GLAST Large Area Telescope:

Test Planning

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Test Planning Overview

• **Background**
  – Team is currently planning tests up to the two (plus) tower test
  – Test configuration uses the EM GASU and PDU with no EPU or SIU
  – Implementation relies on:
    • Test definitions and scripts from Subsystems
    • Test definitions from End-to-End Test Committee
    • Off-line calibration code from SAS and Subsystems
    • I&T generated integrated timing-in and trigger tests
• I&T IRR scheduled for July, 2004
  – Need I&T testing through two towers ready to go by that time
Integration Flow Overview

TEM/TEM PS

Calorimeter

Tracker

TEM/TEM PS Receiving Test

Calorimeter Receiving Test

Tracker Receiving Test

Cal/TEM/TEM PS Integration

Tower Integration In EM Bay

Tower Integration in Grid

Multi-Tower Test
Test Strategy

- Receiving tests use Subsystem provided test suite
- Integration tests combine portions of receiving tests of the subsystems being integrated, plus any additional testing to verify interfaces
- To be defined “timing-in” tests
- Single bay and multibay tests add system level tests as defined by the End-to-End Test Committee
  - Not including the power up and configuration testing
E2E Recommendation Interpretation

- **Power up and Configuration tests**
  - Includes power feed, boot, LAT power on and LAT configuration testing
  - For integration testing through two+ tower tests, the power up and configuration tests will be replaced by integrated tests from Subsystem scripts

- **Subsystem CPTs**
  - Repeat of selected portions of the Subsystem Test Suites
    - Need help in selection process
      - Maintain the chain from subsystem level testing for comparison purposes
      - Establish the baseline of subsystem performance for the integrated system (e.g. initial timing settings and specific performance parameters to monitor throughout LAT testing)

- **Integrated trigger tests**
- **Data handling tests**
  - Integrated system baseline plus configuration variations
  - Environment variations (thermal)
Data Analysis Strategy

- Power up and Configuration tests
  - Test scripts provide go/no go indication and test report
- Subsystem CPTs
  - Subsystem test scripts provide first pass analysis and should provide go/no go indication and test report
- Integrated trigger tests
  - I&T test scripts provide first pass analysis and should provide go/no go indication and test report
- Trigger and Data Flow tests
  - I&T test scripts provide first pass analysis and should provide go/no go indication and test report
  - SVAC off-line analysis
Assumptions/Issues

- The tests are probably too long and Subsystem scripts need to be modified to support parallel tower tests
- Need to reconcile analytical differences between a subsystem test and the equivalent tower test when additional data are available (e.g. Cal test when tracker data is available)
- Turn-on Sequence definition
- Process for determining timing of the subsystems and trigger settings
- Some subsystem and LAT verification plans/matrices are not complete, adding risk that necessary tests are not recognized
- I&T is defining the strategy for power up/power down to limit power cycles
- I&T will implement a unified register test for tests during integration
Subsystem Support Needed

- Updated Verification Plans
  - Verification matrices
- Interface verification plans
- Test procedures, scripts and go-no go acceptance criteria
- SAS calibration scripts
- Representative to support planning effort
  - Help select subset of Subsystem Test Suite to be performed at the integrated level
  - Help select parameters to be trended, the form of trending and plan for providing necessary subsystem parameter history
  - Help define how often EGSE and SAS calibrations are performed and correlated
  - Sign off on completed test plan