

Assam Hardware Testing

Overview Presentation

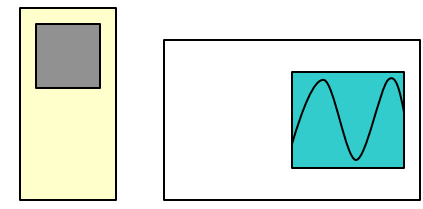
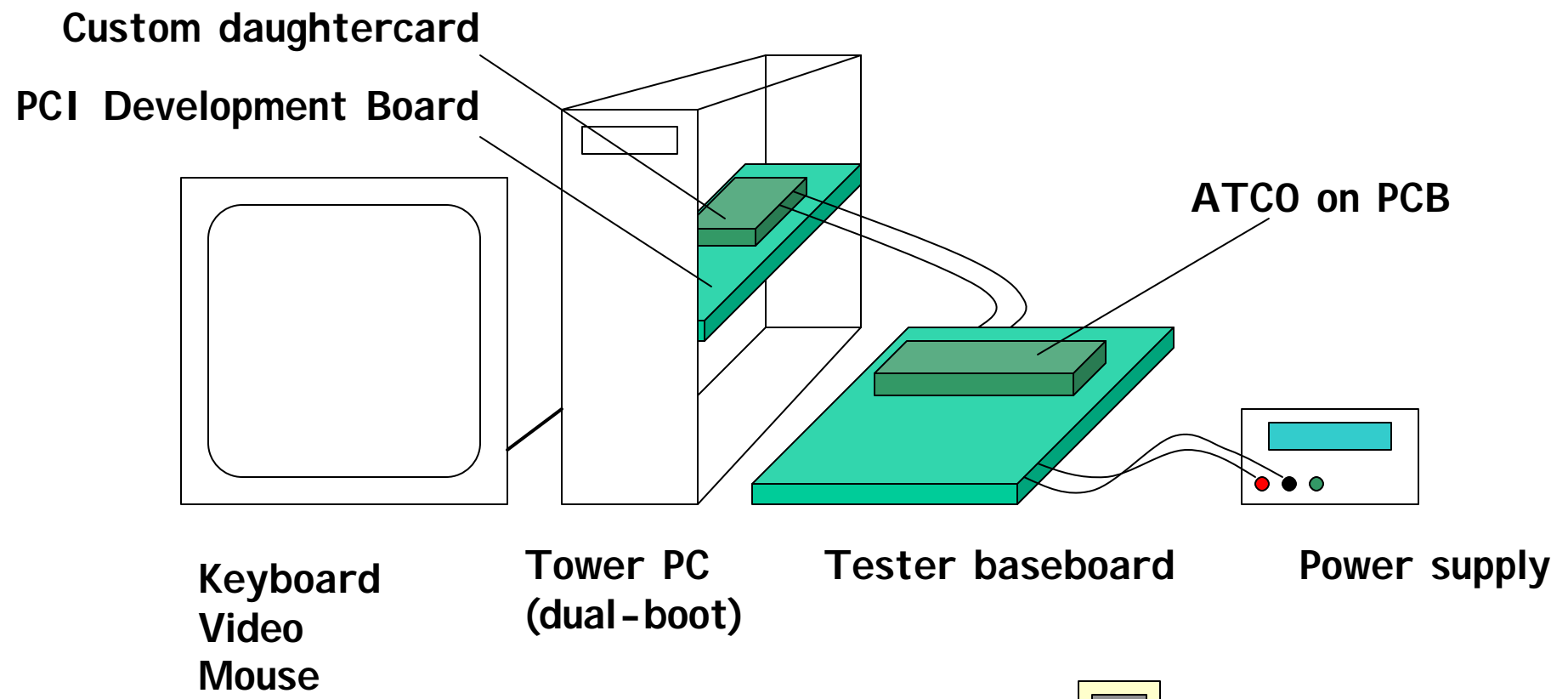
February 26, 2001

Kenneth C. Barr

Contents

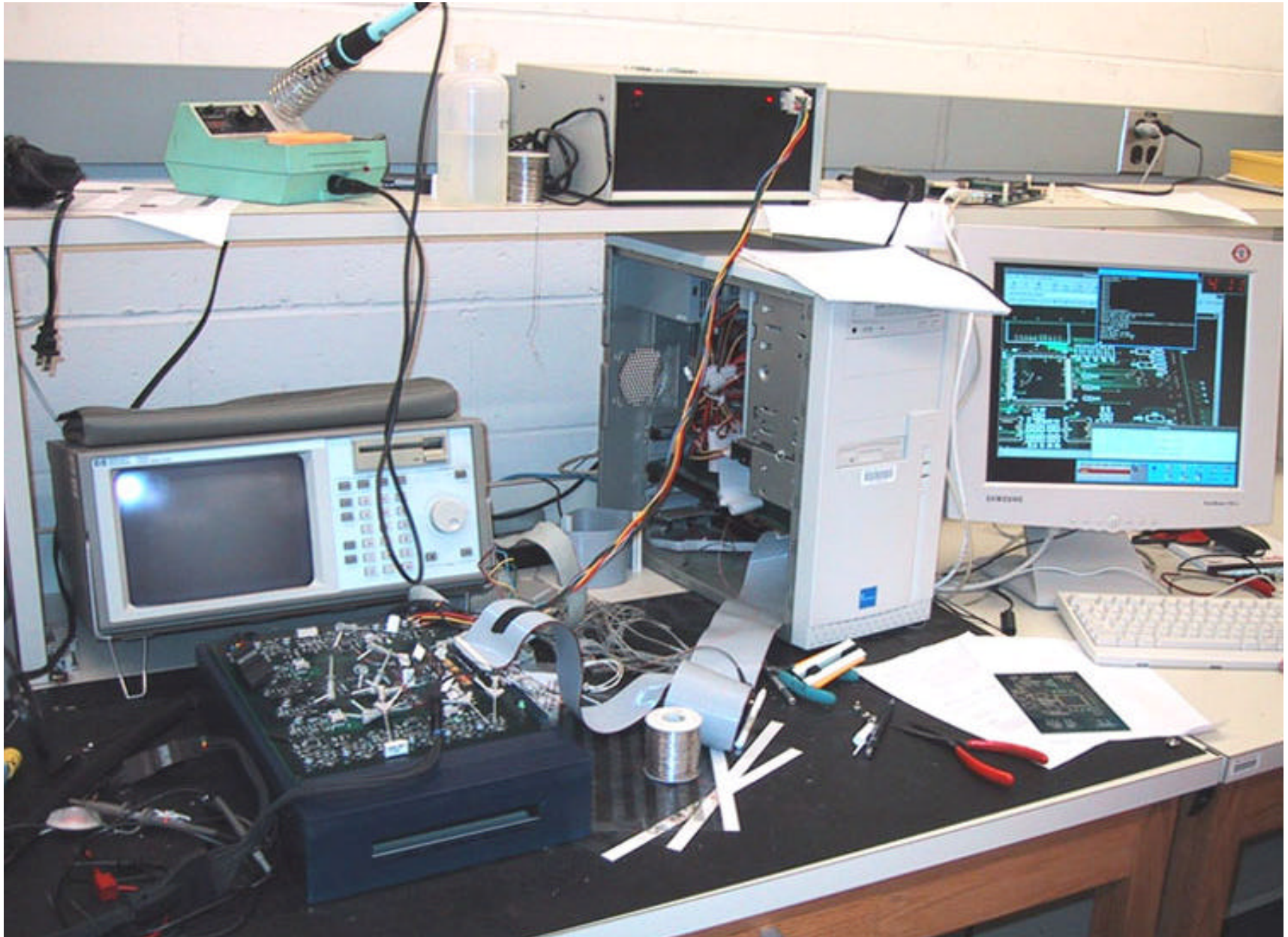
- **Lab Configuration**
- **Host PC**
- **Host – Baseboard link**
- **Tester Baseboard**

Lab Configuration



Multimeter, scope, etc.

Lab Configuration

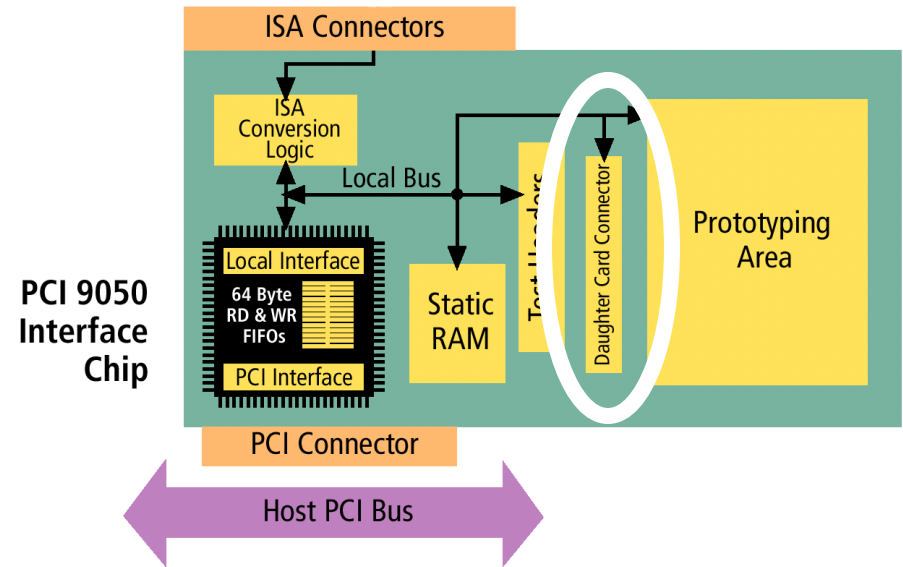


Host PC

- **Pentium III / 800 MHz**
- **300 Watt Power Supply**
- **440 BX Chipset**
- **256-512 MB 100 MHz SDRAM**
- **20G HDD, Dual Boot (Linux/Win2K)**
- **Misc**
 - **Vendor: PCs for Everyone**
 - **Accessories: CDRW, PCMCIA**

Host-Baseboard Link

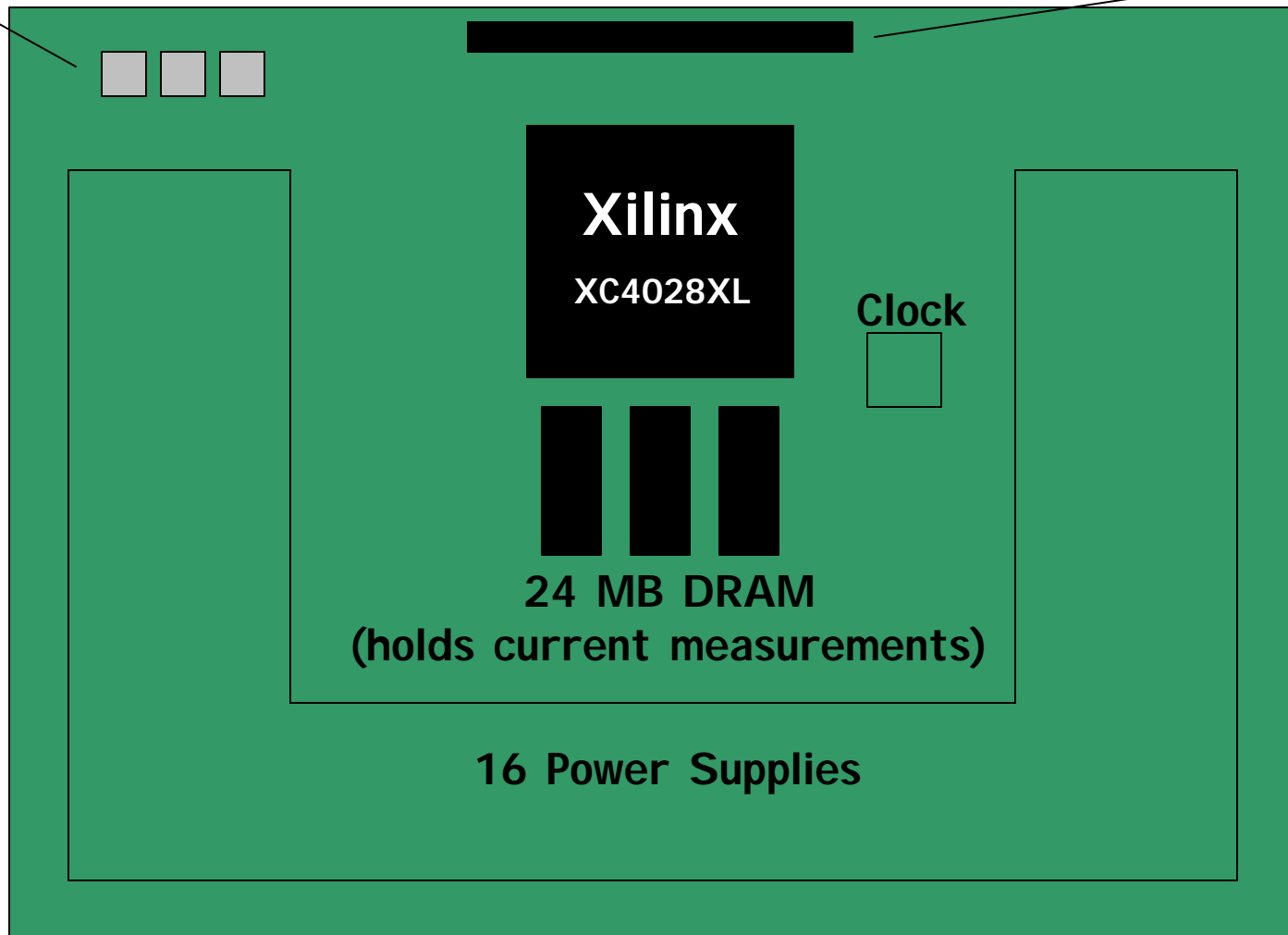
- **Development card converts PCI to a simpler local bus**
- **Daughtercard connects local bus to the tester baseboard**
 - Provides clock
 - Line drivers and terminators
- **Custom Linux driver**



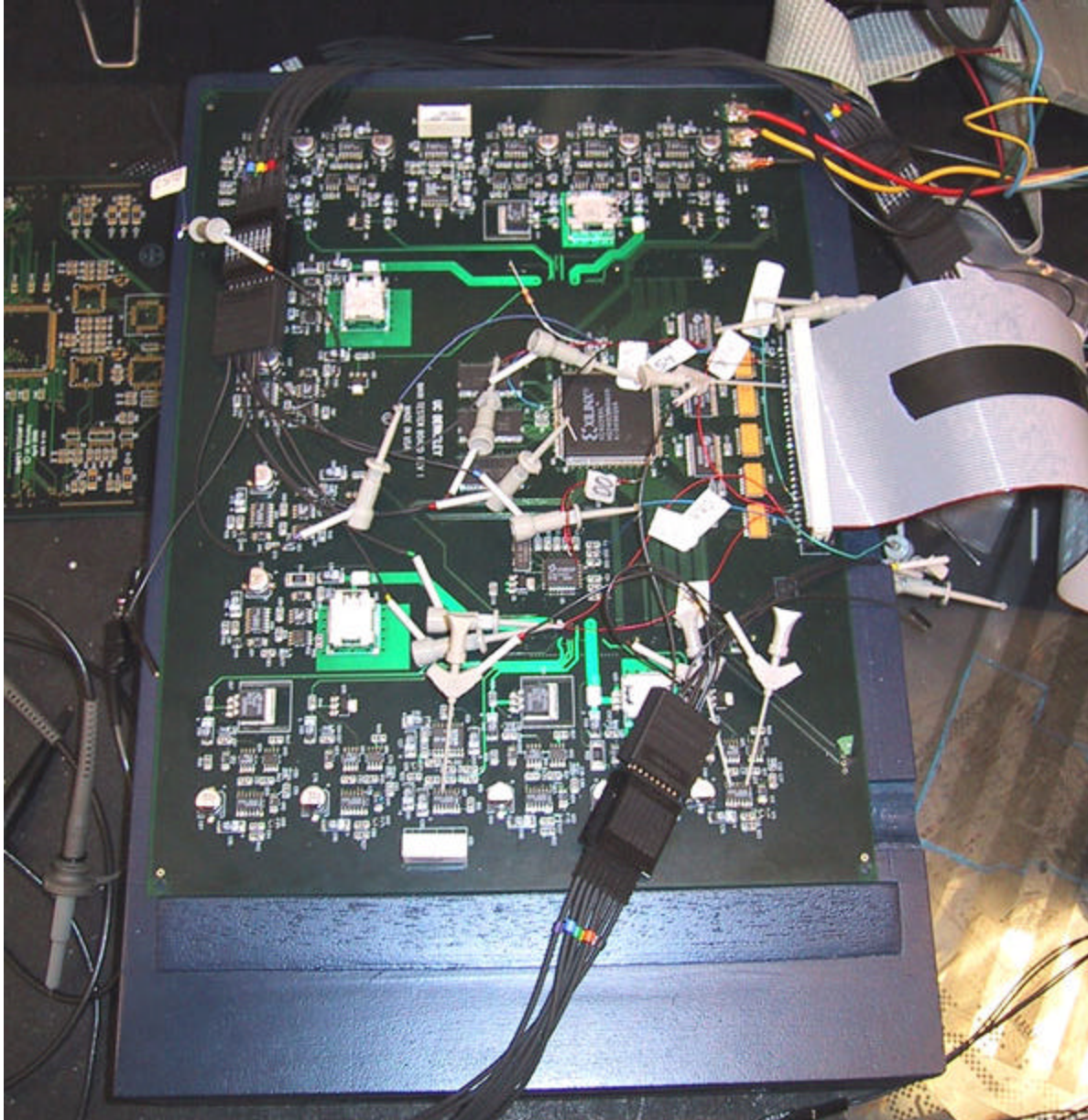
Tester Baseboard (Back)

From Power Supply

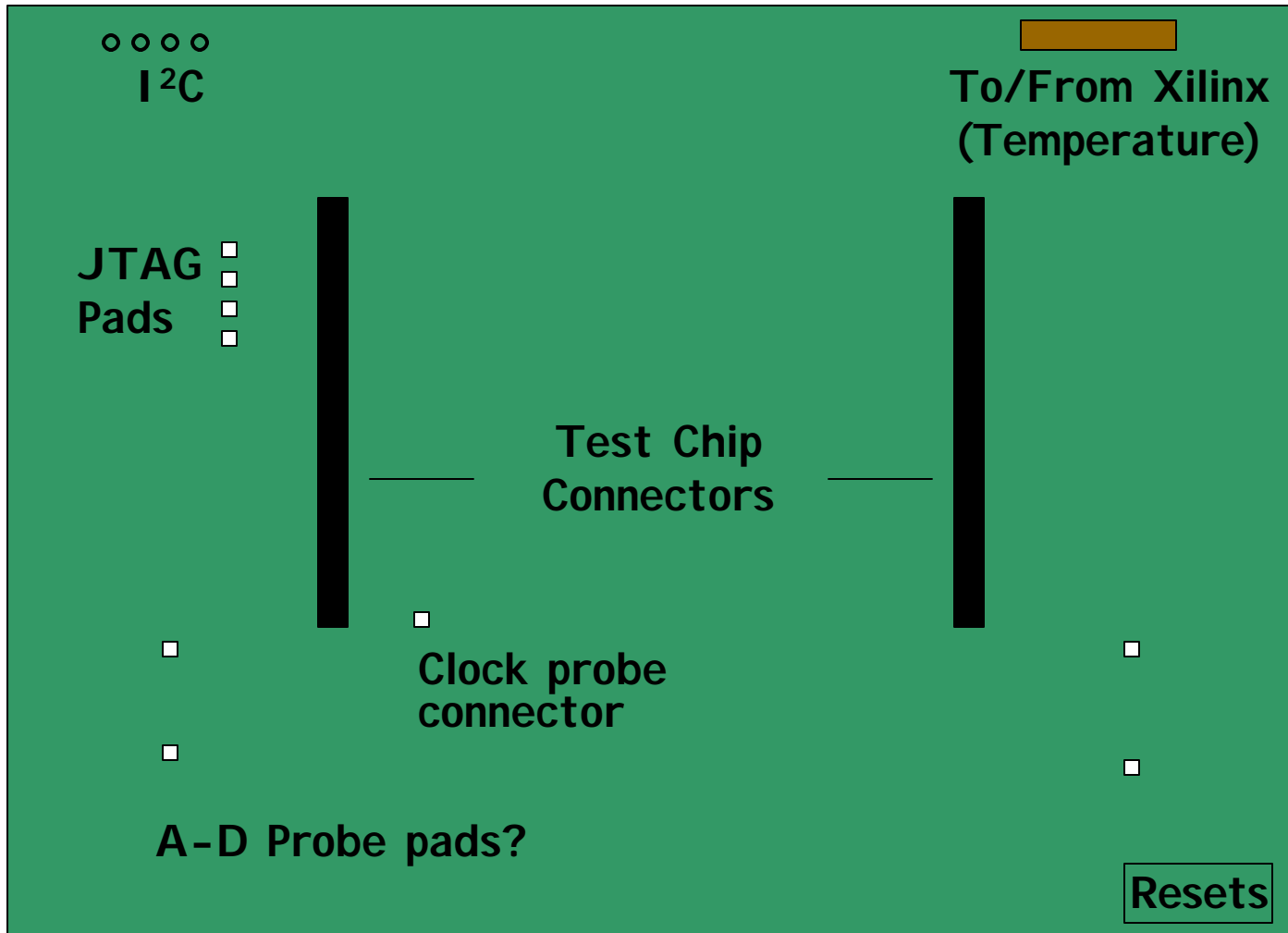
To/From Host



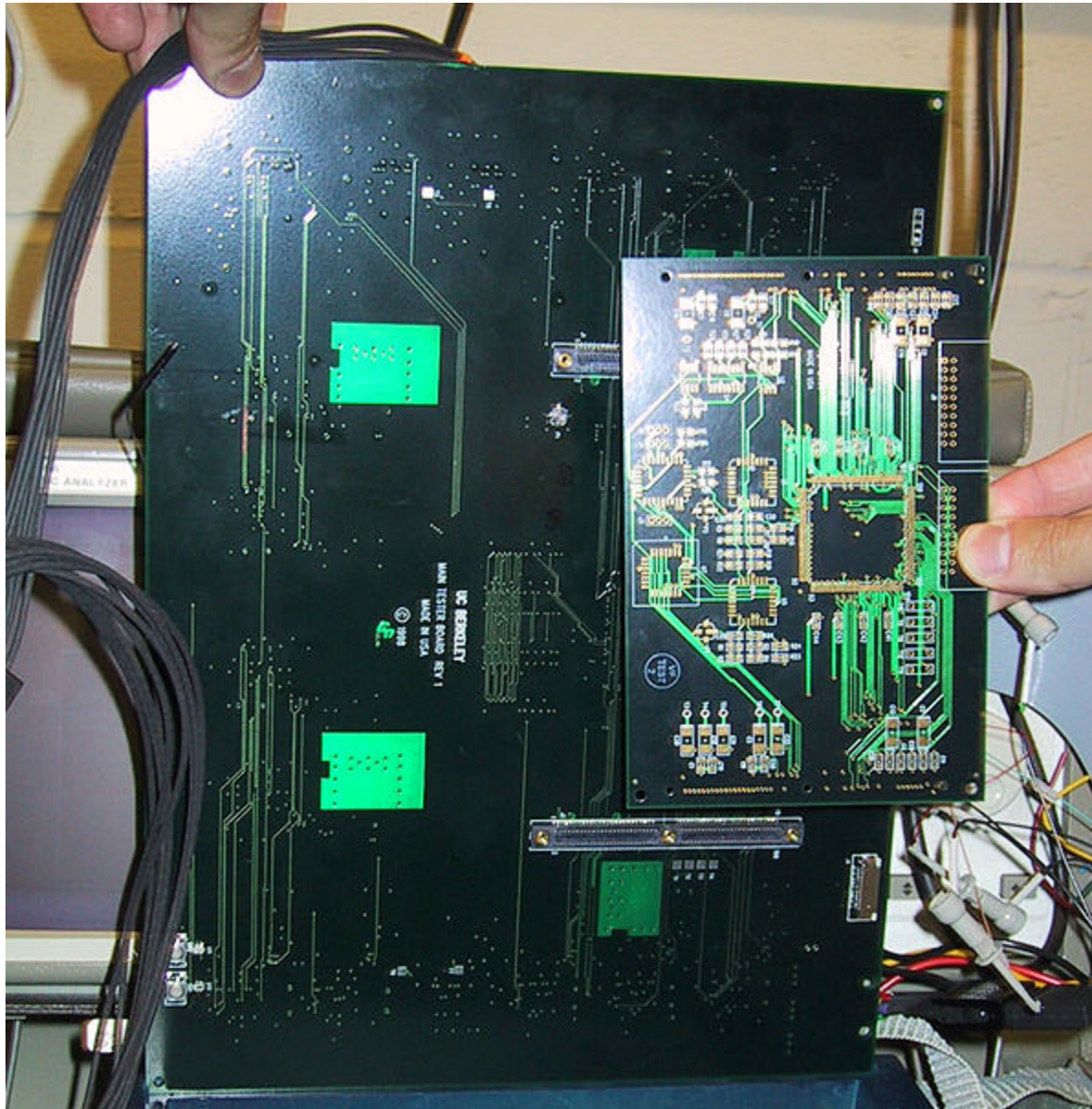
Tester Baseboard (Back)



Tester Baseboard (Front)



Tester Baseboard (Front)

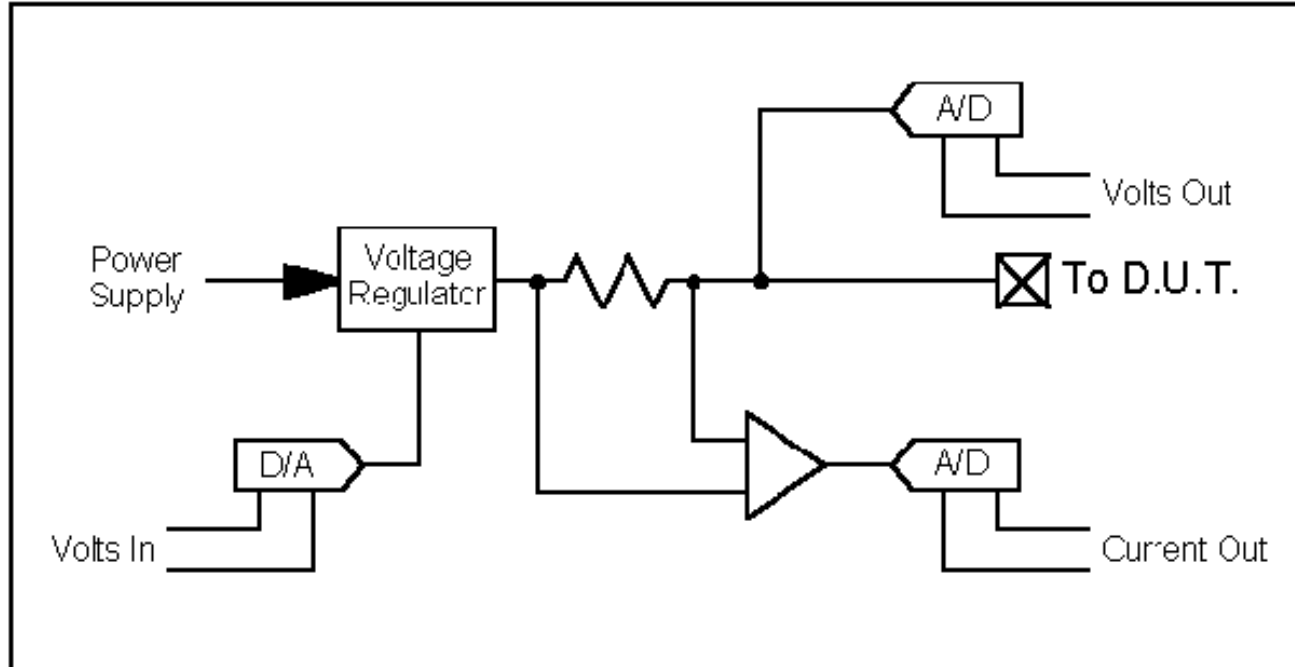


Tester Baseboard Features

- **Xilinx XC4028XL**
 - 193 User I/O pins (Max)
 - 18K-50K Gates (Typical)
 - 80MHz external, 150MHz internal
- **Sixteen voltage-adjustable and current-monitored power supplies**
- **Controller for temperature control and measurement**
- **Configurable status and control bits**
- **Parallel 32 bit data path**
- **Adjustable frequency clock**
- **JTAG serial interface to DUTs**

Adjustable Power Supplies

- Voltage adjustable between 0V-3.9V in 1 mV increments
- Current measurements stored in 24 MB DRAM
- Adjustable sample rate
 - DRAM can hold 2 seconds at 500 kSamples/s
 - DRAM can hold 64 seconds at 15 kSamples/s



Temperature Monitor/Control

■ Control

- Via Peltier Device
- Estimated Accuracy: ± 2 °C

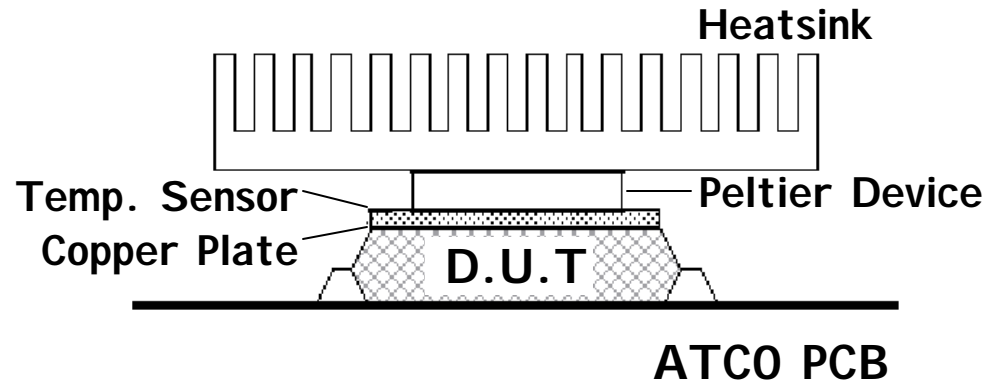
■ Measure

- Range: -55 - 125 °C
- Error: ± 0.5 °C

■ Bond to chip in a reusable fashion

■ Documentation Issues

- Part numbers
- Interface to ATC0 PCB



Control

- **32 control bits configurable on the baseboard**
- **Parallel bidirectional datapath between baseboard and DUT (32 bits plus control).**

Clock

- **Clock generator frequency can be specified in 1 MHz steps from 25-400 MHz, using an external crystal as a reference.**
- **Differential PECL outputs. Must be converted on test chip PCB to a single-ended signal with the appropriate signal levels.**

ATCO Interfaces

