TileCal-IFIC Upgrade Project Meeting

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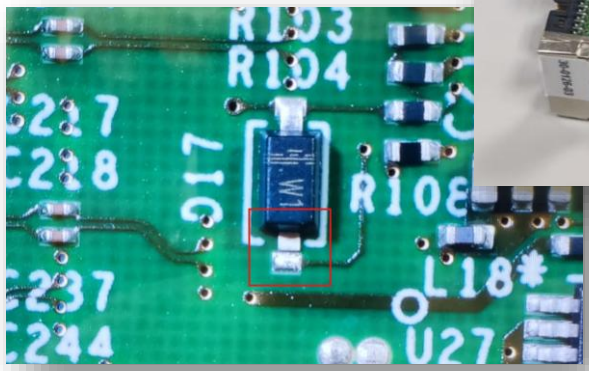
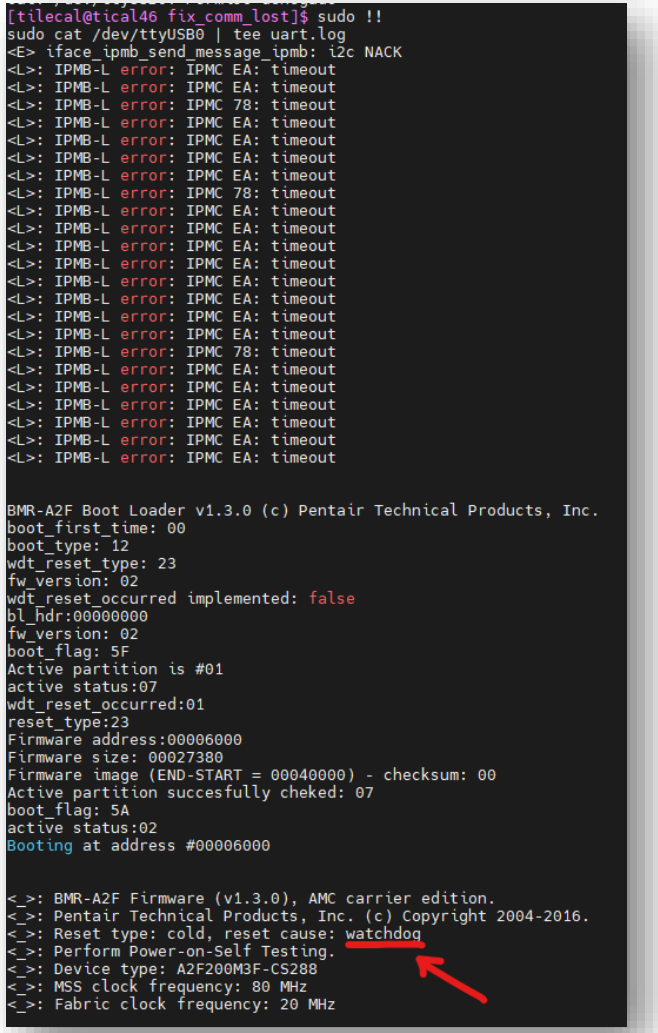
CPM validation

- I validated four CPMs before sending them to CERN.
- One CPM did not receive payload power when I inserted it into the carrier.
    - I found that diode *D17* had been **incorrectly soldered** during production.
    - ✅ After resoldering it, the CPM received payload power and operated normally.
- I also registered the CPMs and their current locations in the production database.
- Finally, the four CPMs were prepared and sent to CERN for the **PRR**.
    - *CPM-30-0626-08*
    - *CPM-30-0626-09*
    - *CPM-30-0626-10*
    - *CPM-30-0126-03*



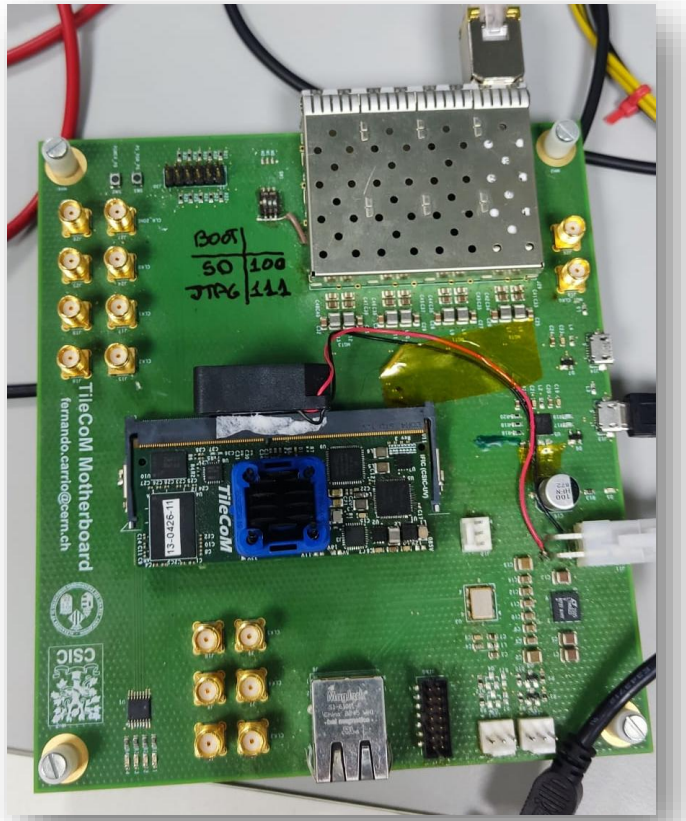
TDAQi power lost Debug

- I prepared parched version of the TDAQi MMC firmware to prevent Carrier power lost.
  - The objective was to correct a possible problem in the *ipmb_send()* function.
  - This function could modify the transmission buffer while a previous transmission was still active.
- During the first long test, the CPM changed from M4 to M7 after 20 hours.
  - The payload remained active. ✅
  - The IBERT test continued running without errors. ✅
  - We lost management communication with the CPM. ❌
- For the next test, I applied the same type of communication patch to the CPM.
  - The objective was to apply correcting IPMB communication in the CPM and the TDAQi would prevent the communication loss.
  - However, the result was worse than in the previous test. ❌
  - The UART showed IPMB-L errors from both the CPM and the TDAQi.
- A more serious failure occurred during this test.
  - The carrier then restarted because of a **watchdog** timeout.
  - The CPM, the Carrier and the TDAQi changed to M0.
  - This time, we lost the payload and the IBERT test stopped.
- For future work: we focus on the shared IPMB-L bus and the carrier recovery mechanism.



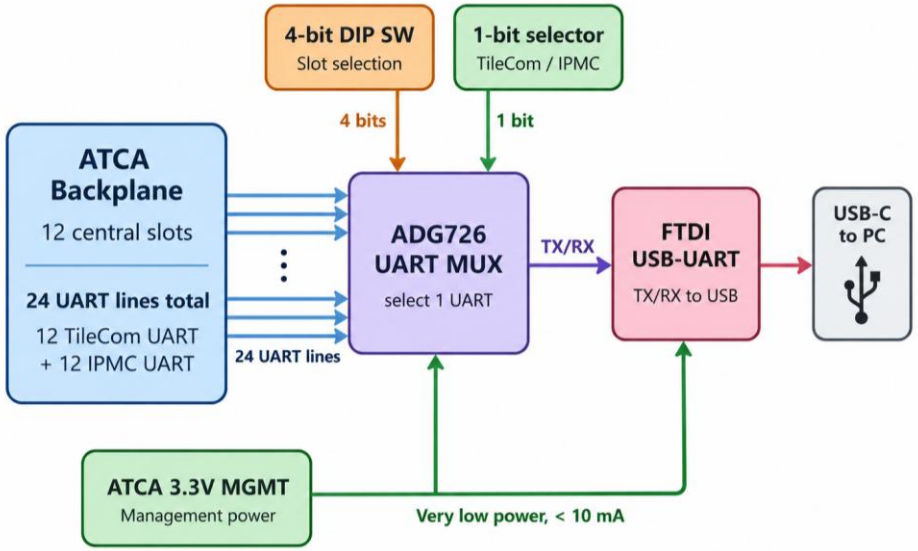
TILECOM Clermont Debug

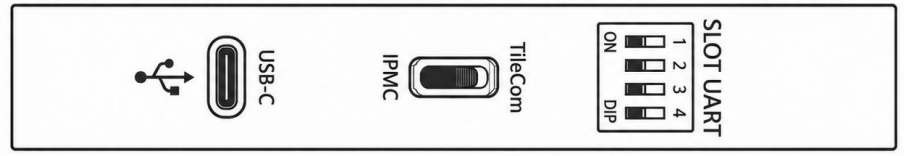
- Clermont sent us TileCom (*TCO-13-0426-09)* because it sometimes failed to boot correctly.
    - The problem appeared after configuring the clocks.
    - They had to restart the TileCom several times before it booted correctly.
    - Following our recommendation, they separated the decoupling capacitors from the TPS thermal pad -> but the problem continued.
- I tested the TileCom with two different configurations.
    - Our usual SD card image.
    - The SD card image provided by Clermont.
- I also tested different power and connection conditions.
    - A laboratory power supply between 11 and 13 volts.
    - The TileCom connected to a carrier on the laboratory bench.
- The TileCom booted correctly in all our tests.
    - We could not reproduce the problem observed in Clermont.
    - I am currently analysing the Ilana motherboard schematics and comparing the connections to find a solution.



ATCA UART debug board

- I would like to desig a board to access the UARTs of the 12 slots from the front of the ATCA shelf.
    - Each slot has one TileCom UART and one IPMC UART.
    - This means that the board will provide access to 24 UARTs in total.
- The UART selection will be completely manual.
    - A 4-bit DIP switch for select the slot.
    - A two-position switch for select either TileCom or IPMC.
- A multiplexer system, will connect the data signals to an FTDI USB converter with a USB-C connector.
- The board will use the management 3.3 V.
    - The board will not negotiate or enable payload power.
    - The initial target is to keep the current consumption below 10 mA.
- The next step is to validate architecture and discuss de design.





Sensor readout through IPMB-L

- At present, TileCom reads the carrier sensors through the I²C bus shared with the IPMC.
  - TileCom publishes these sensor values to the OPC server.
  - During the PRR, the reviewers warned that having two masters on the same bus could cause collisions and recommended avoiding this configuration.
- The proposed solution is to connect TileCom to IPMB-L.
  - TileCom would request the sensor values from the IPMC using IPMI commands.
  - This would be cleaner than reading the IPMC UART and parsing its text output.
- Only a few changes would be required on the carrier.
  - Connect the two IPMB-L lines and add an I²C buffer.
  - Implement the ipmb_send() routine in TileCom.
- TileCom would appear on IPMB-L as a device or FRU, without implementing power management with the Shelf Manager.
  - An FPGA enable pin would tell the IPMC that TileCom is present.
- We would like to discuss this proposal with Fernando and Albert to confirm that he considers it viable and agrees with this solution.