials
- ▶ P 25 Phase 1
 - ▶ Legacy Public Safety Standard
 - ▶ Used two way radios, Ebay, Surplus Dealers
 - ▶ New Radios Available - \$\$
 - ▶ Lots of Vendors
- ▶ Programming Software
- ▶ Networks
 - ▶ PCS001, PCS002
 - ▶ P25NX
 - ▶ www.p25nx.net/
 - ▶ Requires Motorola Quantar Repeater

P 25

- ▶ Kenwood and Icom Digital Network
- ▶ Commercial Standard
- ▶ Starting to see NXDN Ham Repeaters
- ▶ Programming Software

NXDN - NEXEDGE



- ▶ Dongle is a device that uses your PC to get on the internet. You do not need a radio to transmit and receive. PC Microphone is used to transmit audio. Connects through the USB port on your computer.
- ▶ DVAP (short for Digital Voice Access Point), is a device used for communicating on one mode, such as DSTAR. It connects to your PC by using the USB port.

www.p25nx.net/

DONGLES & DVAPS

- ▶ The DVMEGA, DV4MINI, OPENSLOT, AND MMDVM, are multi-mode “hotspots,” used to connect to the internet using free software, and having QSO’s, all over the world, using the modes available. They require a radio (designed for the mode you choose to communicate), a PC, and either connect to the PC with a cable, or via Bluetooth (requires optional accessory called a Blue DV). You can use it for single band or dual band. You can also use an optional unit called a “Raspberry Pie”.

DVMEGA, DV4MINI, OPENSLOT, (OR
MMDVM, HOMEBREW HOTSPOT)

CONNECTIVITY DEMONSTRATION



- ▶ Mixes Ham Radio with:
 - ▶ Computers
 - ▶ Digital Technologies
 - ▶ Internet
 - ▶ Cellular
 - ▶ Homebrew with Raspberry Pi and Arduino

GREAT FOR ALL HAMS !

LET'S CONNECT TO THE
INTERNET AND PLAY
WITH THE GEAR

