

# M17 Project

Open Source Amateur Radio



# What is M17?

From the M17 Project website: <https://m17project.org>

“ M17 is a community of open source developers and radio enthusiasts. We're building understandable systems in support of the hackers and experimenters' history of ham radio. ”

Existing VHF/UHF DV modes are mostly derived from commercial or public service standards (DMR, P25), are proprietary (Fusion) or are mostly open with proprietary components (D-Star). The vocoder in all of these modes is a proprietary AMBE/IMBE variant from DVSI.

# M17 Application Features

Fully open source hardware and software, including the Codec 2 vocoder. Specification is available at <https://spec.m17project.org>

Built by a global team of amateurs

9600 bps 4FSK modulation (4800 symbols/sec)

Codec 2 at 3200 bps (voice only), or Codec 2 at 1600 bps (mixed voice and data)

No callsign database needed

# M17 Application Features

Short message support (SMS)

File Transfer support (Packet Mode)

GPS location reporting and APRS integration

*Optional* strong encryption

Simplified reflector operation and callsign routing

Manufacturer agnostic - can be implemented by any capable platform

# History

M17 started in Warsaw, Poland, by Wojciech Kaczmarski SP5WWP while he was a member of the SP5KAB radio club

After experimenting with existing DV modes, Wojciech decided to create a different mode, now called M17. The name is derived from the address of the SP5KAB radio club, Mokotowska 17

Now, four years later, a global team has contributed to M17 hardware and software, testing, publicity, and maintenance of infrastructure



# ARRL Technical Innovation Award

“ The 2021 ARRL Technical Innovation Award honors Wojciech Kaczmarski, SP5WWP, for developing a new digital radio communication protocol, M17, for the good of amateur radio. ”

Pictured: ARRL CEO David Minster NA2AA (left) and M17 Community Manager Ed Wilson N2XDD (right)  
Photo credit: Alex Norstrom KC1RMO

# Development

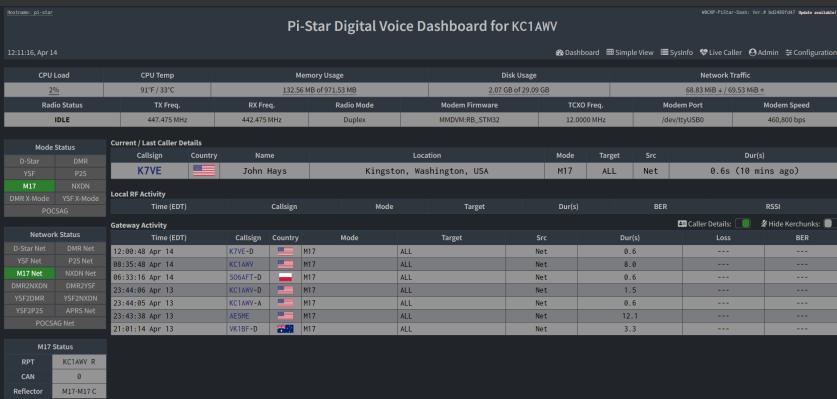
M17 is under very active development.  
Many parts of the M17 ecosystem are  
currently available:

- Reflector
  - mrefd by Tom N7TAE
  - IPv6 capable
  - No callsign database needed

#	Flag	Callsign	Suf	Link/Peer	Mod	Last Heard
1		K7VE	D	K7VED	C	12:00
2		K9IK	D	K9IKD	L	09:22
3		KC1AWV		KC1AWVM	C	08:35
4		SO6AFT	D	SO6AFTD	C	06:33
5		KC1AWV	D	KC1AWVA	C	2023.04.13 23:44
6		KC1AWV	A	KC1AWVA	C	2023.04.13 23:44
7		AESME		AESMEM	C	2023.04.13 23:43
8		K8KH	D	K8KHD	L	2023.04.13 22:53
9		VK1BF	D	VK1BFD	C	2023.04.13 21:01
10		IV3NFC	D	M17-ITA A	A	2023.04.13 16:43
11		SP5WWP	D	SP5WWPD	C	2023.04.13 15:42
12		TA2VIC	D	TA2VICD	C	2023.04.13 15:03
13		K7VE	D	M17-USA A	A	2023.04.13 14:13

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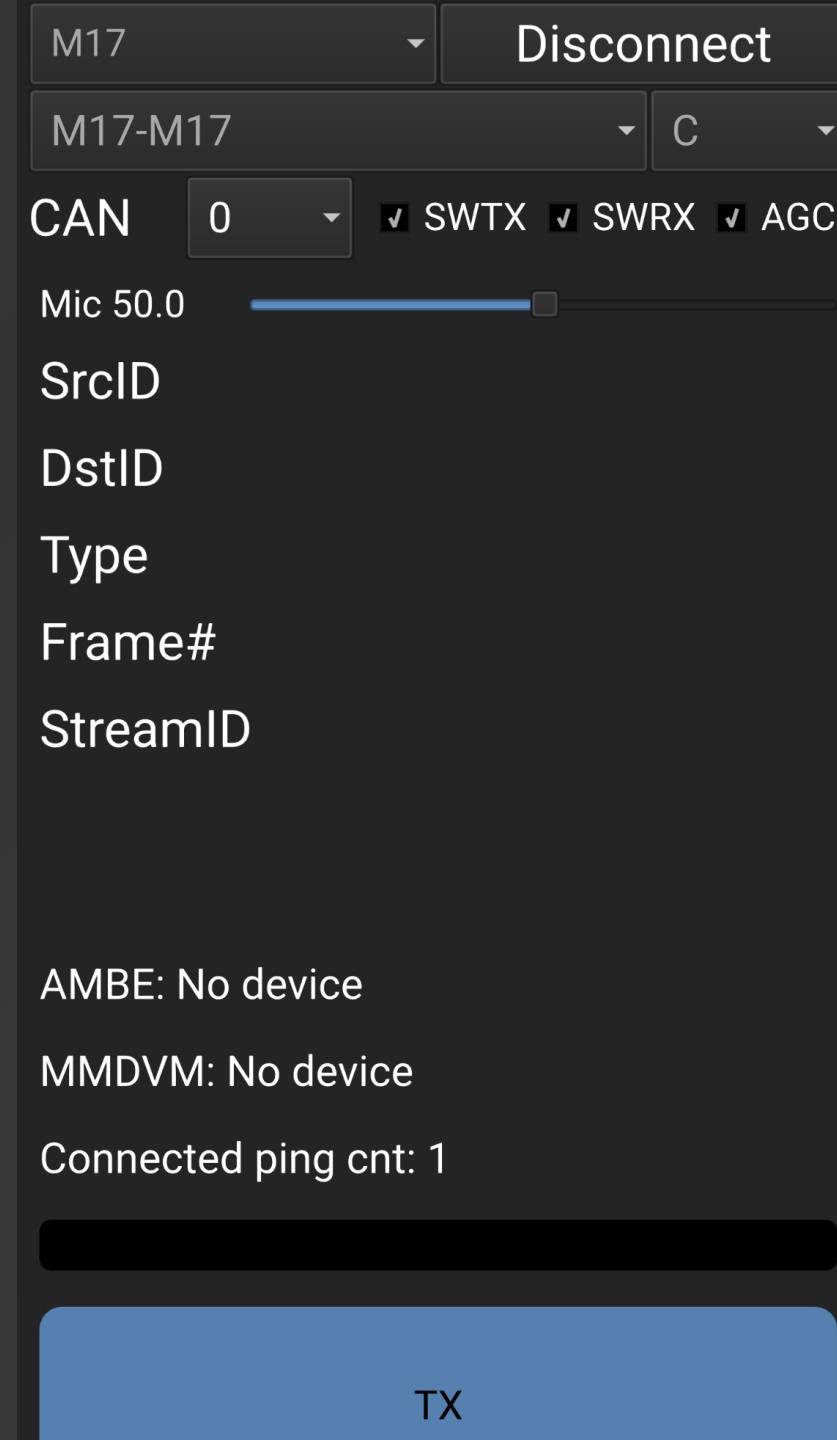


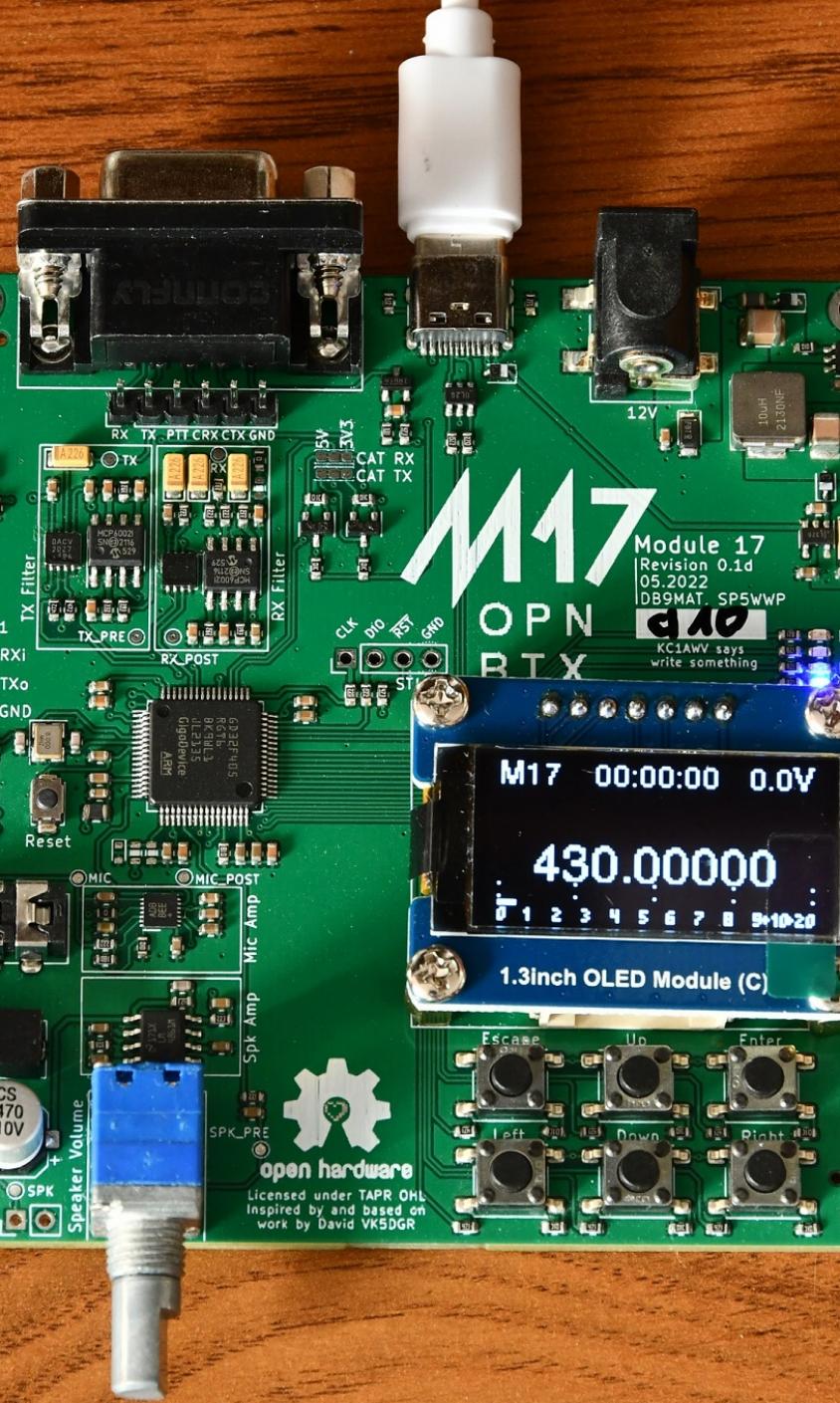
- Repeaters and Hotspots
  - MMDVM by Jonathan G4KLX
  - MMDVM\_HS by Andy CA6JAU
  - WPSD by Chip W0CHP

# Development

M17 is under very active development.  
Many parts of the M17 ecosystem are  
currently available:

- Internet clients
  - mvoice by Tom N7TAE
  - M17Client by Jonathan G4KLX
  - DroidStar by Doug AD8DP





# Development

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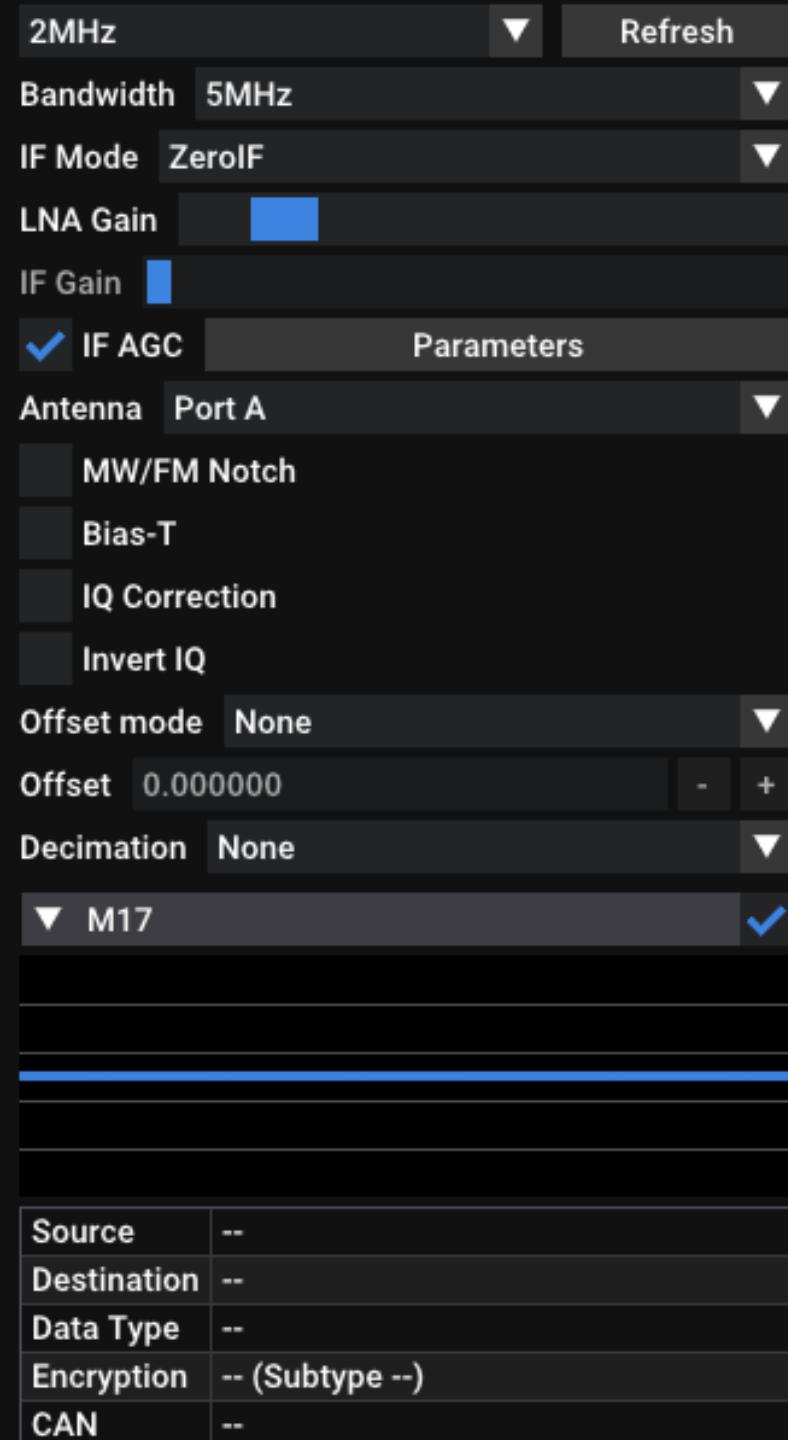
- Radio modems
  - Module 17 by Mathis DB9MAT
  - Opi17 by Pedro M0IEI
  - TNC4 by Mobilinkd (WX9O)

# Development

M17 is under very active development.  
Many parts of the M17 ecosystem are  
currently available:

- Radios
  - OpenRTX (TYT MD series / Retevis RT series)
  - OpenHT
  - SA8x8 modules (very experimental)





# Development

M17 is under very active development. Many parts of the M17 ecosystem are currently available:

- SDR
  - SDR++ by Alexandre ON5RYZ
  - Openwebrx by Jakob DD5JFK
  - Rpitx by FOOEO
  - GNURadio (gr-m17)

# Get Involved

M17 is a community that thrives on volunteer participation

Community Aspects:

- Software and hardware development
- Testing
- Publicity and Communication
- 3D CAD and printing
- Operating

# Getting on Air

## Internet

- mvoice
  - Linux client
  - Runs on Raspberry Pi
  - Use your own headset

# Getting on Air

## Internet

- DroidStar
  - Android app from Play Store
  - Linux available by compiling source
  - iOS was available
  - Windows via obscure build

# Getting on Air

## Internet

Cross-mode tools are available through the work of AD8DP

- USRP2M17
- DMR2M17
- M172YSF
- DVSwitch - Analog Reflector

# Getting on Air

## RF

Capability of transceiving M17 over RF *is* possible, now!

MMDVM hotspots and modems can be upgraded to support M17  
using MMDVM(\_HS) v1.6.0+

Must use updated MMDVMHost and M17Gateway on PiStar, or use  
WPSD by Chip WOCHP

# Getting on Air

## RF

M17 Modem implementations:

- M17Client by Jonathan G4KLX
  - Linux client (also runs on RPi)
  - Uses existing MMDVM Modems and Hotspots
  - Must compile and configure yourself
    - Documentation needed!

# Getting on Air

## RF

M17 Modem implementations:

- TNC4 by Mobilinkd
  - Any KISS capable software
  - M17HT Android App
  - Must use 9600 baud capable radio

# Getting on Air

## RF

Partial (RX only)

- SDR++ by Alexandre ON5RYZ
  - Builtin M17 decoder
- Openwebrx by Jakob DD5JFK
  - Optional M17 decoder

# Getting on Air

## RF

Partial (TX only)

- `rpitx`
  - Transmits baseband M17 from a Raspberry Pi via GPIO pin

# Getting on Air

## RF

### TX/RX

- OpenRTX
  - TX and RX work, with modifications to specific radios
- Module 17
- OpiM17
- M17AnalogGateway

# Getting on Air

## RF

TX (soon, RX)

- m17-tools derived from m17-cxx-demod
  - Works with DigiRig
  - Runs on Windows!

# Grants, Sponsors, and Partners

## Grants from ARDC

- April 2021, granted \$250,000 for research and development
- December 2022, granted \$228,900 to DARC for M17 development



AMATEUR RADIO DIGITAL COMMUNICATIONS

# Grants, Sponsors, and Partners



## OCF Fiscal Sponsor

- Provides all benefits of a 501(c)(3) non-profit with fiscal support
- Donations to M17 accepted through OCF

# Grants, Sponsors, and Partners

## OpenRTX

- Develops firmware with M17 support for many radio platforms

## Ettus Research

- Provided hardware for RF research and development

## ZUMRadio

- Provided hardware to support M17 development on hotspot and modem platforms

# More Information

M17 Project <https://m17project.org>

OpenRTX <https://openrtx.org>

Open Collective <https://opencollective.com/m17-project>

M17 Project Net on Fridays at 1700 UTC

- Reflector M17-M17 Module C

Discord <https://discord.gg/G8zGphypf6>

Matrix <https://matrix.to/#/#m17project:matrix.org>