

AccessionIndex: TCD-SCSS-T.20121208.038

Accession Date: 8-Dec-2012

Accession By: Dr.Brian Coghlan

Object name: VICOM Image Processor boards

Vintage: c.1982

Synopsis: Versabus PCBs from the VICOM image processor used by the Dept.Computer Science during 1982-1990, one of the first generation of dedicated image processors.

Description:

The VICOM Image Processor was one of the first generation of standalone dedicated image processing systems. The Dept.Computer Science and the Dept.Geology, TCD, jointly purchased and operated one of these systems from 1982 to 1990. Both Mike Nowlan and David Abrahamson (who was on sabbatical in RPI in Troy, New York, and travelled over to the west coast in May-1981 on Prof.J.G.Byrne's instructions) visited VICOM in California to discuss the purchase of the machine. It arrived during Michaelmas term 1981 a little the worse for the journey from California, slightly damaged by the delivery people, see Figures 12-14.

The VICOM was instrumental in the work by Prof.Adrian Philips that supported the formation of Maptec (International) Ltd. An interesting example of this work was the extraction of a map of ESB power-lines from medium-resolution satellite maps of Ireland, which were only then becoming available, by automatic recognition of line segments in the images.

Dr.Brian Coghlan was principally involved for Computer Science, both running and maintaining the system, enhancing his Core79 3-d graphics library, and supervising Andrew Butterfield in extending the PADL solid modelling package from George Washington University to allow 3-d hidden-surface removal in concert with the VICOM system.

Images were downloaded to the VICOM from a host (e.g. VAX) and stored as RGB data on three image memory planes. The image manipulation was done by dedicated mapping hardware that indexed through the selected planes and performed nearest-neighbour as well as global data operations, with on-the-fly write-back of results. Additional 1-bit image memory planes were provided for graphics overlays. Result images could be uploaded back to the host.

The collection has a number of surviving boards from the chassis of the VICOM system used by the Dept.Computer Science, but not the main chassis or desk. The system was used with a large Calcomp 960 plotter, but this also has not survived. This is very unfortunate, as both had been preserved fully intact until c.2009, but were disposed of due to pressure on space for subsequent refurbishments.

The system was constructed in a Versabus chassis, an early Motorola 32-bit bus format and specification yielding quite large PCBs, 14.5" x 9.25". The system was managed via a standard Motorola MC68000 Versabus processor board that had, for its time, an extensive set of software in eleven EPROMs, including BIOS, VICOM's OS and their *VDU* user interface.

An additional Versabus board acted as an I/O processor. This was a complex dual-68000 CPU board from Charles River Data Systems. The second CPU was intended for I/O processing with 4 serial ports and a communications bus.

One further board survived, but it is not known what function this performed. It has an 8031 microcontroller plus a field programmable sequencer, plus assorted logic.

The image-specific boards have not survived. These were compatible with Versabus, but were approximately 50% deeper, i.e. approx. 14.5" x 13.75", and very densely populated. They were not free of bugs, and much of the 'maintenance' of the system was in reality debugging of and designing fixes for hardware 'features'.

VICOM

DIGITAL IMAGE PROCESSOR

"The VICOM processor is a special purpose computer for digital image processing. It can greatly enhance the capability of an existing image display or general purpose computer system. It can be used as a real-time scene analyzer with a television camera input. VICOM can also be used as a powerful stand-alone digital image processor. Point processing, spatial convolution, zoom and rotation can be performed by the VICOM processor in a fraction of a second. Other image processing operations can be executed by a built-in 16-bit microprocessor. The VICOM is truly the next generation in image processing."

Dr. William K. Pratt
President
Vicom Systems, Inc.



VICOM SYSTEMS, INC.
2307 BERING DRIVE
SAN JOSE CALIFORNIA 95131 U.S.A.
408 946 5560 TELEX 171 619
TWX 910 338 0125



Reader Service Number 3
For immediate interest

Reader Service Number 6
For information only

Figure 1: VICOM advertisement

The homepage for this catalog is at: <https://www.scss.tcd.ie/SCSSTreasuresCatalog/>
 Click '*Accession Index*' (1st column listed) for related folder, or '*About*' for further guidance. Some of the items below may be more properly part of other categories of this catalog, but are listed here for convenience.

Accession Index	Object with Identification
TCD-SCSS-T.20121208.038.01	System CPU board. Made by Motorola Microsystems, copyright 1980. Markings: 84EW8068B01 Rev.B, BA09804, 01EW3068B01 Rev.J, S/N: 1463. 1 x MC68000L8 CPU 1 x MC68B04P programmable timer 1 x MC?430P 2 x Signetics N2661-3N UARTs 18 x NEC D416C 16k x 1 DRAMs 1 x Intel D3242 DRAM address MUX 1 x EPROM 4085B01 (AU8) 1 x EPROM 1940X09 (EU2) 1 x EPROM 11-18-81 1D57 (EU1 MONO) 2 x EPROMs (OS PROM MSB and LSB) 6 x EPROMs (VDU PROM MSB1-3 and LSB1-3)
TCD-SCSS-T.20121208.038.02	1MB Memory board with ECC. 8 x 20 Mitsubishi M5K4164NP-15 64k x 1 DRAMs 2 x Am2960DC ECC datapaths Markings: 084560-08 62601 1 685 8342, 40838 Rev.G, PC-PCB 38-3.
TCD-SCSS-T.20121208.038.03	I/O/processor. 1 x MC68000G8 CPU 4 x HA6116P-3 2k x 8 SRAMs 8 x Am2149-45DC 1k x 4 SRAMs 1 x MC146818 realtime clock 2 x Z8530PS serial link controller 1 x 2764 EPROM (UNBUG EVEN V2.0 5/13) 1 x 2764 EPROM (UNBUG ODD V2.0 5/13) 1 x MC68000L12 CPU 1 x MC68B40P programmable timer 6 x Am27S03 16 x 4 SRAM 3 x Am2149-45DC 1k x 4 SRAMs 1 x Intel D2147H-2 4k x 1 SRAM Markings:P/N: 05-30406 Rev.H, S/N: 8307099, Mede in USA, 1982, Charles River Data Systems Inc (CDRS), 4 Tech Circle, Natick, MA 01760, P/N: 90-30474 Rev.B.
TCD-SCSS-T.20121208.038.04	Unknown board with unknown functionality. Intel P8031AH EPROM (292) Signetics N82S105N field programmable logic sequencer

Markings:P/N: 05-00279 Rev.J,
S/N: 8307152, Assembly 05-0279.

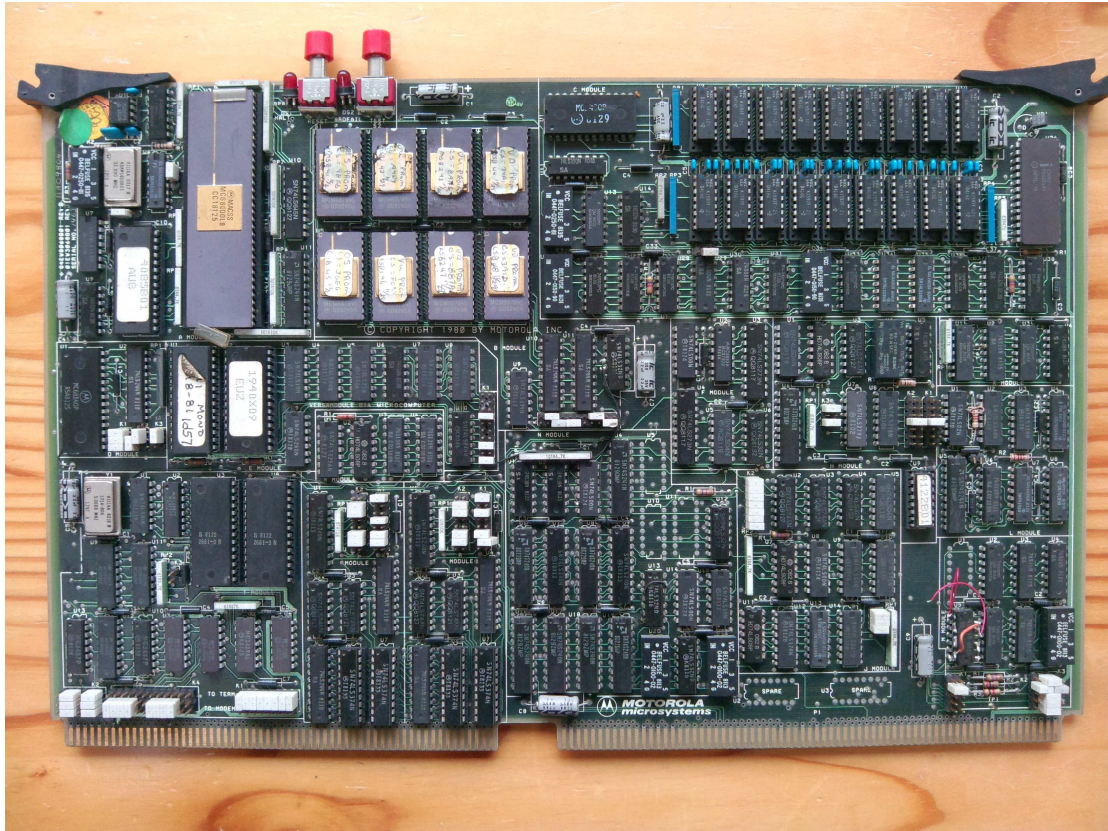


Figure 2: VICOM CPU board, front view

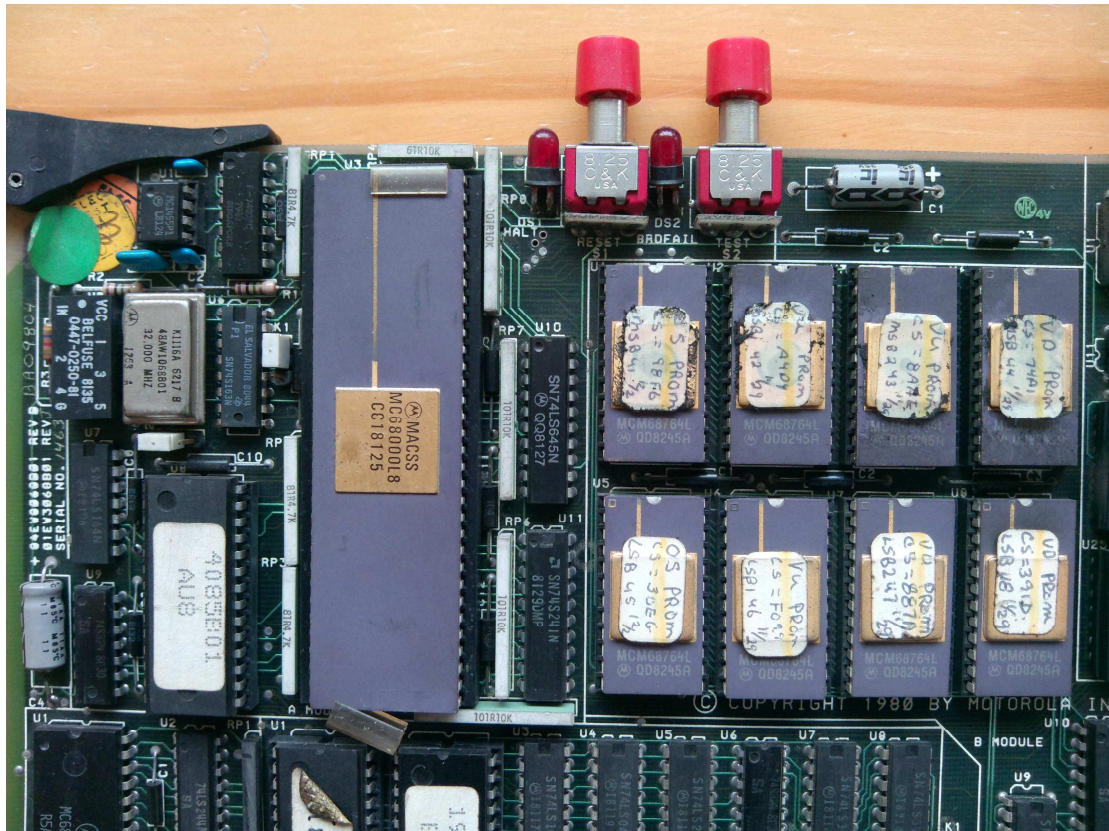


Figure 3: VICOM CPU board, front closeup

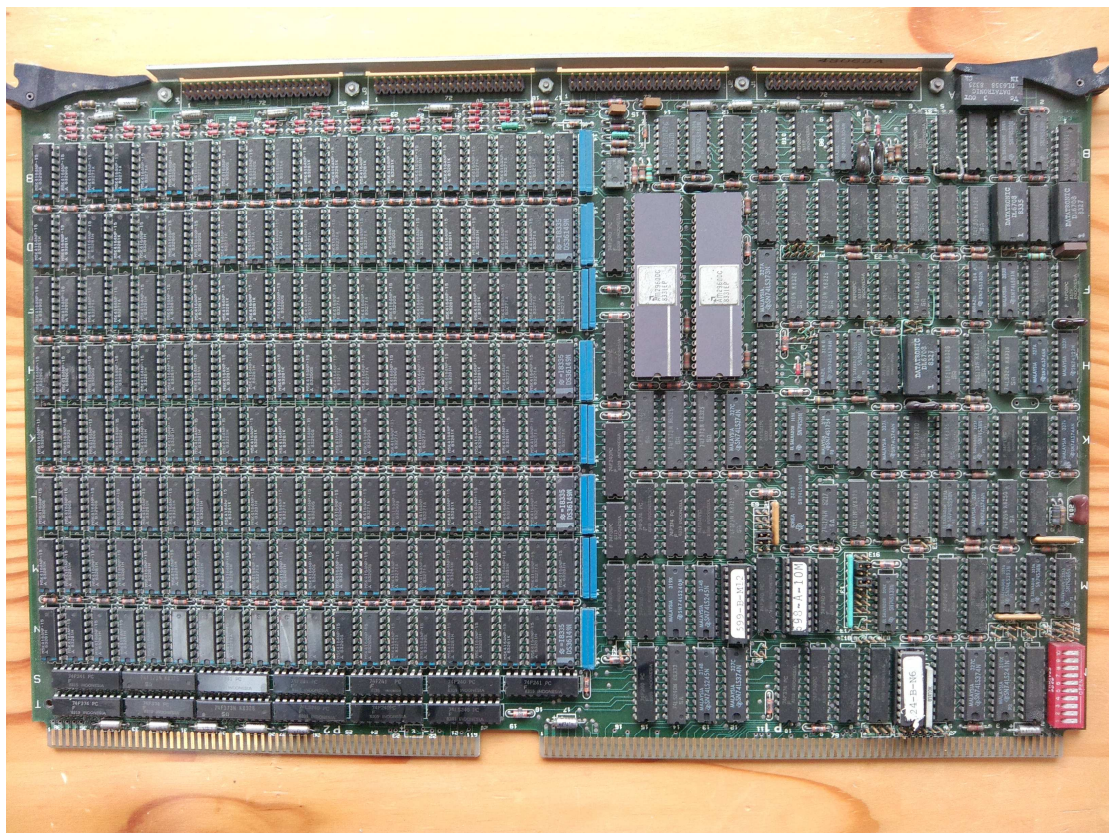


Figure 4: VICOM memory board, front view

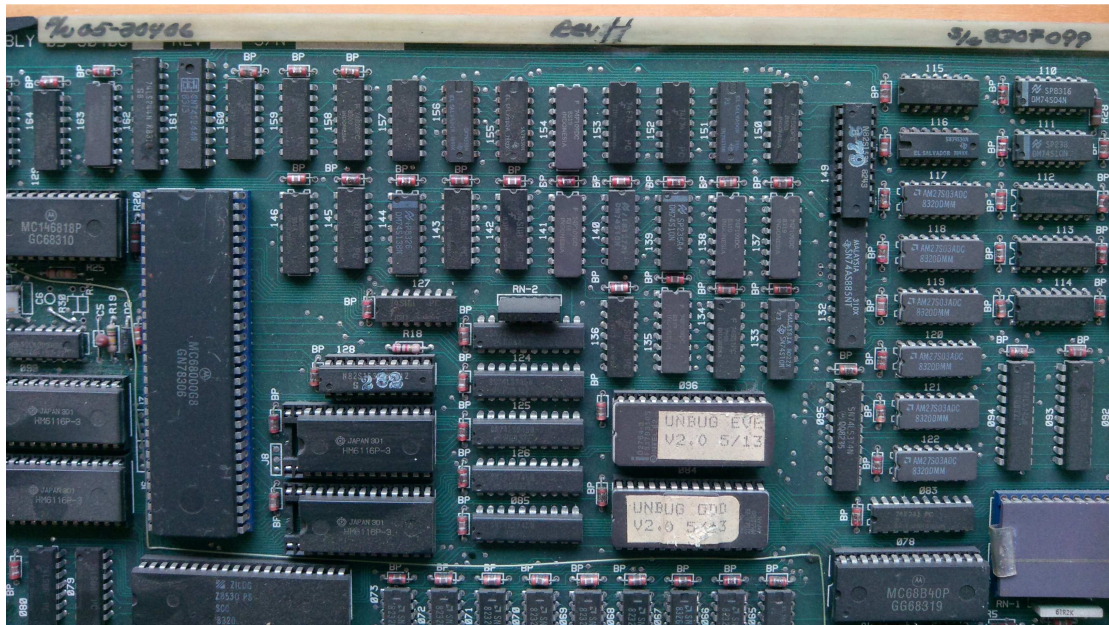


Figure 7: VICOM I/O processor, front closeup

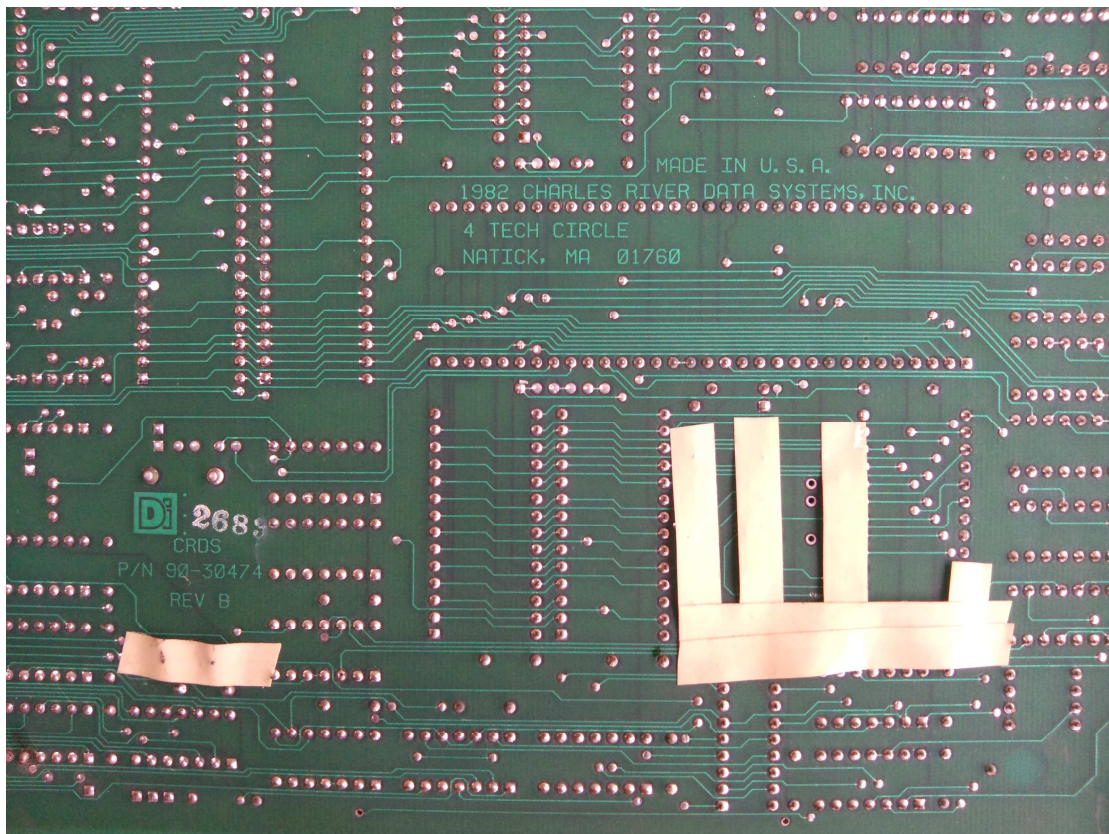


Figure 8: VICOM I/O processor, manufacturing labels

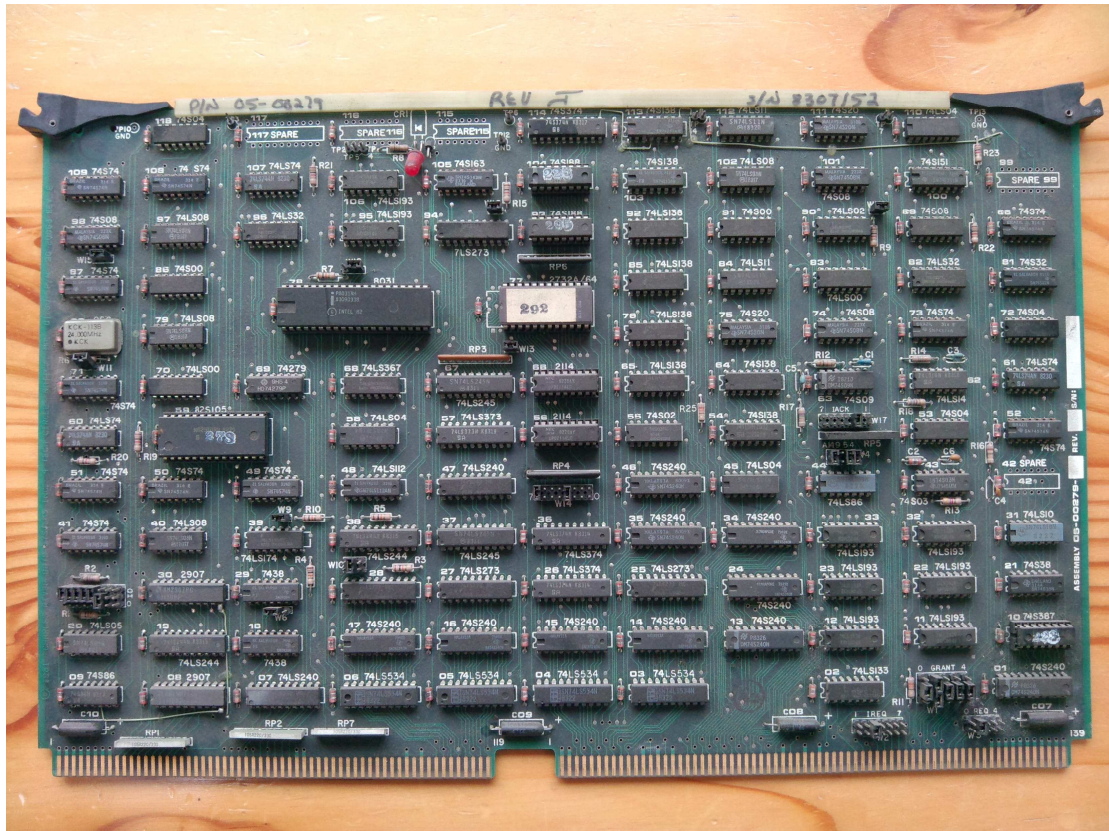


Figure 9: VICOM unknown board, front view

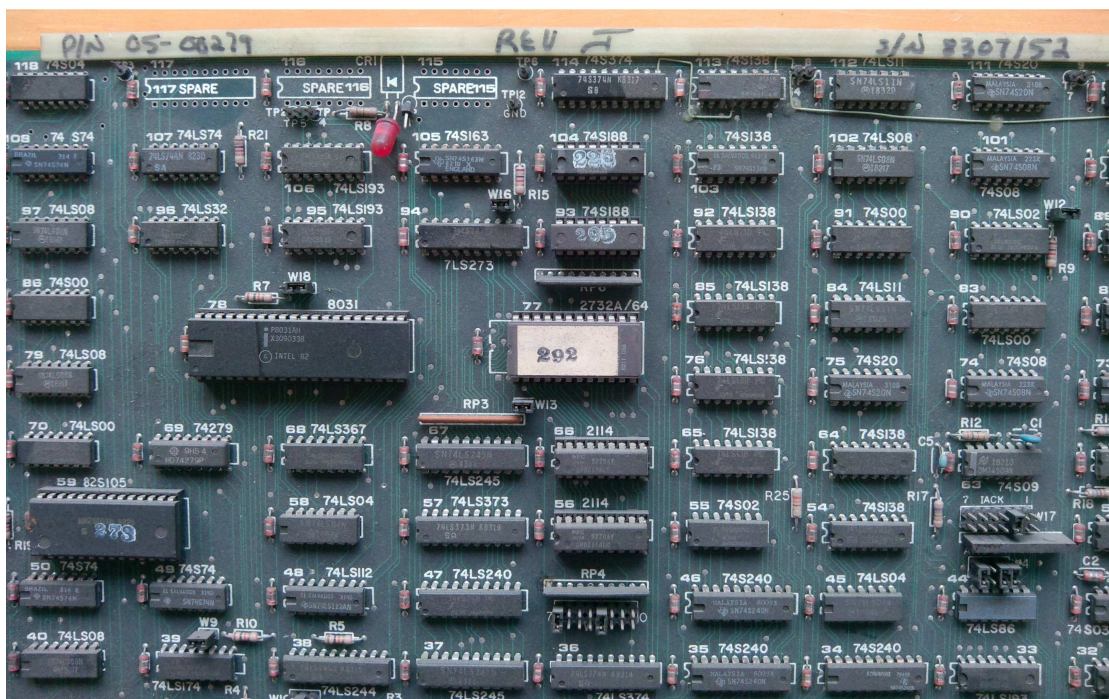


Figure 10: VICOM unknown board, front closeup

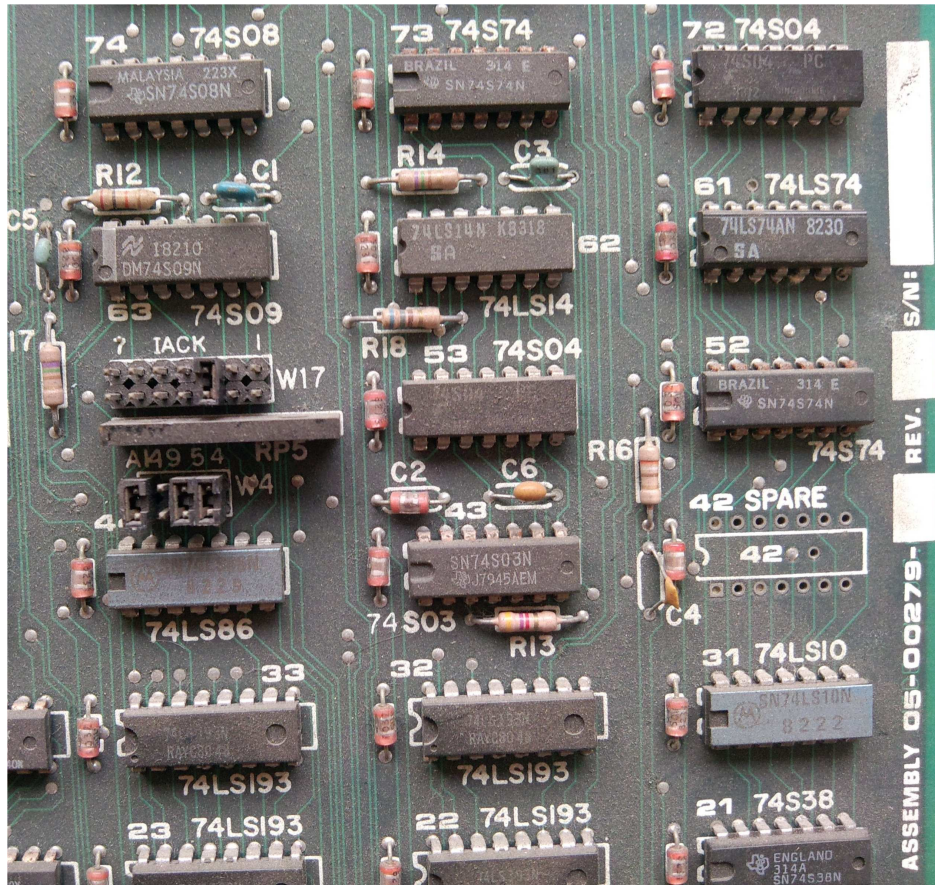


Figure 11: VICOM unknown board, manufacturing label

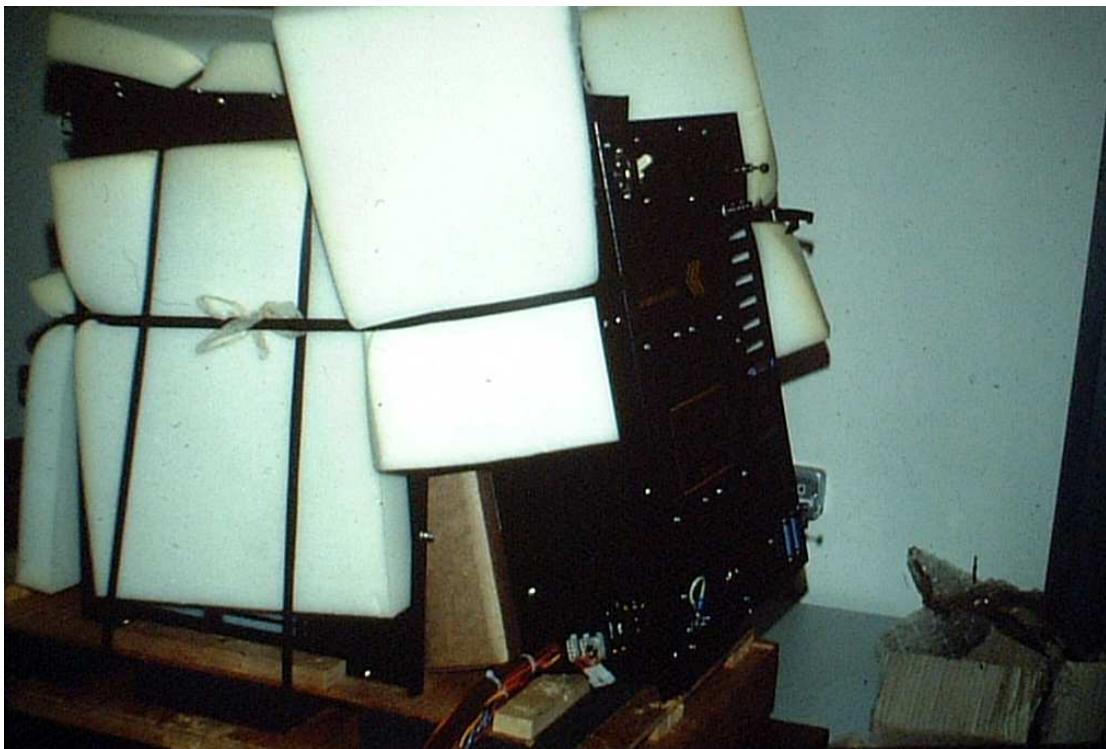


Figure 12: VICOM in its packaging arriving in the department
Note dislocation of front panel

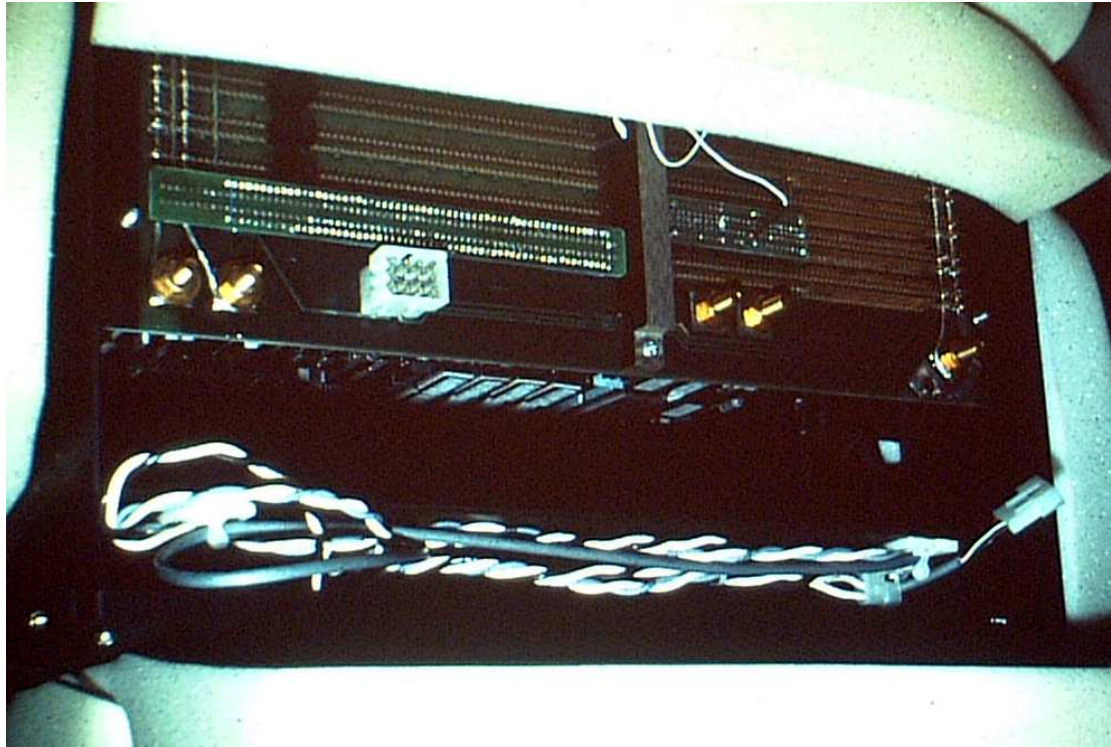


Figure 13: VICOM backplane at rear exposed from its packaging arriving in the department

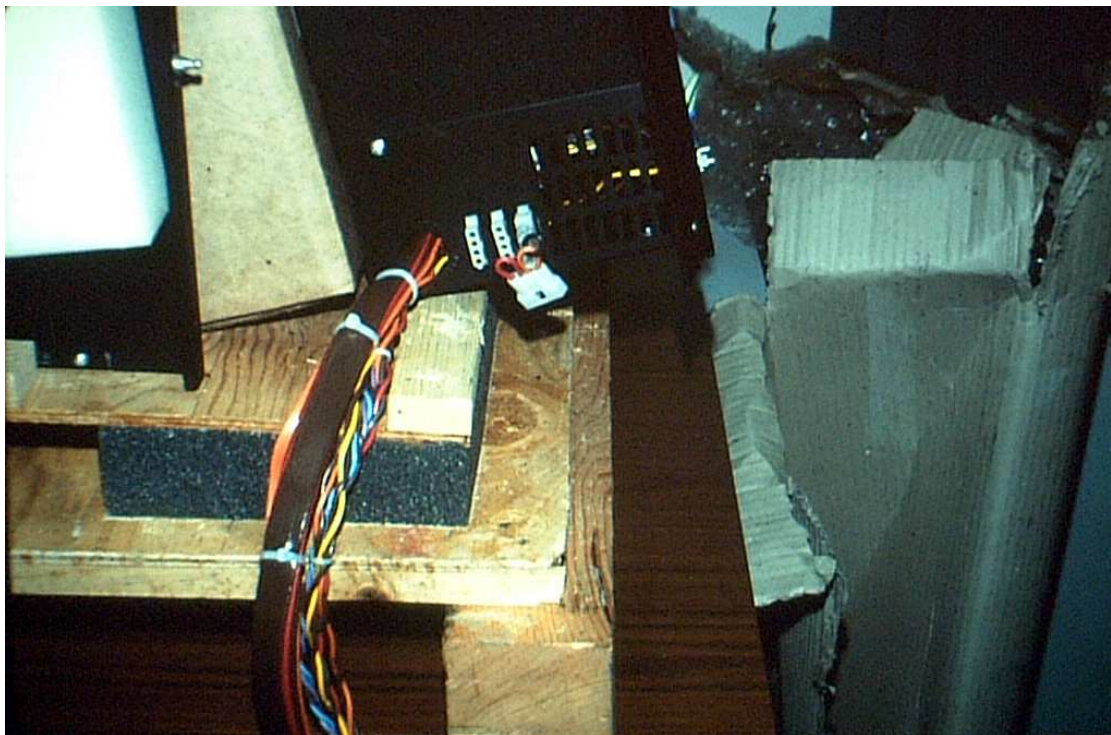


Figure 14: VICOM side cable entry exposed from its packaging arriving in the department