TITLE: A Built in TNC for the Toshiba Mod. T1000.

AUTHOR: Frederic de **Bros, KXIS,** July 26, 1990
         22 Temple St.
         Boston, MA   **02114**

1. **INTRODUCTION:**

The idea to have a TNC + laptop computer attached to **a** hand held transceiver seems attractive. **Several** home brew versions have been tried on SHARP PC 5000 and Tandy 100 computers. None were truly portable or Clutter free.
We describe here how to affix a UMPAD (Universal packet as-sembler/disassembler) onto a modem board inside the Toshiba T1000 computer.

2. **MATERIALS:**

An asynchronous modem board type **S231I** (1) was purchased from Source One Systems **(2).** **A** UMPAD TNC with ribbon cable was purchased from PACCOM (3). A 27 pin right angle PC **mount ribbon** cable connector (part **#SLEM 27R-2)** was purchased from Burndy. A **27-strand** non inverting ribbon cable was obtained from Elec-tronic Innovations. A 5 pin Din female connector **was** obtained form Radio Shack.

3. METHODS:

The **S331I** **was** modified in the following way: The straight **ribbon connector** and the **DB9DTE were unsoldered from** the original **board.** The right angle 27 pin connector was soldered to the **board.** The 5 pin Din socket was mounted on the **modem** back panel **with countersunk screws.** The ribbon cable was replaced with a **"non inverting"** type. The **3** transistors on the modem board were bent down to **a** clearance of **5mm.** The **0.luf** Tantalum capacitor was unsoldered and mounted horizontally. The cables leading to the battery connector in the T1000 were bent down, and backwards (towards the battery case). Two **5** mill. rubber standoffs **were screw** mounted in the original **DB9 -** Pin holes. The UMPAD was glued to these rubber standoffs. The UMPAD **was** connected to 0, switched **+9V, RxD** and **TxD** (RS232) on the modem board. CTS and RTS were connected at the RS232 port of DCE and DTE respectively. The T1000 was modified **by** AXONIX (4) to **a** backlit ELT screen.

3. ͦ ͮ ˙ ˒ ͦ ͦ ˙

Figure 1 shows the modified modem board. Figure 2 shows the UMPAD with the radio/computer port. Figure 3 shows the assembled unite
It works well in the car and in the office, Use is minimal though. **We** find it easier and cheaper to have a TNC + terminal at the various locations where packet can be used. Advantages are when going abroad, and to demonstrate/setup a system. **We** find that certain handheld transceivers are interfered by the clock **(TH25AT e.g.)**

4. **FIGURES:**

FIG. 1:
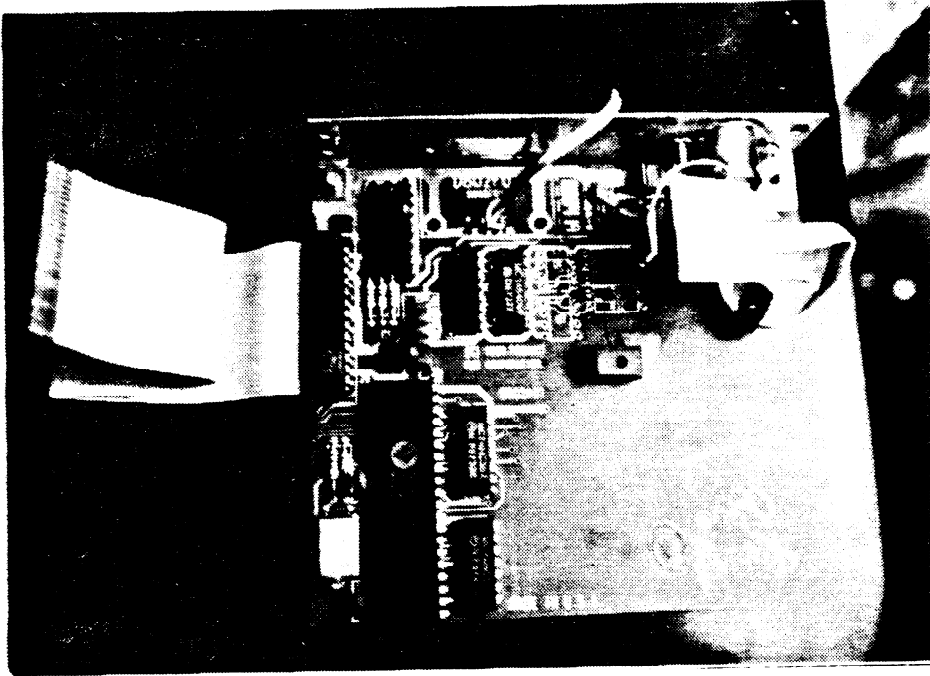The **S231I** Modem board prepared for the UMPAD.

FIG. 2:
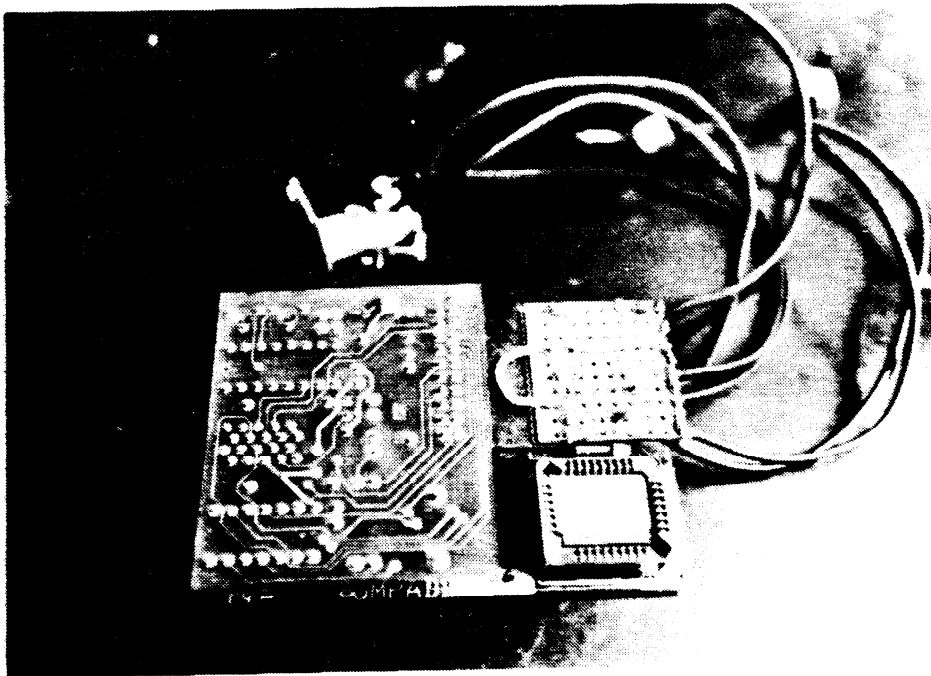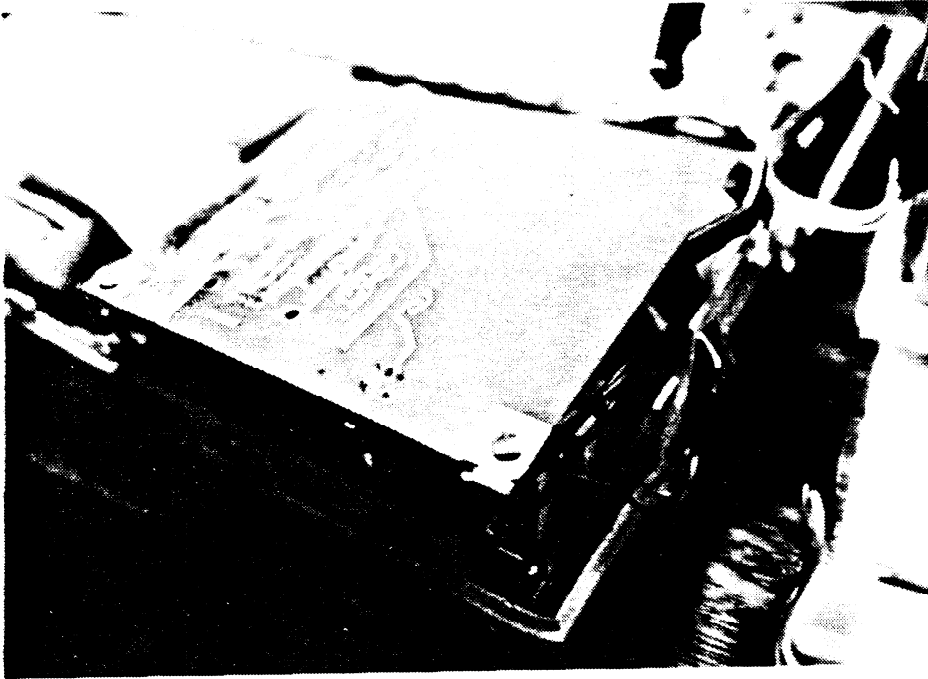The UMPAD with the Radioport and computer **interface.**

Fig. 3
The entire Unit mounted in the T1000.

5. **DISCUSSION:**

Several improvements are still possible. A better backpanel to house the DIN connector. The TNC should be software - switchable. The entire unit should be on a single board. Product R & D and PACCOM have been communicating about this project. An additional Hayes telephone modem should be installed on the board. RFI from the clock can be a limiting factor, if short antennae are used. Corn 2 should be available as COM 3 on a DB 9 port. Use TTL levels rather than RS 232 to save even more battery power.

6. SUMMARY :

Portable PR with a T1000 computer is feasible with relatively little effort. A self contained unit attractively styled seems very desirable in the Amateur Radio Community.

7:   <u>REFERENCES:</u>

(1)   Product R **&** D Corporation
1194 Pacific Street
San Luis Obispo, CA 93401

(2)   Source ONE Systems
13231 Champion Forest Drive
Suite 212
Houston, TX 77069

(3)   PACCOM
3652 Wells Cypress Street
Tampa, FL **33607-4916**

(4)   AXONIX Corporation
2257 South 1100 East
Salt Lake City, UT 84106

24