

TCS

Testing Guide

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Contents

1	Crate Setup	2
2	Testing Random and Calibration Triggers	2
3	Testing Private Gaps	3
3.1	Configuration	3
3.2	Using TTCci XDAQ Interface	3
4	Check Synchronisation Cycles	4

1 Crate Setup

Preconditions

If Trigger-Supervisor services are not running, restart them by executing

```
$ gtgmt-restart
```

Check all required cable connection, refer to the *Crate User Manual*.

Configure Hardware

- Power up crate
- Execute `$ crate-restart`
- Open up Trigger-Supervisor GT Cell

Url: <http://el1cratepc:3228/urn:xdaq-application:lid=13>

- Go to *Control Panel* to *2 GT Configuration*, unlock the panel.
- Open *Configure GT...* menu.
- Select a proper database key, eg. `gt_2011_23_PixDtCscAutoresync`.

Note: Disabled *GTL* (if not using current Condition FW Version), *PSB* (if using OGTI module), *AutoColdReset* (to not access OGTI module) and *Require FW Version* for the following tests.

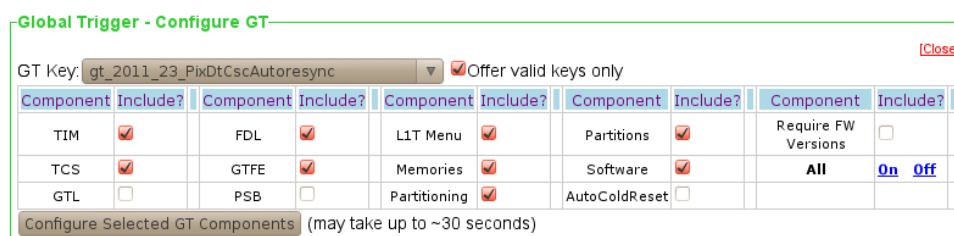


Figure 1: Configuration menu in the Trigger-Supervisor GT Cell.

2 Testing Random and Calibration Triggers

In the *2 GT Configuration* Panel, press *start* to start a new run.

Enable *RANDOM* Triggers.

The *Random Trigger Frequency* should be 600 Hz.

In the *3 GT Trigger Monitor* Panel, the rate must finally reach 600 Hz.

Go back to *2 GT Configuration* Panel, enable *CALIBRATON* Triggers.

In the *3 GT Trigger Monitor* Panel, the rate must finally reach 700 Hz.

Formula: $\text{RANDOM (600Hz)} + \text{CALIBRATON (100Hz)} = 700\text{Hz}$



Figure 2: Start Run and enable Random Trigger.

3 Testing Private Gaps

3.1 Configuration

Note: Requires a database key with following configuration:

- `EN_AUTO_PRIVATE_GAP_TTC_28_29 = True`
- `BC_NUMBER_PRIVATE_GAP = 2000` (example)

Alternative configuration without TS:

- Check Enable AutoResync (TCS GUI)

or

- `PTCX_CMD_REG[7] = 1`
- Set `PTCX_BC_TABLE0[3] + offset(BC_NUMBER)`

3.2 Using TTCci XDAQ Interface

- Monitoring: Goto TTCci XDAQ Interface (need to be configured properly, eg. by. crate-restart)
- State Machine: Enabled (check)
- Open Counter Window, *Counters & Status*, link is *show counters popup*.

Url: <http://ellcratepc:4000/urn:xdaq-application:lid=40>

- Run TCS GUI \$ `tcsGUI`, select *CAEN*, load *HW->GUI*
- Start Run at PTC0
- Watch counter window
- Use teh GUI to bring Partiton Status 28 or 29 int *Warning Overflow* state.
- Watch the PrivateGap counter in the counter window increment.

4 Check Synchronisation Cycles

- In the TCS GUI, open *Monitor Counters* (in PTC0 tab).
- Watch *Number of Resets: Synchronisation Cycles*

To force synchronisation cycles

- Go to Master tab, bring Partition Status of PT 28 or PT 29 to *Out of Sync* state.

The count of synchronisation cycles must increment each time.