Station Board Testing

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Test Setup

- Station Board
- Card Carrier & Fans
- 48 V Power Supply
- Oscilloscope
- Logic Analyzer

- 48 V Power Supply
- ethernet switch
- CMIB
- FORM
- 48 V power supply
- laptop
- ethernet
- switch
- timecode
- data
- server
- files
- software
- external network
- bench
Block Diagram
CRC Testing
Test Vector Generators

- Fiber Optic Receiver Module (FORM)
  - RAM based but same for each bit (or off) for CRC tests
- Input FPGA
  - RAM based
- Delay Module
  - Can hold 0.262144 seconds of data
  - Can be set to cycle at any length (probably set at 25 interrupts)
  - Software generated contents include
    - Receiver noise
    - Signal tones and noise with delay and phase rotation
    - Calibration tones
    - Delay models for use by CMIB
- TBD mini data generators in some FPGAs
Measurements

- **Delay Module**
  - Measures its own delay

- **Filter FPGA**
  - Tone extractor
  - Other (power, state counts, clip counts, …)

- **Output FPGA**
  - Data recorder (radar mode)

- **TBD mini data recorders in some FPGAs**
Automatic Tests

• During prototype testing use of logic analyzers, scopes, etc is OK but, during production, boards must be tested in an automatic, computer controlled test fixture.
• The test fixture used for testing failed boards found and replaced during normal operations could be the same as for the production phase.
• The test fixture should be able to test all board types but Station and Baseline board testing are essential.
• The automatic tests should be able to identify paths/chips that need attention/replacing. They may use special purpose FPGA designs.
• The test fixture will consist of a working system. A working board of the same type will be replaced with the board to be tested and a set of tests performed following a canned script.