

# PRUG

*Packet Radio Users Group Japan*

## PRUG activity 2000–2001 achievement advantage

### What's PRUG?

Packet Radio Users' Group is a non-profit investigation group for wireless data communication and Internet technology. We have been working actively from 1985 in Japan.

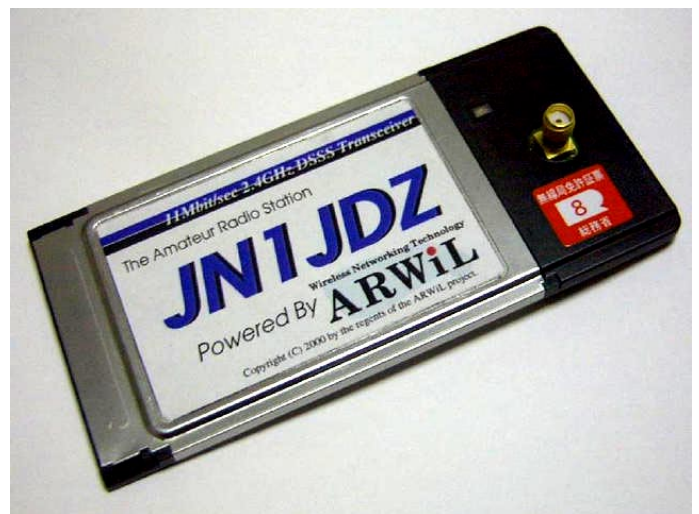
### Distance trial with IEEE802.11b Wireless LAN on Amateur Radio



Parabola Radio Users Group

We had another 2.4GHz SS distance trial in this summer.

We operated IEEE802.11b wireless LAN transceiver with big parabola antenna and made a distance recode. The antenna of IEEE802.11b transceiver is hardly restricted. Changing antenna is illegal. On the other hand, the antenna of amateur transceiver is not restricted in Japan. So we got a license for wireless LAN as amateur radio station and operated it with high gain antenna.



Licensed Transceiver call sign: JN1JDZ

Place Tsukuba-mountain  
 36.13.06.2/140.07.15.6 WGS 84  
 Tonegawa riverside  
 36.04.17.4/129.48.14.7 WGS 84  
 Dist. 32.8km  
 ANT 120cm parabola (riverside)  
 80cm parabola (mountain-top)  
 Status linked at 1Mbps  
 Net-meeting RS 59

One radio FT-712 was modified to have an EJ-40U CVSD codec module built in.



FT817 and adapter for codec module

Another radio FT-817 had PKT96 packet interface so this interface was used to connect CVSD codec.



Worked

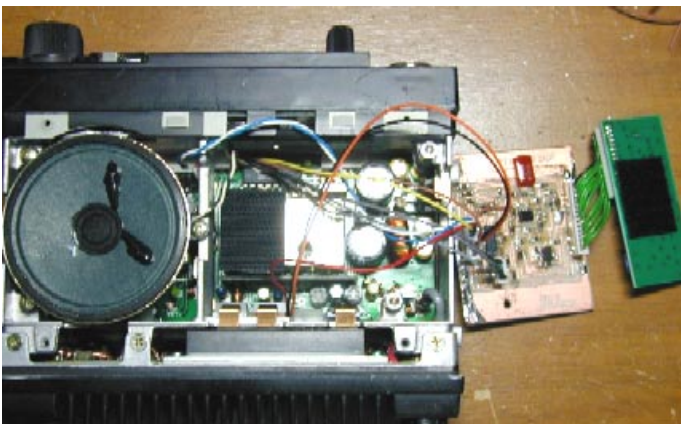
They worked fine to enjoy digital VOICE chat at distance of 43km (27miles). And both of them are compatible with Alinco's digital voice transceiver DR435 and DJ-596.



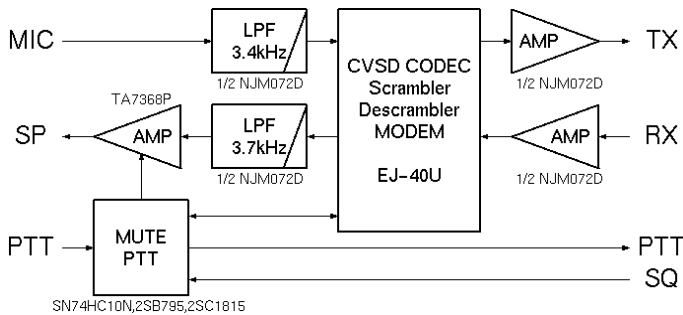
This LAN card has a SMA connector for antenna cable

## Digital voice on the Air

Digital voice radios using CPFSK modulation of 14kbps worked fine in the field. The 2-way digital voice link is established on distance of 43km.



FT712 and EJ-40U codec module



Block diagram of codec module adapter

URL: <http://jn1jdz.ampr.jp/20F3> (Japanese)

## New Transceiver Expected

JN1JDZ Kanno is expecting to develop a new original transceiver for high-speed digital communication.

That radio will be like this.

Protocol: ARWiL  
 Frequency: 1.2GHz band  
 TX Power: 1W  
 Mode: Nyquist Filtered FSK  
 Data Speed: 256kbps  
 Occupied Band Width: 270kHz  
 BER:  $5 \times 10^{-3}$  at frame loss 1%

## What is ARWiL?

ARWiL is a robust data link layer routing protocol for wide area wireless networks, which supports these functions as follows:

- Autonomous and adaptive routing on wireless networks, which refers condition of each wireless links.
- Fully automatic operation.
- It capable to high speed and wide area wireless networks.
- It can transmit the internet protocol formatted packets (IPv4 and IPv6).
- Hierarchical routing.

More info: [shin@prug.org](mailto:shin@prug.org) (<http://www.arwil.net/>)

## Activity report of the AMEDES

The AMEDES is an automatic weather reporting system run by amateur volunteers on the Internet. Each AMEDES node is equipped with a small Java computer and a few kinds of sensors.

(Java computer TINI: <http://www.ibutton.com/TINI/>)



AMEDES (<http://www.tini.org/>)

## AMEDES node specification

### Hardware

Sensors: temperature, rainfall  
 Option-1: wind speed/direction, rainfall gauge (1-wire weather station) ([www.ibutton.com/weather/](http://www.ibutton.com/weather/))  
 Option-2: humidity, air pressure (onboard devices)

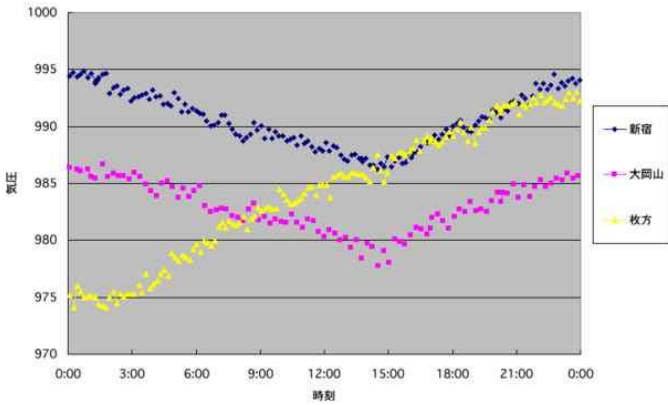
### Software

Web server: providing current weather status  
 IRC client: periodic reporting agent  
 Mail client: event-reporting agent

As of February 2001, 50 units of the AMEDES nodes have been delivered nationwide and 30 of them have been running.

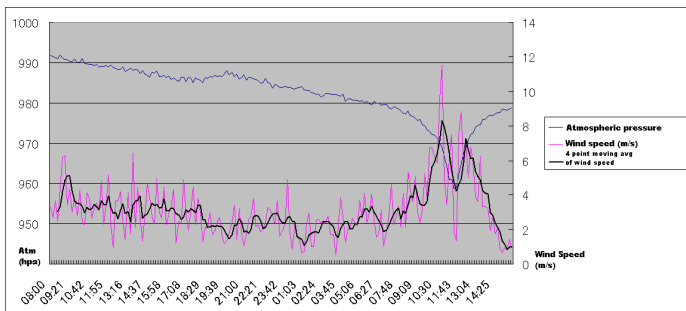
A late night in August, I was soldering a pressure sensor on the circuit board because a typhoon Pubuk

(Japanese name: Taifu No.11) was approaching. Two days later Pubuk went over through the major islands of Japan. It was the first experience to measure atmospheric behavior of a typhoon on our AMEDES network. The result was notable and excellent.



<http://www.cap.to/~jun/typhoon.html>

The measured result shows the difference of time when the typhoon approached to Osaka and Tokyo. The distance between the two cities is about 400km so the estimated traveling speed of this typhoon is calculated as 30km/hour (or about 20 mph). A few days after, another typhoon Danas (Taifu No. 15) approached to Tokyo. This time, the center the typhoon hit the city. The measured result was interesting. The profile of the pressure diagram clearly shows the low-pressure dip and that the wind speed had two peak values because of the fact that the wind speed is calm at the very center of a typhoon.



<http://jq1vie.cqham.com/TF15-VIEatm-wind.gif>

We have obtained very interesting results and many of AMEDES owners have decided to add pressure

sensors to their nodes. We are eagerly waiting for another typhoon approaching to show the capability of AMEDES.

## Partech2001 in Hamamatsu Japan

November 23—24, 2001  
 Hamamatsu, Shizuoka Prefecture, Japan  
<http://www.jh2yvr.org/partech2001/> (Japanese)  
 Call For Participation/Papers

Hotel: GRAND Hotel HAMAMATSU  
<http://grandhotel.co.jp/>  
 +81-53-452-2112

### Access

1. Nagoya AP (NGO) -Bus (1h)->  
 JR Nagoya -Shinkansen (1h)->  
 JR Hamamatsu
2. Narita AP (NRT) -Narita Exp. (1h)->  
 JR Tokyo -Shinkansen (2h)->  
 JR Hamamatsu
3. Kansai AP (KIX) -Ltd.exp Haruka(1h) ->  
 JR Shin-Oosaka -Shinkansen (1h) ->  
 JR Hamamatsu

NRT: aka Tokyo Narita International Airport  
 KIX: aka Osaka Kansai International Airport

Contact: [partech2001-info@jh2yvr.org](mailto:partech2001-info@jh2yvr.org)

# SEE YOU NEXT YEAR