GLAST Large Area Telescope:  
Tracker Test Changes  

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Tracker Test Changes

- Working group has been walking through the tracker tests
  - Hiro, Eduardo, Larry, Pat
- Goal was to do a detail review of the test descriptions
  - They were based on the subsystem test
  - Review was to
    - See how the system test environment affected the test write-ups
    - Examine durations of the tests
    - Determine which of the tests verified Tracker Level 3 requirements that will be sold off at the Tracker level
      - Some of these tests were eliminated from the system level tests because problems would be caught by other tests and the precise measurements were not necessary
      - Some of these tests were eliminated because a similar test of the entire LAT will be performed (e.g. Deadtime)
- This presentation is my cut at the results of the discussion – I’m sure that the other members of the team will catch any omissions and errors and tell me discretely about them after the meeting
Detailed Test Description Changes

- All tests have been revised to use the default register settings unless otherwise specified in the test description
  - Where appropriate the test results will be compared to the default settings to see if the defaults should be updated. This will be an engineering evaluation separate from the formal acceptance test
  - We used the term “default register settings” instead of “default configuration” since the configuration also includes hardware redundancy.

- TE100 (Tracker turn-on and power consumption) has been expanded to cover all housekeeping telemetry relevant to the Tracker (including TEM telemetry)

- TE301 (Gain and Noise Measurement) was modified to include a shorter test for the LPT
  - Reduces the number of channels to get a reasonable test duration
  - Checks GTFE functionality rather than individual strips
Detailed Changes (Continued)

- **TE302 (Single Strip Noise Occupancy) acceptance criteria modified**
  - Acceptance criteria is less than 16 channels per MCM)
  - Changes to list of noisy channels will undergo engineering evaluation
- **TE303 (GTFE Trigger Test)**
  - Hiro will investigate methods for shortening this test so that it is appropriate for the LPT
- **TE401 (Self-Triggering Test) observes the quality of the trigger**
  - This is a long test, Hiro will investigate possibility of shortening
  - May move to analysis of the 24 hours of muons for SVAC
- **TE502 (Efficiency, Resolution and Alignment)**
  - Not strictly calibration, but is a characterization test. May move to SVAC test set
- **TE702 (Trigger Jitter Measurement)**
  - To be discussed with Su Dong, possibly part of a higher level test
Tracker Test Matrix Changes

- TE102 will be used only at the Tracker receiving test
  - TE100 augmented to check temperature telemetry functionality
- TE501 (Layer noise occupancy) and TE502 (Efficiency, Resolution and Alignment) have been removed from the LPT
- The 600 series has been moved to the SVAC collection period
  - TE601 (Threshold Calibration)
  - TE602 (TOT Conversion Parameter Calibration)
  - TE603 (MIP Calibration/ Trigger Efficiency Measurement)
- TE701 (Threshold Dispersion) is only used for the incoming inspection
  - Noise and Gain test is perceptive for issues that would show up here
- TE702 (Trigger Jitter Measurement)
  - Only in receiving test and 2 Bay CPT
  - Existence in 2 bay CPT to be reviewed with Su Dong
- TE703 (Dead Time Measurement)
  - Also a system level requirement, and tested at the LAT level
- TE704 (Noise Occupancy with Readout in Progress)
  - Only in receiving test, 2 bay CPT and multibay CPT
  - Look at making a lat level test that covers TRK, ACK and Cal
# Tracker Test Matrix

<table>
<thead>
<tr>
<th>Test Title</th>
<th>TEM/TEPS Receiving</th>
<th>TRACKER Receiving</th>
<th>GEM Receiving</th>
<th>SIU Receiving</th>
<th>EPU Receiving</th>
<th>ACD Receiving</th>
<th>CAL/TEM/TEMPS Integ.</th>
<th>GASU integration</th>
<th>PDU integration</th>
<th>SIU Integration</th>
<th>EPU Integration</th>
<th>ACD Integration</th>
<th>Heater Ctrl Box Integ.</th>
<th>Single Bay LPT</th>
<th>Single Bay CPT</th>
<th>Two Bay CPT</th>
<th>Multibay LPT</th>
<th>Multibay CPT</th>
<th>ACD Integration</th>
<th>LAT LPT</th>
<th>LAT CPT</th>
<th>Periodic Data Collection</th>
<th>SVAC Collection</th>
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