Aurelia Microelettronica
Micro-Art of Technology

- FPGAs
- ASICs
- BOARDS
- Rad-Hard

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Space Activities

- **Main Projects:** ATV, Pamela, ASI projects, I PPM (by ESA)

- **Main Developments:**
  - Centre of Competence for ATMEL DMI LL technology
  - CASA2: first CAN bus controller for space application (MG2RTP ATMEL rad-hard technology)
  - SSPII: 12bit, 5MHz ADC (DMI LL technology)
  - SELP: Single Event Latch-Up protector (DMI LL technology)
  - CAN bus transceiver compliant to ISO 11898 standard

- **Capabilities:**
  - Design of mixed signal ASIC in rad-hard technology
  - April 2003: Aurelia becomes the European Aeroflex/UTMC Design Centre (collaboration agreement)
  - VHDL development and fitting on UTMC rad-hard FPGA
  - Access to irradiation test facilities
CAN bus experiences

- **Starting in 1999:** release of the ALPHA 1.1 provided by ESA
  - CAN 2.0B protocol partially implemented
    - Overload and Remote Frames not supported
    - Not continuous synchronization but only at message starting
- **Middle of 2000:** first ASIC prototypes
  - DMI LL CMOS 0.8μm process
  - Standard CPU parallel interface
  - Some bugs in protocol management
- **End of 2000:** collaboration with Alenia Spazio and Russian Space Agency to develop a new CAN bus controller (CASA2) for ATV (Automated Transfert Vehicle) programme
  - CAN 2.0B protocol fully compliant
  - 8-bit programmable 8051 interface
  - Successfully passed VHDL BOSCH testbench
- **2003:** the new HarriCANe CAN core version (HurriCANe 5.0 ?) has been delivered to ESA
- **2004:** CASA2 has been used in an Italian Space Agency project (CASTA) with embedded micro-controller (8051) and other peripherals
CAS A2
CAN ASIC for Space Application

ACAN (HurriCANe v5.0 ?)
2002: CASA2 has been licensed to ATMEL (PN: AT7809E)

ATMEL MG2RTP Rad-Hard Sea of Gate
- Error handling and Stuff bit generation
- CRC and ACK generation
- Interrupt on:
  - Telegram sent/received successfully
  - Buffer overflow receiving
  - Bus off condition
  - Error passive condition
- Operating Frequency 16 MHz, FC-SSA: 99.79%

Since 2002 has been used CASA2 in:
- 150 Electrical Model on RT ACTEL FPGA
- 44 Engineering Model ASI Cs
- 1330 Flight Model ASI Cs

Aurelia is ATMEL technical reference for what concerns CASA2. Up till now any anomalies has not been detected

Comment: Difficult to follow the IPs version evolution