Olivetti Research Local ATM to G703 Adaptor
G703 Thing

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The G703 Thing connects 100 Mbit Local Area ATM framed on TAXI transmission to unframed G703 at 34 Mbit/second.

The G703 Thing V1 has four ports, as follows:

Port 1: 9 pin D male carrying a pair of transformer coupled ECL level differential chanels of AMD TAXI format, one for in and one for out.

Port 2: A pair of 50 ohm BNC coaxial connectors, transformer coupled, carrying AMD TAXI format signals, one for in and one for out.

Port 3: A single 50 ohm BNC coaxial connector, trasnformer coupled carrying AMD TAXI format signals bi-directionally.

Port 4: A pair of 75 ohm BNC coaxial connectors, transformer coupled, carrying HDB3 bipolar signals at 34.368 MHz conformant to the G703 spec, one for in and one for out.

A three position switch seletcs one of ports 1-3 to be connected to port 4.

An internal link selects whether the transmit side of port 4 is clocked from a local crystal or from the the receive side recovered clock of port 4.

The TAXI side cell format is as follows:

> A cell starts with TAXI command code 2 and consists of the next 53 bytes. Any number of synch words may be present at any point in the cell or between cells.
>
> The transmitted TAXI format is similar, except no synch words are inserted mid-cell and at least one synch word is inserted after a cell. This is conformat to the ATM UNI spec.

The G703 side cell format is as follows:

> A cell consists of 53 bytes sent bit serially with the msb of each byte first. One cell follows exactly 53 bytes after the preceeding. The cell header check is used for receive cell alignment. The stream is padded with empty cells where necessary, but these are not seen by the TAXI ports. (There is no DS or E series framing, B or D channels. Bits are sent with raw ATM framing.)

1 G703 Thing Operation.

Cells are received from the selected TAXI link into a 40 cell deep fifo memory. The incoming header error check is currently ignored and a new one always added (NOTE: this should be changed so that incoming bad HEC cells are togged). Cells are read out of the fifo and transmitted on the G703 link when this fifo is not empty. When it is empty, cells with a header field of 32 zeros a HEC of 55 hex and a payload of 48 zero bytes are transmitted on the selected G703 link.

Cells are received from the selected G703 link and written into a 40 cell deep FIFO if the first 32 bits of the header are not zero. When the fifo is not empty, cells from the fifo are read out and transmitted on the TAXI ports.

Cells received from the G703 link with bad header error check are discarded. If 8 consecutive bad HECs are encountered, the receiver will unsynchronise and scan for 8 consecutive good HECs (including HECs of idle cells) before resuming cell forwarding.

2 G703 Thing Physical Construction.

The unit is housed in a 2U heigh 19 inch rack module with integral switched mode PSU. All connectors and switches are front panel mounted except for the mains input.

There are 6 LED status indicators at last count:

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 1 - Cell Out       - Flashes when a cell is sent on G703
 2 - G703 Synch     - Incoming G703 link carries a cell stream.
 3 - Cell In        - Flashes when a cell is received from G703
 4 - FIFO Overrun   - Too many cells are coming from the TAXI side.
 5 - TAXI Violation - Incoming TAXI link error.
 6 - G703 weedy     - On when the received G703 signal is low in level.
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Led 4 is cleared with an indicator clear push switch. The others go on and off of their own accord.

Summary of important features: G703 is unframed. The LATM cells must have a header error check. Cells with zero or 1 header cannot be sent.