

Electrical Test Plans

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APA Production Testing

- X, V, and U wires will be tested for continuity and isolation by probing through X head boards
- Probe cards will be mounted in place of CR boards
- A separate set of probe cards will be mounted in place of G-bias boards
- Similar or identical probe cards would be used for Electronic Tension Testing

APA Production Testing

- Continuity and low-impedance isolation tests will be streamlined by injecting signals with four different audio frequencies on all wires simultaneously
- Foot board terminations are probed individually
- Test points probed in rapid succession will produce a repeating succession of four tones
- Missing or mixed tones will indicate a problem

APA Production Testing

- High-voltage isolation and leakage tests can be streamlined by testing groups of 10 or 12 wires connected in parallel
- When a group fails, individual wires can be probed to isolate the problem
- Normal testing would proceed 10-12 times faster than testing wires individually

Wire Tension Testing

- An upgraded laser tensometer is easier to position, computes the resonance frequency, and records data with less user intervention
- Upgrades will cut measurement times in half
- Still needed as a backup to Electronic Tension Testing

CR and G-bias Board Tests

- Probing of individual capacitors and resistors is very slow due to exponential decay of charging currents (pre-charging helps)
- Automated testing is challenging because of high voltage (1 kV) and high impedance (10^{10} Ohms)
- A high-impedance comparator that monitors current thresholds as small as 0.1 nA has been demonstrated

CR and G-bias Board Production Tests

- An envisioned test system would check the power-up response of an entire PCB by monitoring the charge current through each coupling capacitor (or G-bias filter output)
- Defective components would alter the transient signatures of individual channels
- Threshold crossings that occur too soon or too late would reliably indicate defective parts