Status of Opto-Board Production

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Introduction

- 3 opto-board flavors
  - nSQP D opto-board (disk, L1, L2): 7 TTC + 14 data links
  - nSQP B opto-board (B-layer): 7 TTC + 14 data links
  - IBL opto-board: 8 TTC + 16 data links
Production Status

- Total fabricated: 417
  - Good: 382 (1\textsuperscript{st} class: 372, 2\textsuperscript{nd} class: 10)
  - Bad: 26
- To be QA’ed: 9
- To be wire bonded/QA’ed: 4 B + 3 D

Date

Boards

K.K. Gan
Summary of Failed Boards

Failed Opto-Boards

- 8 Low IVDD
- 7 Mechanical
- 5 Others
- 4 Leaky PIN array
- 2 Bad DORIC (duty cycle)
- 5 Bad VDC

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Problematic Epoxy

- Detachment of MPO connectors on several boards (< 10) early in the production
- 22 boards used epoxy with different color
  - replace all MPO connectors
    - 30 insertion tests performed on 40 connectors before removal
      - 10 insertion tests during QA
      - no connector detached after 40 insertion tests
      - expect no detachment under normal operation
  - 19 boards successfully recovered
IBL Board Status

- Good: 47+14 (DBM+AFP)
- Needed: 28
- Spare: 15
- 85/85 test: 2
- 50/50 test: 2
- All boards at CERN passed CERN reception test
B Board Status

- Good: 52
- To be wire bonded/QA’ed: 4
- Needed: 44
- Spare: 6+4
- 85/85 test: 1
- 50/50 test: 1
- All boards at CERN passed CERN reception test
D Board Status

- Good: 265
- To be QA’ed: 9
- To be wire bonded/QA’ed: 3
- Needed: 228
- Spare: 43
- 85/85 test: 3
- 50/50 test: 3
- All boards at CERN passed CERN reception test
Stress Test on Opto-Boards

- Industry standard: opto-boards should survive for 1,000 hours at 85°C/85% relative humidity
- Started the test on two IBL boards
  - D and B boards will be added in the next weeks
- After 2,000 hours, repeat the test on new boards at 50/50 for months
Extended Burn-In

- Few of the 400 boards have problems after burn-in/thermal cycles:
  - 1 VDC
  - 8 VCSEL arrays have low power
  - 4 leaky PIN arrays
  - must keep opto-boards powered to weed out infant mortality
Summary

- IBL boards production completed and delivered
- Build 4 more spare B boards this week
- Complete fabrication of spare D boards this week