TAPR History

From Idea to Manufacturing: Uncovering the steps for success

Steven Bible, N7HPR
President, TAPR

HamSCI Workshop

NJIT

February 24, 2018

A Little History About TAPR

- Began in 1981
- Non-Profit 501.3c educational organization

http://www.tapr.org

- Accidental Incubator
- Products the "enable" the amateur experimenter

Mission Statement

TAPR is a community that provides leadership and resources to radio amateurs for the purpose of advancing the radio art.

Philosophy

- Promote the "Technical Side of the Hobby"
  - Advance the radio art
- Provide hardware and software that which does not exist
  - Until it becomes mainstream (maturity)

Funding

- Collect dues
- Profits from sales of products
  - Books
  - Kits
  - Projects

Core Group 1982

Den Connors, KD2S

Lyle Johnson, WA7GXD

Margaret Morrison, KC7MA

Marc Chamberlin, WA7PXN

Chuck Green, NØADI

Mark Baker

Dan Morrison, KB3UC

25th Anniversary 2006

James Fortney, K6IYK, Pete Eaton, WB9FLW, Bill Reed, WD0ETZ, Mel Whitten, K0PFX, Mike Parker, KT7D, Chuck Green, NØADI, Lyle Johnson, KK7P, Mike Baker, Dan Morrison, KV7B, Fried Heyn, WA6WZO, Bob McGwier, N4HY, Eric Gustafson, N7CL

Terminal Node Controllers

TNC-1

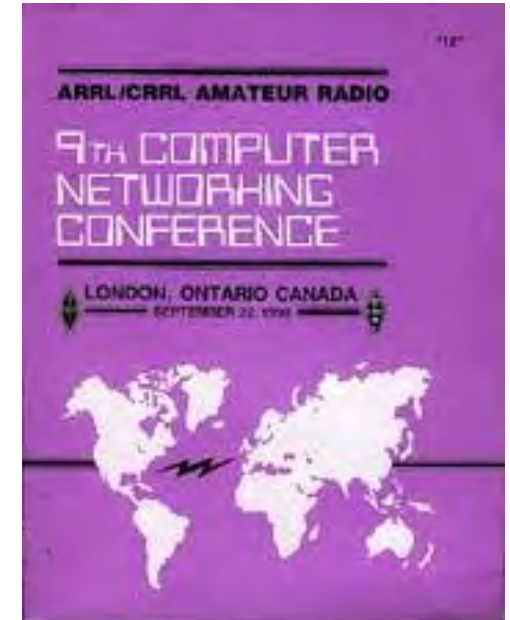Produced between 1982-1983

TNC-2

Produced between 1984-

KA9Q MACA Protocol

MACA - A New Channel Access Method for Packet Radio

by Phil Karn, KA9Q

Abstract: The existing Carrier Sense Multiple Access (CSMA) method widely used in amateur packet radio on shared simplex packet radio channels frequently suffers from the well-known "hidden terminal problem" and the less well known but related problem of the "exposed terminal." This paper proposes a new scheme, Multiple Access with Collision Avoidance (MACA), that could greatly relieve these problems. MACA can also be easily extended to provide automatic transmitter power control. This could increase the carrying capacity of a channel substantially.
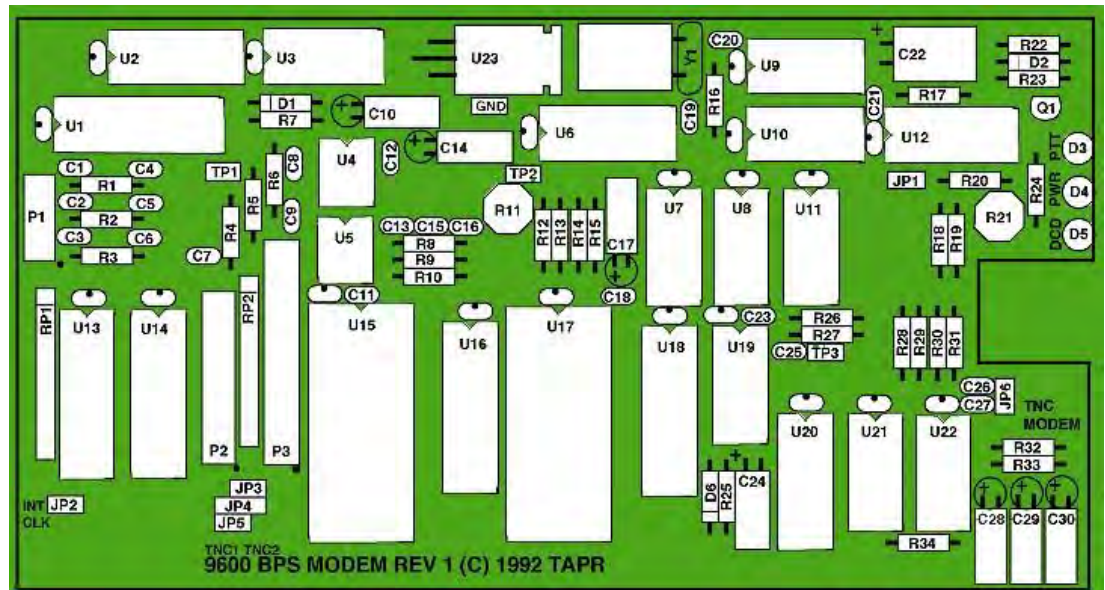

ARRL/CRRL AMATEUR RADIO

9TH COMPUTER NETWORKING CONFERENCE

LONDON, ONTARIO CANADA
SEPTEMBER 22, 1990

1990

https://www.tapr.org/pub_cnc09.html

9600 Baud Modem

- Steve Goode, K9NG
- James Miller, G3RUH

https://www.tapr.org/kits_9600.html

APRS and GPS

Bob Bruninga, WB4APR

Steve Dimse, K4HG

APRS Standard Documented

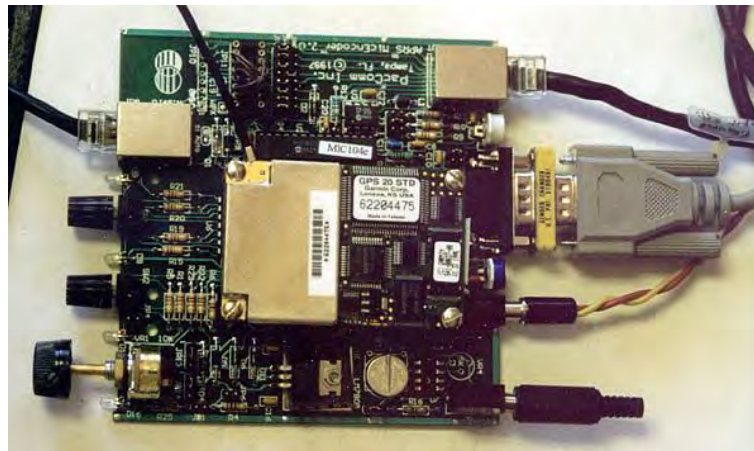- Ian Wade, G3NRW
- John Ackermann, N8UR
- Greg Jones, WD5IVD

http://www.aprs.org/doc/APRS101.PDF

Published
August 2000

AUTOMATIC POSITION
REPORTING SYSTEM

APRS

APRS PROTOCOL
REFERENCE

Protocol Version 1.0
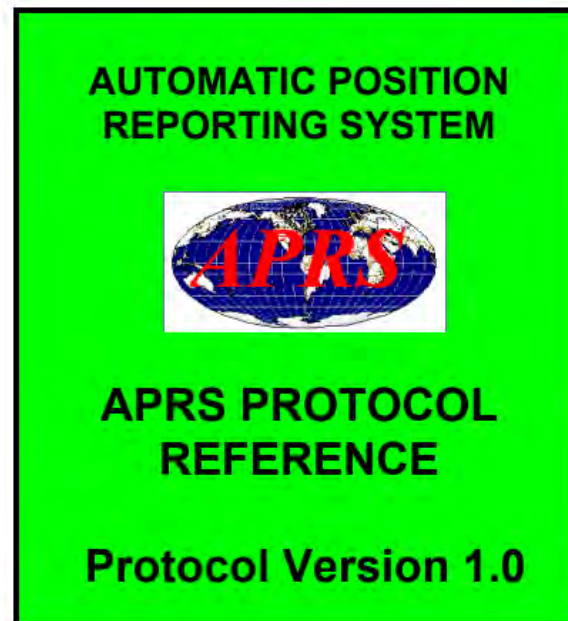
APRS® MIC-Encoder

- Bob Bruninga, WB4APR
- 1996-1997

https://www.tapr.org/kits_mic-e.html

TAC-2

- Tom Clark, W3IWI
- Steve Bible, N7HPR, Project Manager
- Greg Jones, WD5IVD, Asst. Project Manager
- Joe Borovetz, WA5VMS, Inventory
- John Koster, W9DDD, PCB Liaison
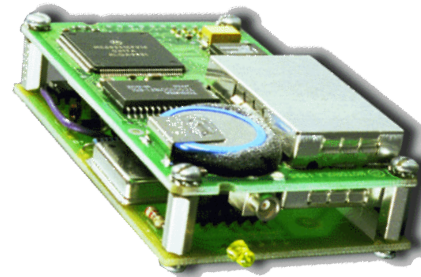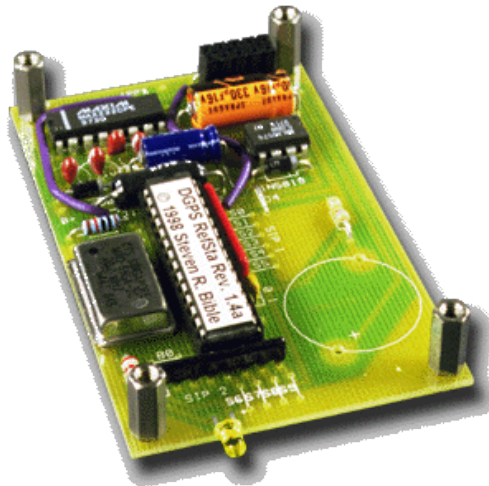- Rick Hambly, WB2TNL, Windows Software

1998
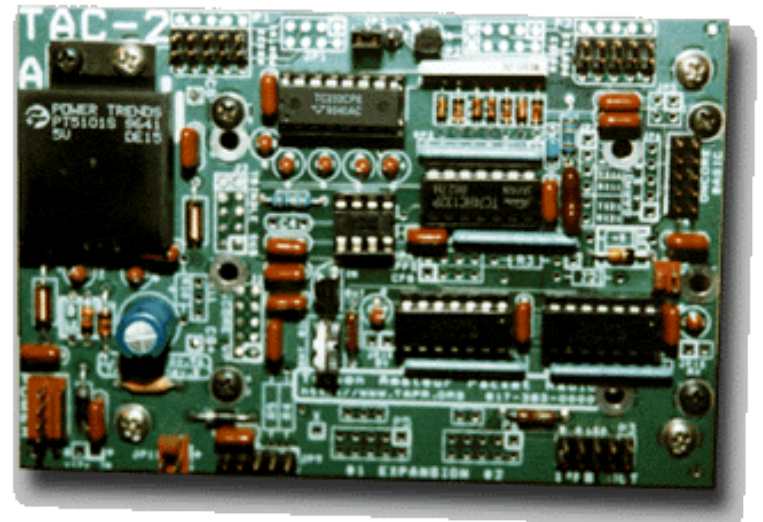
DGPS Reference Station

- Doug McKenny, KC3RL
- Steven Bible, N7HPR

1998

http://www.tapr.org/gps_dgps.html

PIC-Encoder

- Steve Bible, N7HPR Project Manager

- Joe Borovetz, WA5VMS Parts Liaison

- Steve Dimse, K4HG Conceptual Design

- Byon Garrabrant, N6BG Programmer, Conceptual Design

- John Hansen, W2FS Programmer, Conceptual Design

- Greg Jones, WD5IVD TAPR Project Liasion

- John Koster, W9DDD PCB Design

- Dan Welch, W6DFW

  Conceptual Design, Documentation

1999
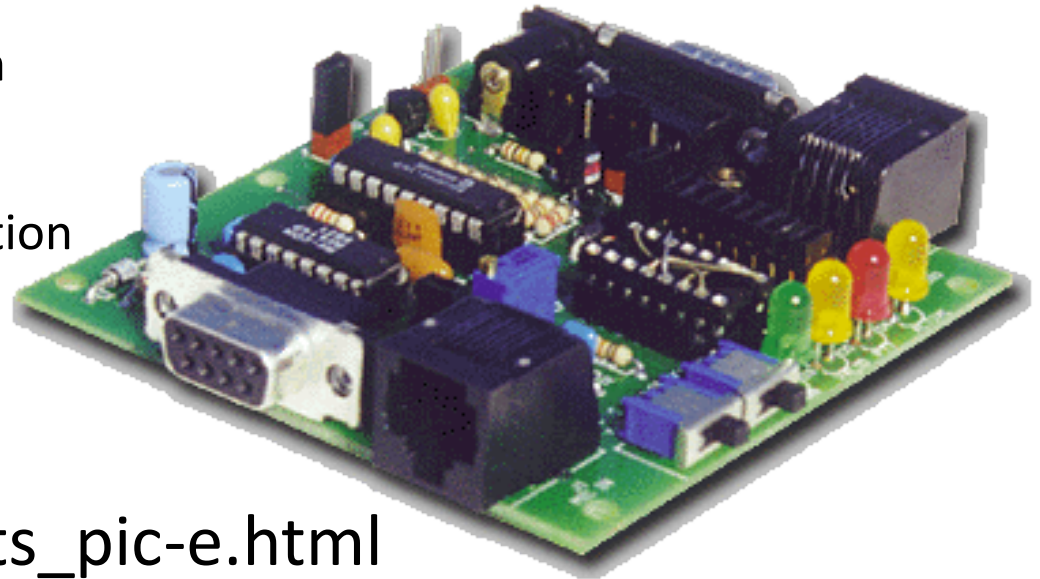
https://www.tapr.org/kits_pic-e.html

Byon Garrabrant, N6BG

- Goes on the create Byonics

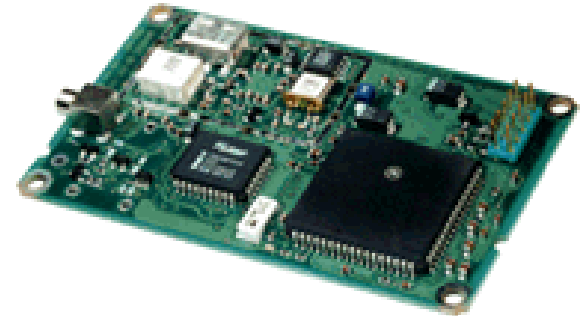 https://www.byonics.com/products

GPS Modules and Accessories
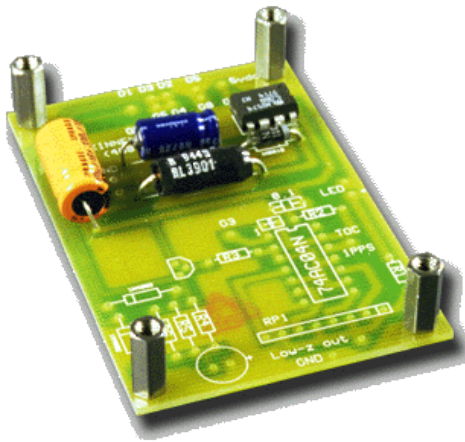
- Motorola Oncore
- Garmin

Oncore VP+

Garmin GPS-25

Garmin Interface

Motorola ANT1
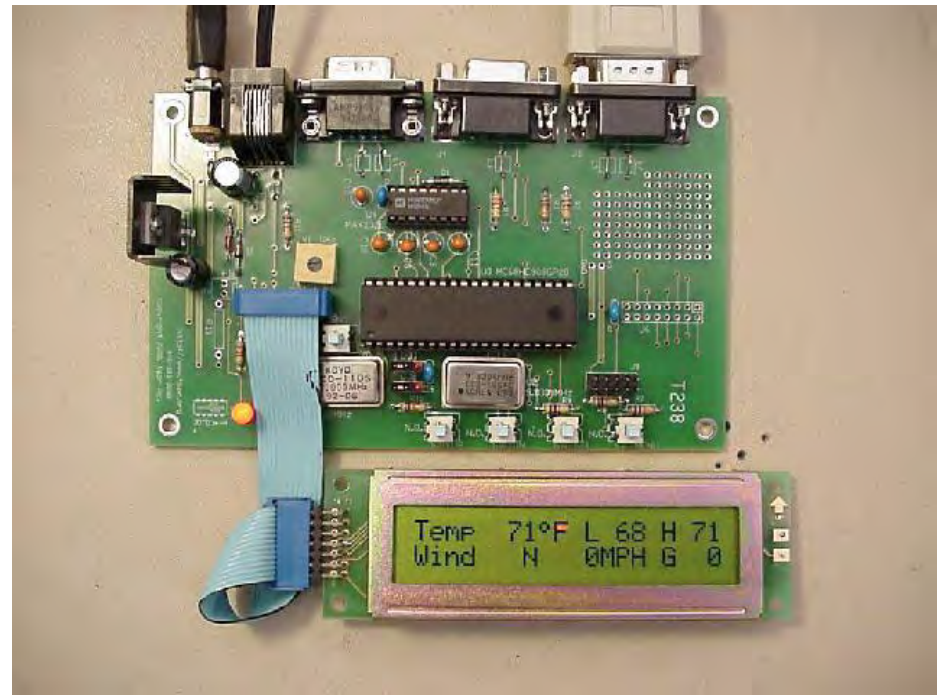
Doug McKinney, KC3RL

Weather

T-238 and T-238+MODEM

- Low-Cost APRS Weather Station
  - William Beals, NØXGA
  - Russ Chadwick, KBØTV
- Dallas Semiconductor 1-Wire Weather Station

2000

CWOP

- Citizen Weather Observer Program
- http://wxqa.com/

Citizen Weather Observer Program

Site Contents:
News
Main Page
Data Quality
Member Lists
Map/Data Displays
Ham Wx Station Info
CW Packet Checking
Weather Station Resources
Computer Security and Archive

Related Links:
CWOP info
APRS-IS info
findu.com info
FAQs, Forums
Solar Radiation
MADIS Program
APRSWXNET info
APRS Servers to Use
NOAA mesonet display

Join CWOP or CWOP-snow
Search CWOP or shortform

N4XI

- X1W-1 - 1-Wire Indoor Sensor/Interface Kit

- X1W-4 EMP Sensor Kit

https://www.tapr.org/kits_x1w-1.html

https://www.tapr.org/kits_x1w-4.html

- X1W-1 – Humidity and Temperature
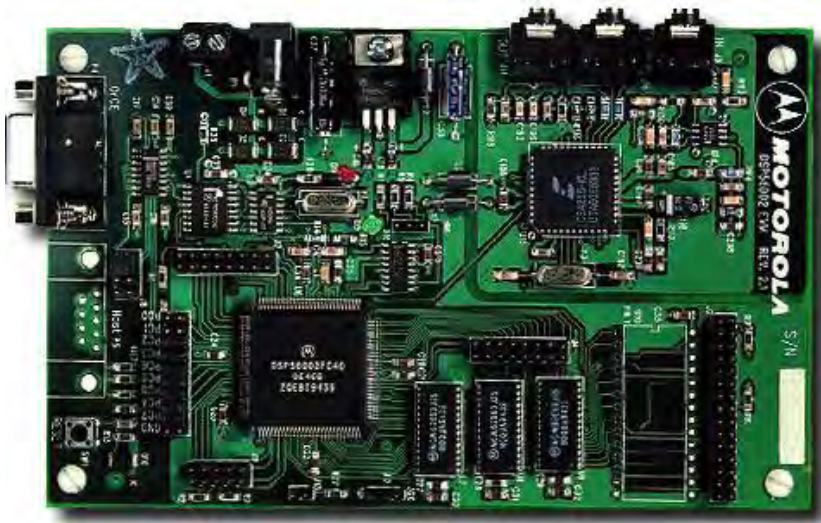
https://www.tapr.org/kits_x1w-2.html

Circa ~2005

Digital Signal Processing

TAPR Motorola EVM56002 Radio Interface and Enclosure Kit

- Motorola DSP56002EVM Evaluation Module
  - Johan Forrer, KC7WW – QEX Article August 1995
  - Steven Bible, N7HPR
  - Lyle Johnson, WA7GXD

1999

Spread Spectrum

DCC 1997

An All-Software Advanced HF Modem for Amateur Radio

- Matthew Ettus, N2MJI
- Student Paper Award

DCC 1998

Introduction to Spread Spectrum

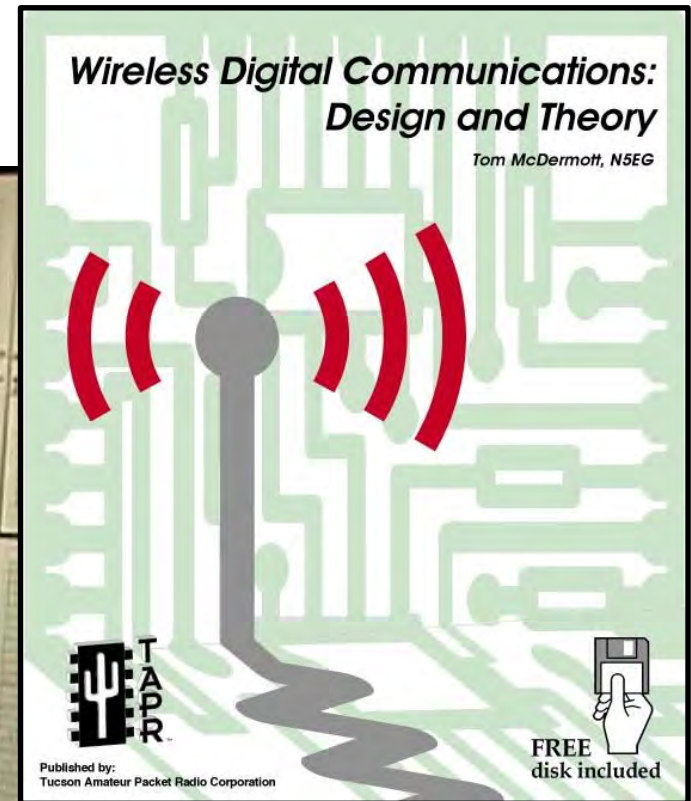https://www.youtube.com/watch?v=imFQCnxqo40

Tom McDermott, N5EG

Wireless Digital Communications:
Design and Theory

Tom McDermott, N5EG

Published by:
Tucson Amateur Packet Radio Corporation

FREE
disk included

TAPR FHSS Radio

An Amateur 900Mhz Spread-Spectrum Radio Design

Presented at the 1997 ARRL and TAPR Digital Communications Conference, October 10-12, 1997.

- Tom McDermott, N5EG
- Bob Stricklin, N5BRG
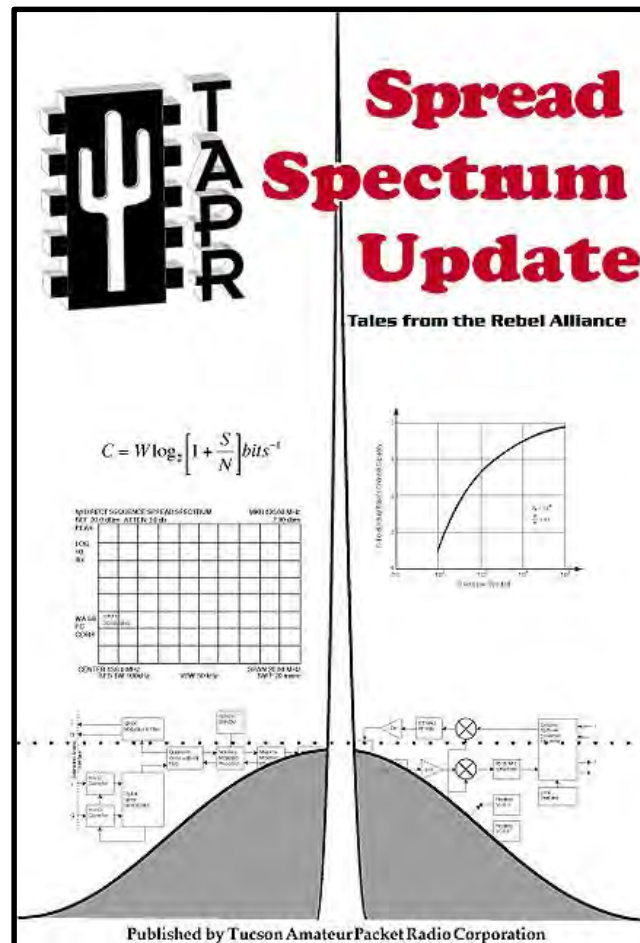- Bill Reed, WD0ETZ

Circa ~1996

Spread Spectrum Book

Subtitle: Tales from the Rebel Alliance

Editors:
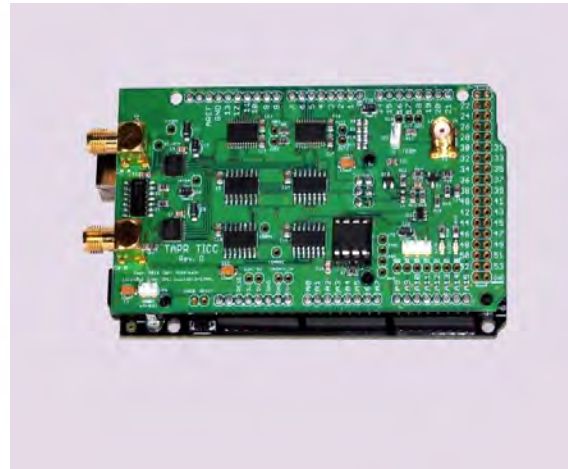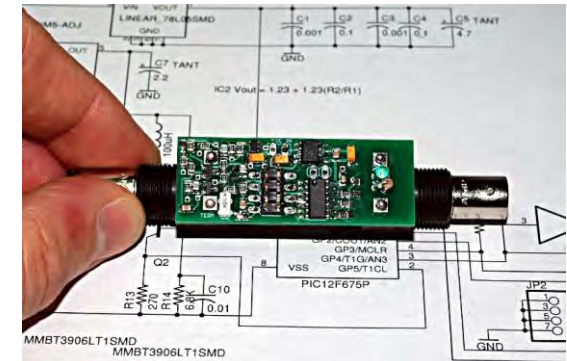
   Greg Jones, WD5IVD

   Steve Bible, N7HPR

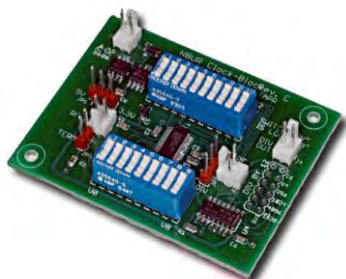# TIMING

Timing Products

- John Ackermann, N8UR

TADD-2 Mini

TICC

TADD-1

Pulse Puppy
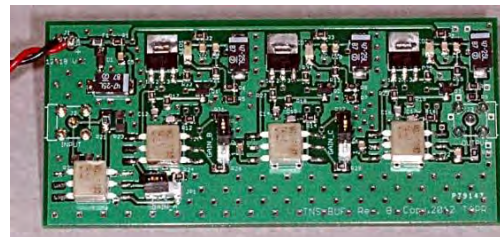
Clock-Block
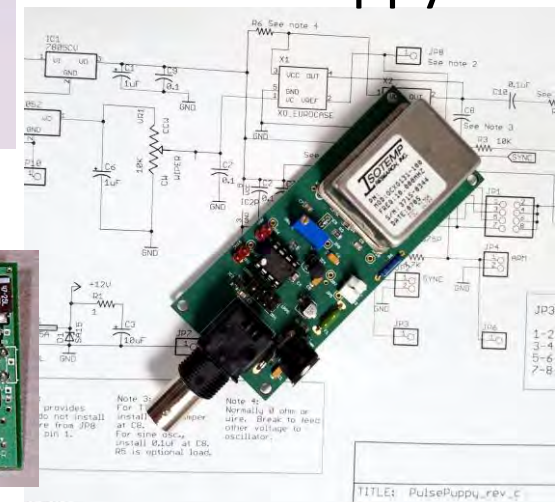
TNS BUF

TAS S

Software Defined Radio

DSP-10

The DSP-10: An All-Mode 2-Meter Transceiver Using a DSP IF and PC-Controlled Front Panel

- Bob Larkin, W7PUA
- QST Oct, Nov, Dec 1999

https://www.tapr.org/kits_dsp10.html

2000

Matt Ettus, N2JMI

- Software Defined Radio Seminars

- Goes on to create Ettus Research

    https://www.ettus.com/

Gerald Youngblood

- A Software-Defined Radio for the Masses
  - Three part article in QEX
  - Jul/Aug 2002, Sep/Oct 2002, Nov/Dec 2002

- Presents at the 2002 DCC in Denver

- Later forms Flex-Radio Systems

The "Accidental" Company
The Making of FlexRadio, from the 2014 DCC
https://www.youtube.com/watch?v=HBlkinewdHM

openHPSDR

- High Performance Software Defined Radio

2009-2012

Digital Modes

PSK-31

- Peter Martinez, G3PLX creates PSK-31

- Johan Forrer, KC7WW
    - A DSP-Based Audio Signal Processor
    - QEX Article August 1995

- Pawel Jalocha, SP9VRC
    - SLOWBPSK written for Motorola the DSP56002 EVM

http://aintel.bi.ehu.es/psk31.html

D-Star

- Ray Novak, N9JA
- Presents D-Star at the 2002 DCC in Denver

CODEC-2

- David Rowe, VK5DGR
- Open source speech codec designed for communications quality speech between 700 and 3200 bit/s
- https://www.rowetel.com/?page_id=452

SM1000

WSPR Pi

- Zoltan Doczi, HA7DCD

2015

http://www.tapr.org/kits_20M-wspr-pi.html
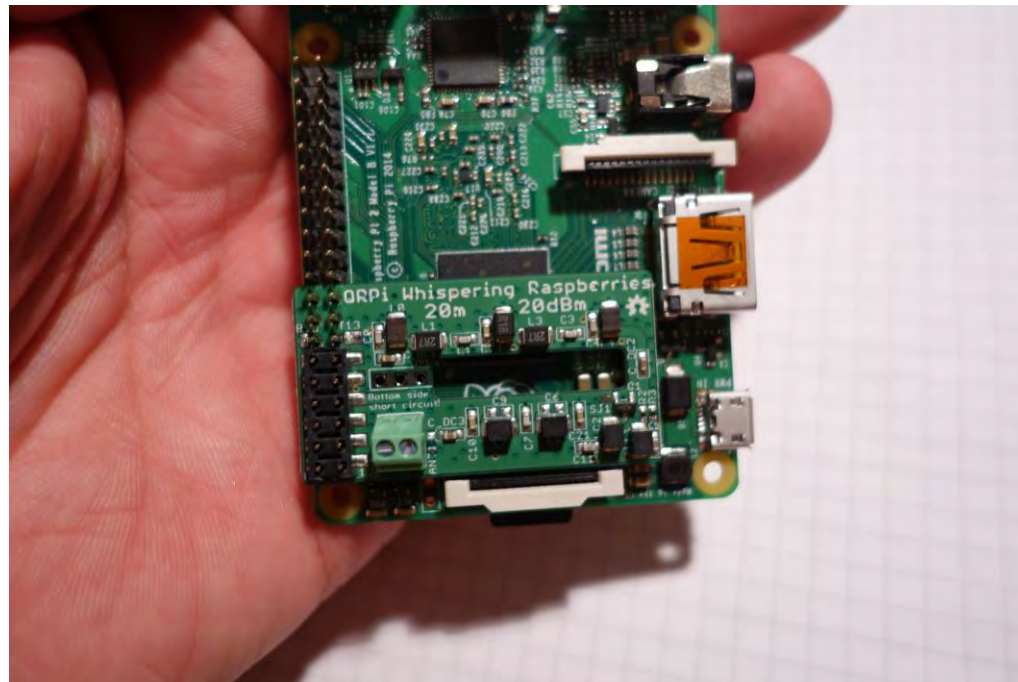
Conferences

Hamvention

Digital Communications Conference

- Formerly Computer Networking Conference
- MOU with ARRL since 1996
- Name changed to Digital Communications Conference (DCC)

DCC

- Call for Papers
- Published Proceedings (ARRL)
- Posted online (www.tapr.org/dcc)
- Speaking slots: 45 minutes
- Lightning Talks
- Demo Room
- Friday Night Social
- Keynote Speaker Saturday Night Banquet

DCC

- Great for Students

- YouTube Videos
    - Gary Pearce KN4AQ
    - https://www.hamradionow.tv/tapr-dcc/
    - 2008, 2009, 2011 to present
    - 2010 available on DVD

DCC 2018

2018 ARRL/TAPR Digital Communications Conference

September 14-16
Albuquerque, New Mexico

Make your reservations now for three days of learning and enjoyment at the Sheraton Albuquerque Airport Hotel. The Digital Communications Conference schedule includes technical and introductory forums, demonstrations, a Saturday evening banquet and an in-depth Sunday seminar. This conference is for everyone with an interest in digital communications from beginner to expert.

Call Tucson Amateur Packet Radio at:
972-671-8277, or go online to **www.tapr.org/dcc**

Sheraton Albuquerque Airport Hotel

Awards

Dayton Hamvention's Technical Excellence award for 2003

- 1984 – Lyle Johnson, WA7GXD
- 1990 – Bob McGwier, N4HY
- 1998 – Bob Bruninga, WB4APR
- 2001 -- Peter Martinez, G3PLX
- 2003 -- Steve Dimse, K4HG
- 2008 -- Thomas C. McDermott, N5EG
- 2013 -- David Rowe, VK5DGR

Awards

QST June 1995 Cover Plaque Award
"Amateur Radio on the World Wide Web"
Steven Bible, N7HPR and Greg Pool, WH6DT

What Can TAPR Do For You?

http://www.tapr.org