

## Tile Calorimeter

20) In your documentation, you describe simplifications of the Tile ELMB2 motherboard.

Can you explain what allowed this simplification and if it has any impact on the performance of the circuits?

This is related to the single brick control. The simplification is the decision to use a tri-state voltage control instead of counters or registers that turn on/off individual bricks. This reduces the number of components needed. There is no impact on the performance of the circuits.

21) What is the magnetic field at that location in ATLAS? Have the components been tested in that field?

For the fingers, we have up to 20 Gauss in normal fingers and up to 50 Gauss in some special fingers. The transformers we use on the bricks are rated for up to 100 Gauss. But we also have a few inductors in the bricks. We are planning to perform magnetic field tests on the entire LV box to make sure that brick's performance would not be affected under magnetic field.

The Main Board has already been tested in magnetic fields 20 times higher than the ambient field.

22) How will the experiment pilot inform the production? Does the production start before that pilot program sees beam?

The demonstrator drawer inserted in ATLAS is primarily a field test of the mechanical structure, power dissipation and ambient noise. These have all passed. Going forward, the demonstrator provides a platform for testing the back-end electronics, communication of slow controls, and trigger configurations.

23) Does the long board get extensive temperature cycling? Are there hidden vias?

The Main Boards are burned-in at 60C for 5 days as part of the production process. We have not experienced any temperature related failures on the 20 boards produced so far. Yes, there are hidden vias on this 14-layer board.

24) Are there really fuses in the low voltage power supply?

We do not have any fuses on the bricks themselves. But the 200 V input is being distributed to the bricks through a fuse board in the LV Box, with individual fuses for each brick. There are also some fuses on the output voltage of the bricks, which are located on the mainboards. These are supposed to disconnect a faulty mainboard side from one brick.