Special Test Request Form	STR Number 35

Part 1 – Test Definition Section

Test Title: Investigation of trigger requests during dead time with a single CAL Module	Test Requestor: L.Wai

Test Purpose and Justification:
Analysis of muon data from STR33 has revealed that the excess counts in the GEM Discarded counter are the result of spurious trigger requests from CAL-LO and CAL-HI. These requests have a particular time signature. Comparison with data from SVAC runs during 2, 4, and 6 towers indicates that the rate of discarded events is increasing with increasing numbers of towers. Why the rate (or likelihood of occurrence) of these discarded events depends on the number of towers being tested remains a mystery.

The working hypothesis from the CAL group is that these discarded events are the result of pickup of readout noise in the CAL-TEM system. This pickup is independent of the trigger source. Module-level testing has shown that some GCFEs are more susceptible to retriggering than others, so we speculate that the discarded events are another tracer of varying susceptibility. Thus it is important to investigate individual Modules with a GASU (which was not available to the subsystems).

We propose to perform a test similar to STR33 on individual Towers in the LAT, except also using a 1kHz external trigger source. We set CAL FLE and FHE thresholds to their flight values (as in STR33) and systematically disable the CAL-LO and CAL-HI triggers.

Test Description:

1. Use existing schema for bay 1 only (used for Trigger group treq scans).
2. LAT can have any rotational orientation for this test.
3. Setup the external trigger for 1kHz periodic from the pulse generator.
4. Collect 5 minutes each of End2End run config IDs B-24, B-25 (no cal lo), B-26 (no cal high)
5. Repeat for each other bay in the grid, using the corresponding single bay schema, with the following sequence: 5,12,13, 8, 9, 0, 4
6. If it appears we will run out of time due to schedule constraints, delete B-24 tests.
7. If data volumes are a problem for any of the runs on bays 0 and/or 4, abort the remainder of the runs for that bay.

GSE Configuration:

EGSE: Current configuration used for 8 tower test under LATTE 4

LAT Configuration:

8-towers.

Expected Results/Acceptance Criteria:

Offline results: Analysis of GEM discarded event distribution and time structure using s/w tools developed for STR33

Acceptance criteria: Data taking completes.

Expected Duration:

Test duration: 6 hr including setup

Expected Analysis Duration:

1 day

Test Procedure:

Based on STR33

Test Script:

e2e runs B-24, B-25, B-26

Part 2 – Impact Assessment Section

Procedure development:
Write down the steps in the work order; use existing procedures for tests.

Script development and checkout:

None.

Impact to schedule:

6-hrs for power-on, test, power-off of the LAT.

Risk Assessment:

No significant risk

Required Resources:

- 1-hr of Brian Grist to write the work order
- 6-hrs of test conductor/operator/QA for LAT test

Other Affected Parties:

SVAC/IFCT – offline analysis of data for results and post-test report.

Part 3: Signature Approval:

Required Authorizations	Printed Name	Signature	Date
Quality	Joe Cullinan	(Signature on file)	Sept 19,2005
I&T	Elliott Bloom	(Signature on file)	Sept 17,2005
Program Office	Lowell Klaisner or Dick Horn	(Signature on file)	Sept 19,2005
Systems Engineering	Pat Hascall	(Signature on file)	Sept 19,2005
Affected S/S managers	N/A		
Instrument Scientist	Steve Ritz or Eduardo do Couto e Silva/Anders Borgland	(Signature on file)	Sept 19,2005
IFCT	Larry Wai	(Signature on file)	Sept 19,2005
Calorimeter	Eric Grove	(Signature on file)	Sept 19,2005
Other	N/A		
Other	N/A		