

Project Monitor Form

Project: CMS FED Date: Friday 21 May-2004	PMF number: 46 Sheet: 1 of 2
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Project Implementation phase.

FEDv1:

Temperature Tests

The initial temperature measurements at RAL with 5 FEDs in a crate (at OptoRx but not driving OptoRx) were in broad agreement with Imperial measurements (see accompanying photos & spreadsheet). Worst case central slot temp about 60 degrees. Cards were positioned in crate to fully enclose a set of fans.

Tried moving fan tray, but found that positioning of fans in CMS crate (slightly set back) was already optimal.

After some trials found a position for an air deflector (cardboard) bar, which reduced temp by about 8 degrees.

Adding a simple heat sink over 8 OptoRxs gave a minor improvement by evening temperatures by about 1 degree.

Conclusion is that single air deflector should be sufficient. This bar also provides strengthening.

Other recommendations:

Measurements of ADC temperatures should be made at Imperial with similar bars in place.

Measurements should be repeated in a water-cooled rack when available (at Preveessin CERN).

The ADCs should be disabled during breaks in data taking.

The 3 slots in crate which get a restricted air flow should not be filled with FEDs.

Other Items

Hot Swapping:

The effects, whereby when a FED was inserted into a live crate it sometimes caused resets on other FEDs already in crate, were cured by the removal of one de-coupling cap on 12 V. Verified also that live insertion of one board did not affect VME readout running on a second FED in crate.

NB After inserting a FED into a live crate it will require an explicit power reset (FP button press).

Encouraging results, but don't advise trying Live Insertion until more extensive tests are done.

Verified that readout of max size Scope Mode events (with event size of 192 Kbytes) is working.

Verified sending BX reset at each new orbit from TTCvi over chan B resets FED counters correctly.

One board has gone to DDi to have the "FEDv2" QDR memories fitted.

FEDv2

Draft FEDv2 schematics (ver A) were checked and reviewed. Only minor items identified. JTAG chains slightly modified to facilitate reprogramming of VME EPROM by back plane cables. This also simplifies jumpers on board.
Refer to Problem Reports and Saeed's full list of modifications.

An internal review of FEDv2 Layout was held on May 5th.
The layout of the FE modules was well advanced. A new package for the VREF was necessary. The suggestions from the DDi report will be implemented where practicable.
The layout is on schedule.
Updated schematics (ver B) with ref designators released on May 13th.
Will do final review at the beginning of June with a view to putting job (2 FEDv2s) out at beginning of July as scheduled.

Other Items

Abstract for paper on FED Manufacture submitted to LECC.

Test Beam at CERN.
Plan for Saeed and Ivan to visit a couple of days during week of 7th June.
Need now to check status of mods on FEDs at CERN needed for Test Beam , eg TTCrx, S-LINK.

10 remaining Front Panels being made for Francois. Order for parts for another 50 placed.
Orders for Analogue parts for 30 boards placed.

Discussions in progress with James concerning design of new Transition card.