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Steps to completing a system test

DSM Testing and Completion

1. Initial software tests
2. Test all DSMIs
3. Troubleshoot boards that do not pass initial test and re-test.
4. Learn to use RCC.
5. Test RCC/RCF function for run/stop, halt, latch address, set phase.
6. Use RCC/RCF for single phase test of 2 chained DSMs
7. Use RCC/RCF for single phase test of multiple boards (up to 17) every board is tested and first, last and middle of the chain block transfer chain. In addition, test run/stop, and latch address commands from the RCC/RCF to the DSMs.
8. Test chaining DSMs output/input for 4 layers with a single phase.
9. Test chaining DSMs output/input for 4 layers adjusting phases to optimize data transfer time.

TCU Testing and Completion

1. Finish TCU VHDL.
2. Run standalone TCU software tests.
3. Complete timing chain with RCC => RCF =>TCUI => TCU => TCUI => PDC => TCD => Cable driver => CDB, MWC.
4. Add TCU to "DSM Testing and Completion" test #9 to give 4 layers of DSM + TCU and test TCU⇔DSM Communication. This includes DSM data input to TCU, DSM address shadowing on TCU and Halt functionality.
5. Verify busy bit handling.
6. Test distribution of triggers from the TCU using the chain DSM => DSMI => TCUI => TCU => TCUI => PDC => TCD => Cable driver => CDB, MWC

System Test

1. Setup system as per crate drawing.
2. Test CDB and MWC input to DSMs using voltage divider to provide data to CDBs.
3. Set timing on TCD distribution to CDB and MWC to optimize data transfer time.
4. Test full data transfer chain with voltage divider => CDB => DIB => DSMI => DSM => DSMI => TCUI => TCU => TCUI => PDC => TPC TCD => Cable Driver
5. Test full data transfer chain for issuing CTB/MWC Calibration Triggers.
6. Perform longevity test leaving system running for multiple days looking for errors.
7. Test removing and replacing boards and re-cabling.
8. Test software for system re-configuring with all functionality.
9. Carefully document system and generate timing diagrams.

Ship to BNL

1. Carefully assemble crates with CDBs, DSMs, TCU and auxillary boards in proper orientation for use at BNL as per system crate layout.
2. Load into shipping crates.
3. Load cables and other materials needed.
4. Ship to BNL.