Trigger Processor STATUS

21th AGATA Week

Electronics and Data Flow session

on Friday March 26, 2021

Trigger Processor development

Xilinx Evaluation Kit : VC707 (Virtex-7 XC7VX485T-2FFG1761C)

TRIGGER PROCESSOR

Aurora Rx

TS_48b_Reference **100%** → Label Sorter **100%** → Multiplicity **100%** → Acceptance **100%** → Coincidence **100%** → LE **100%** → Event counter **100%**

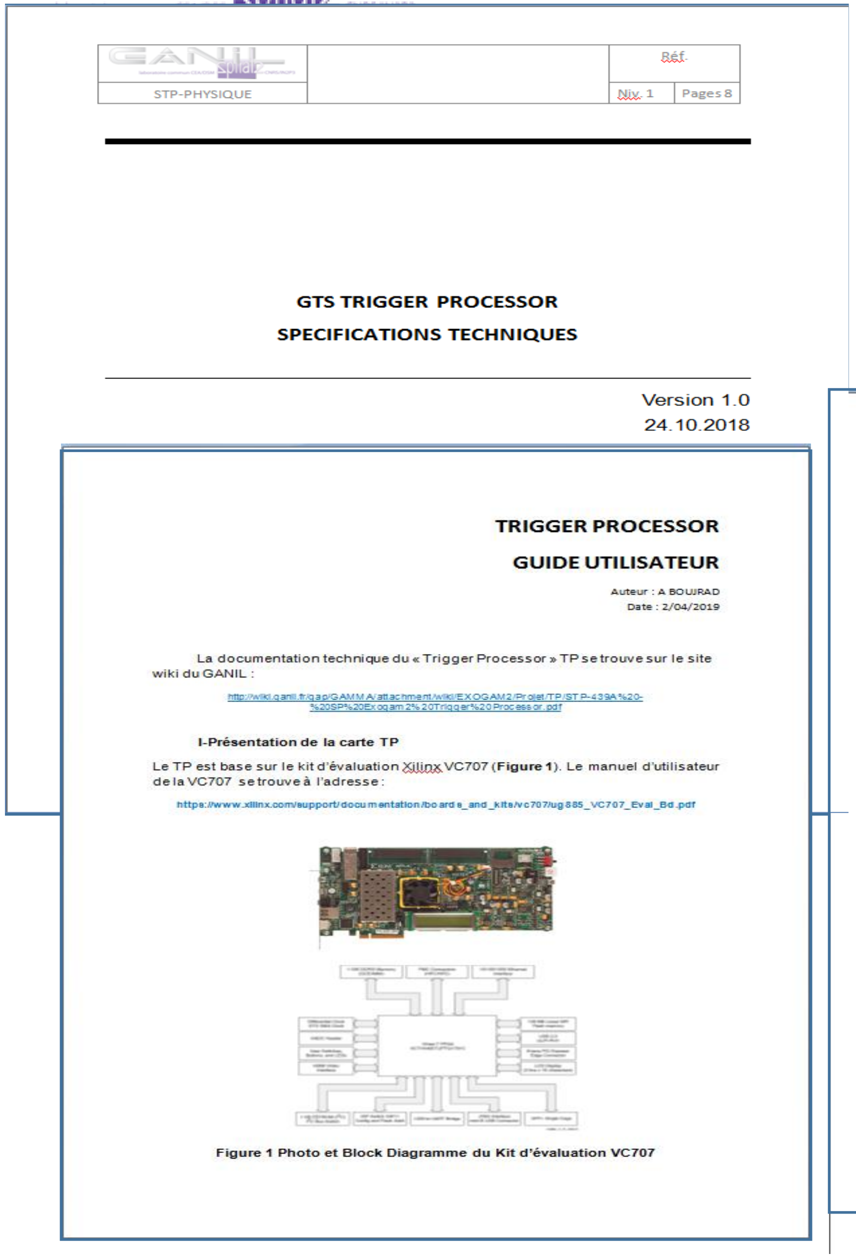
Slow control **100%**

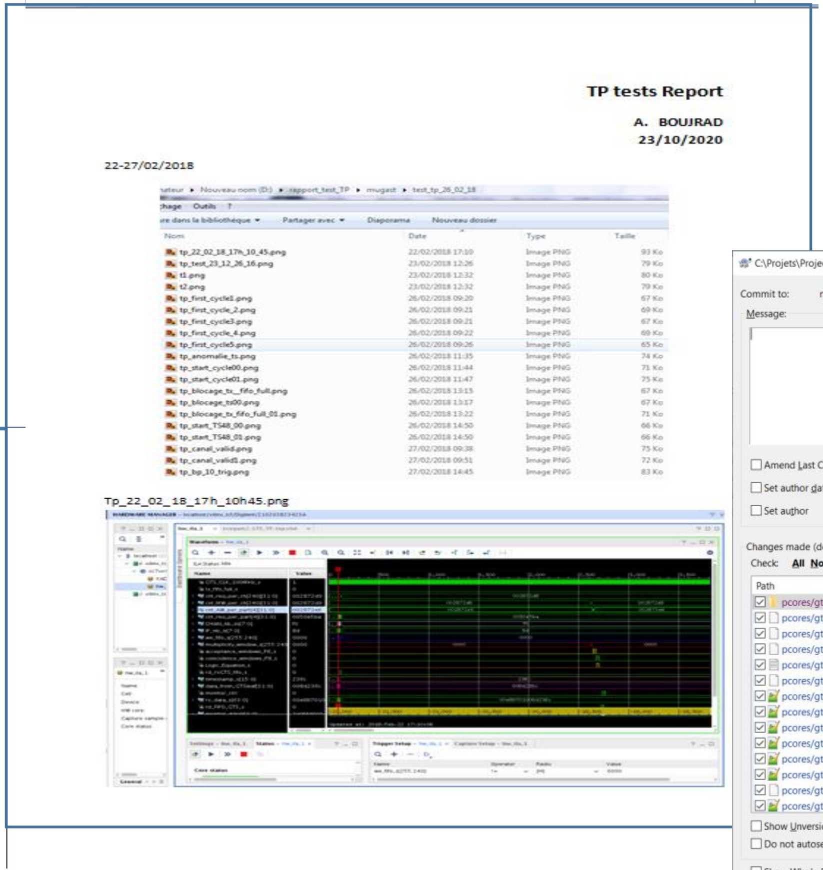
Statistics **100%**

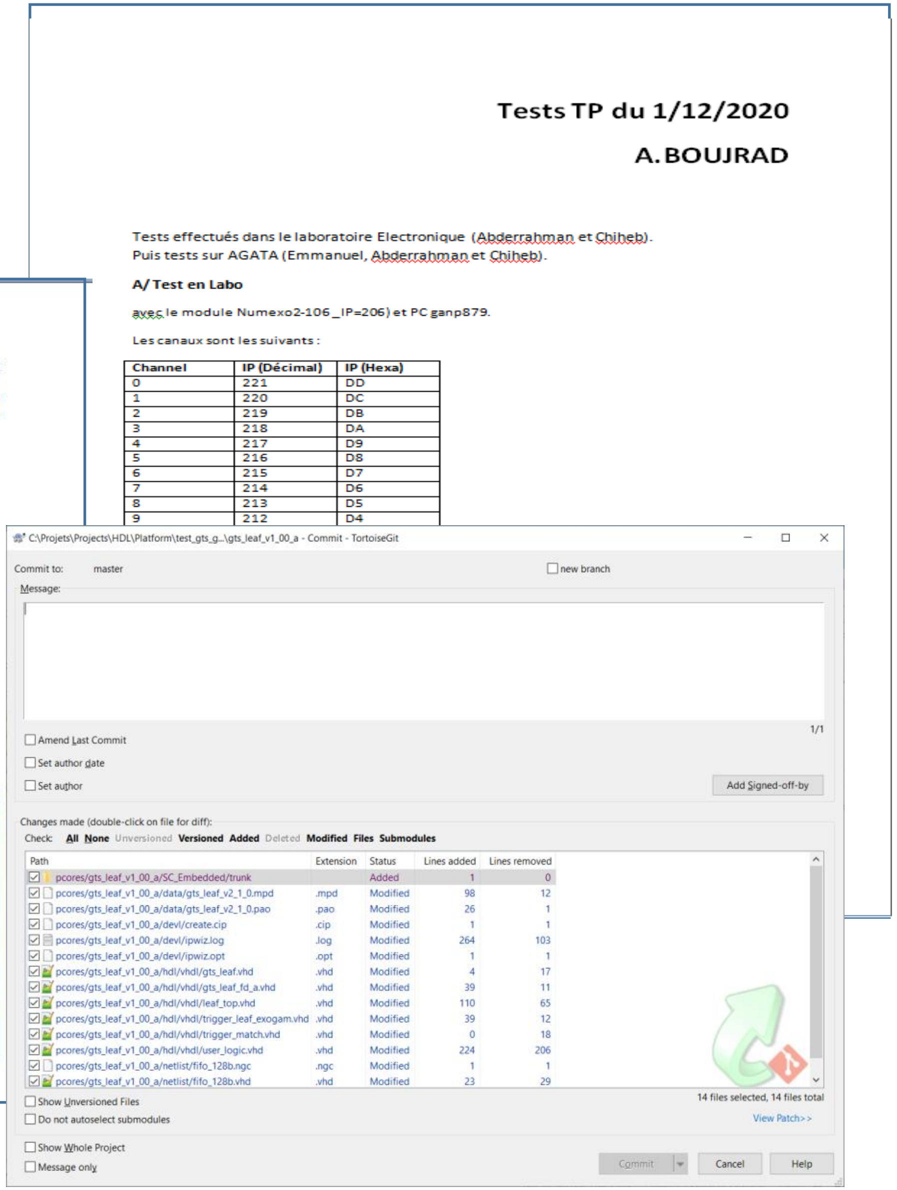
Aurora Tx

TP Documentation

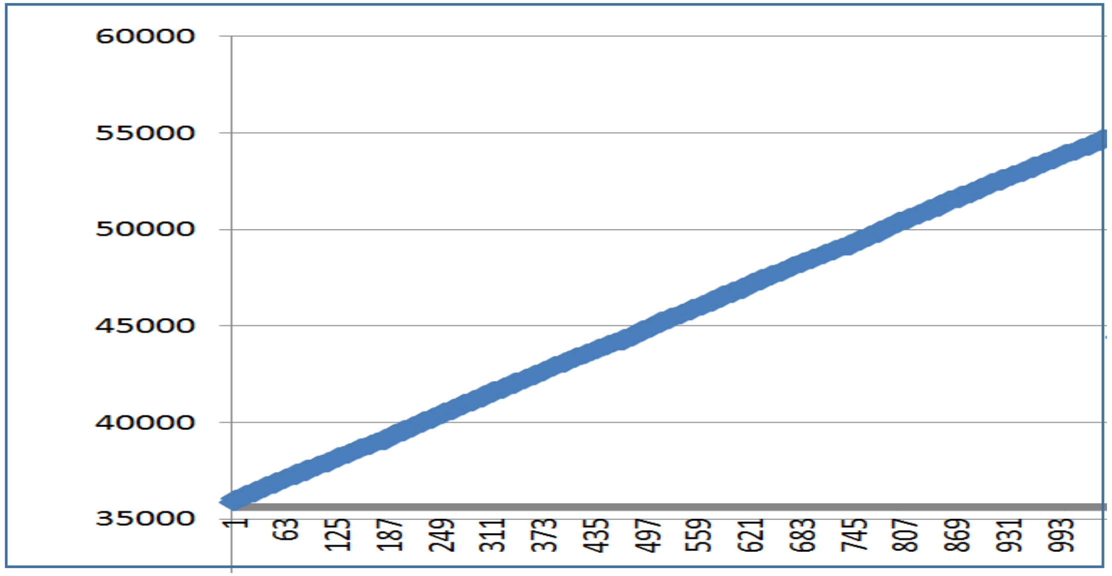
- ❑Technical Specifications
- ❑User Guide
- ❑Tests Report
- ❑Git Repository

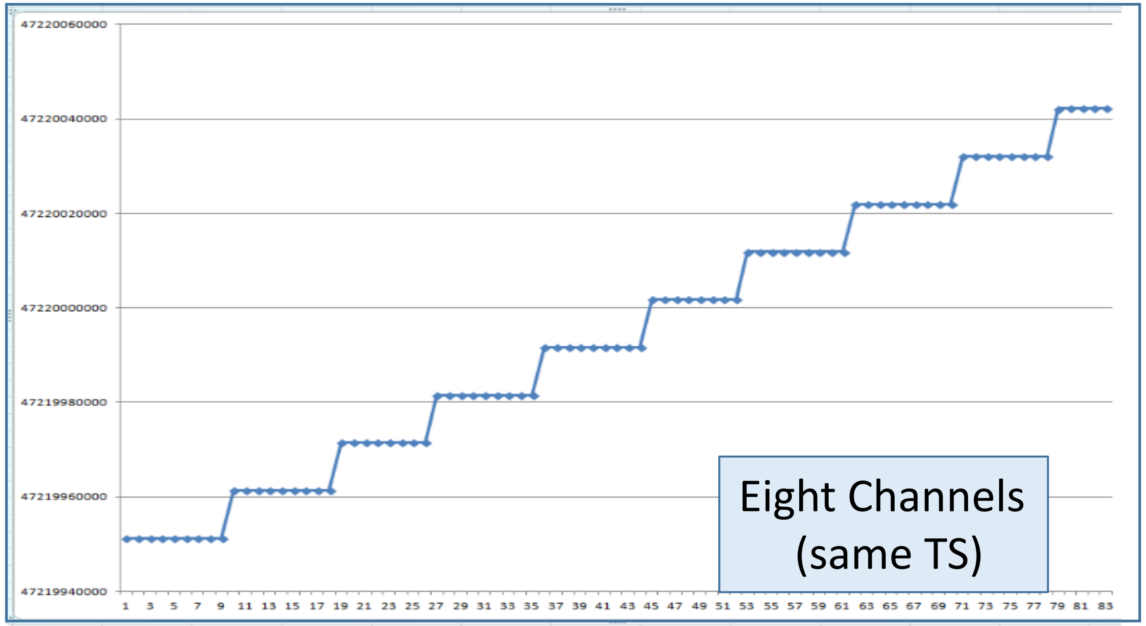


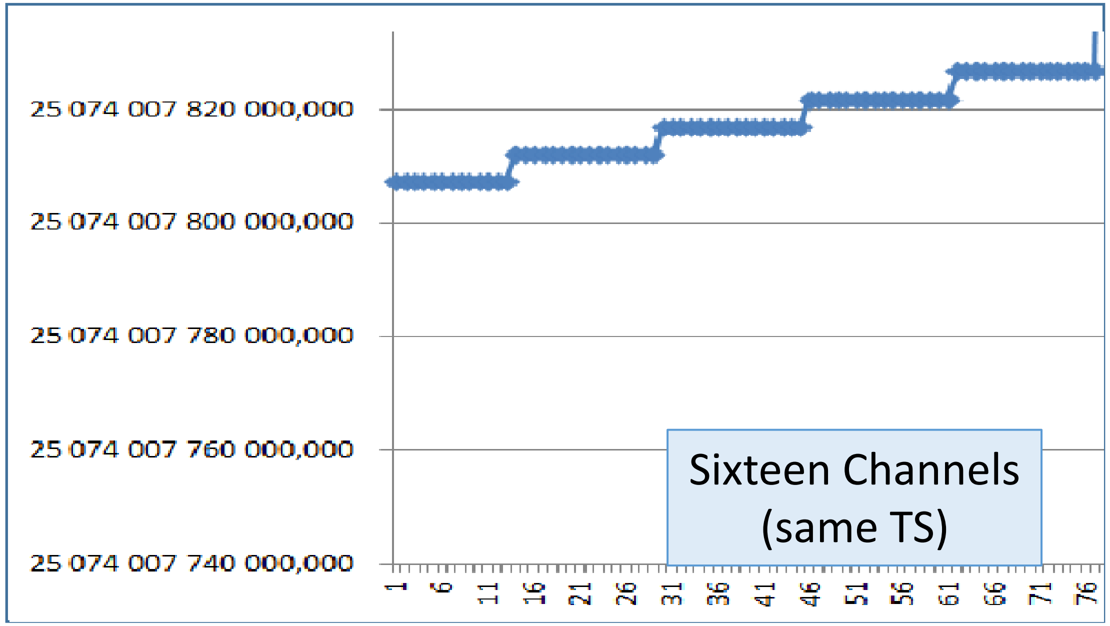




Time Stamp verification example
Tests in Lab







Example of tests on AGATA
December 2020

	ATCA	GGP	Accept	Reject	Equation
1	1 channel in P1		100%		
2	2 channels in P1		100%		
3	19 channels in P1		100%		
4		1 channel in P1	100%		
5		2 channels in P1	100%		
6		20 channels in P1	100%		
7	19 channels in P1	20 channels in P2		0.2 % (GGP)	P1 OR P2

8 **2 adjacent ATCA** Cristals (Compton event) associated to **P1** (multiplicity **> 2)** :
Result : 10 to 20% of coincidence as expected

9 **2 GGP** with Synchro Pulser associated to **P1** (muliplicity **> 2)** :
Result : 2% of rejection (to be explained)

For tests **8 & 9** if multiplicity threshold is set to 3 a 0% validation is obtained as expected

TP development ressources

- Trigger Processor IP developments
  - *Chiheb Belkhiria*
  - *Abderrahman Boujrad*

- Python *(Slow control, Statistics…)*
  - *Laurent Charles*
  - *Sébastien Coudert*
  - *Chiheb Belkhiria*

- IPBUS
  - *Laurent Charles*
  - *Chiheb Belkhiria*

- GUI
  - *Blandine Duclos*

- TP tests
  - *Abderrahman Boujrad*
  - *Emmanuel Clement*
  - *Chiheb Belkhiria*

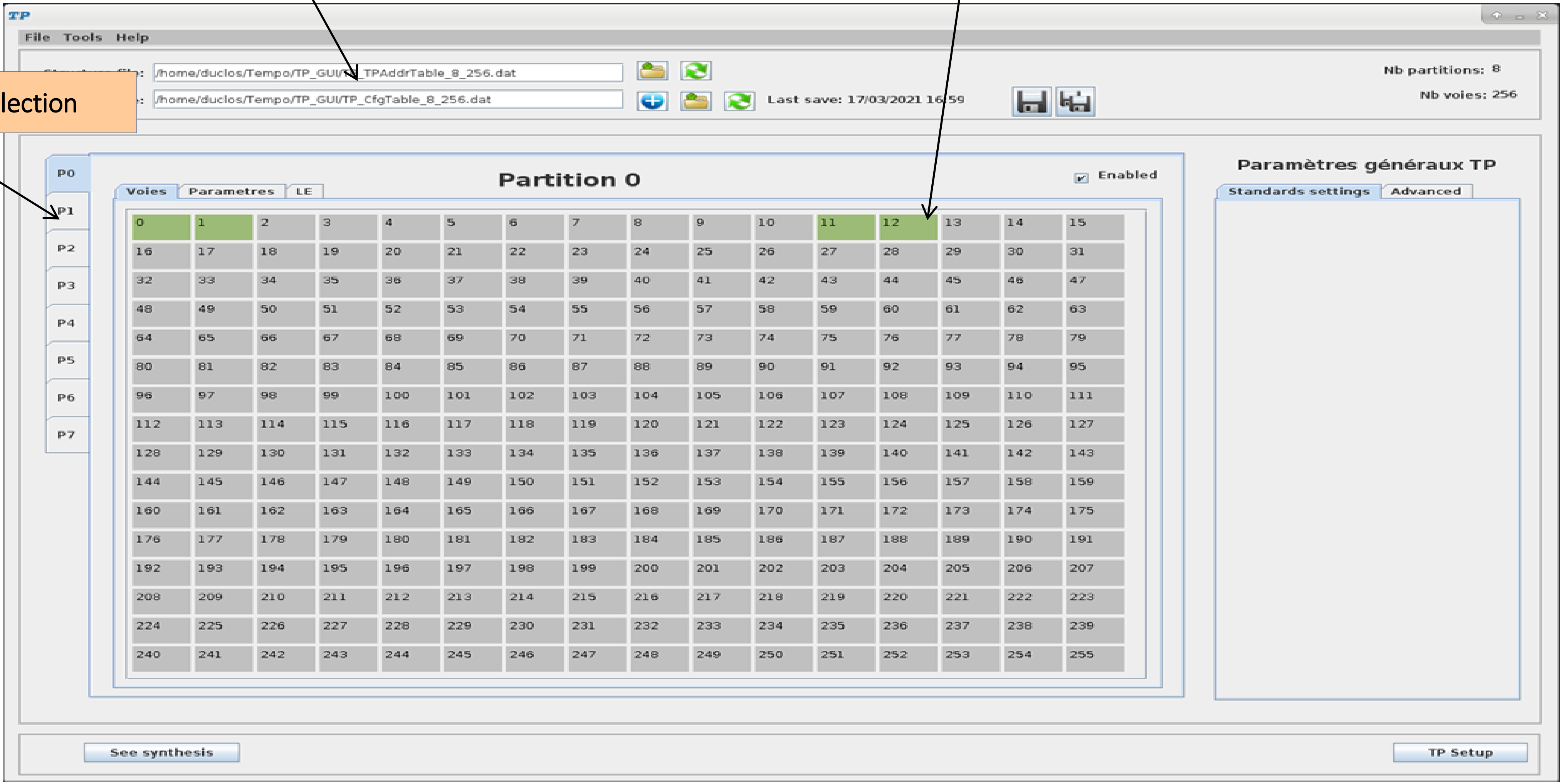
Trigger Processor
Graphical User Interface

(courtesy to B. Duclos)

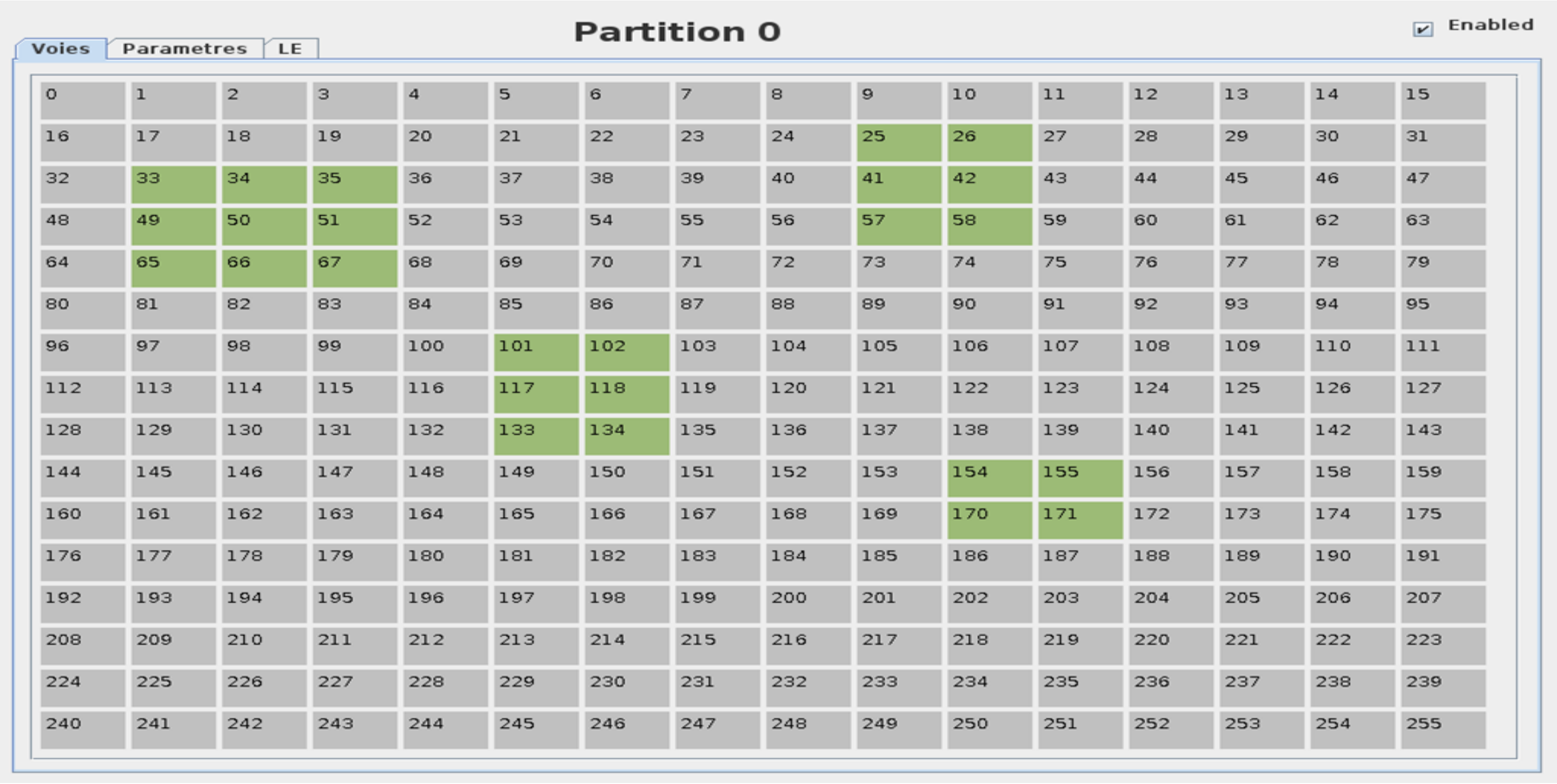
Setup Files

Channels association to a selected Partition

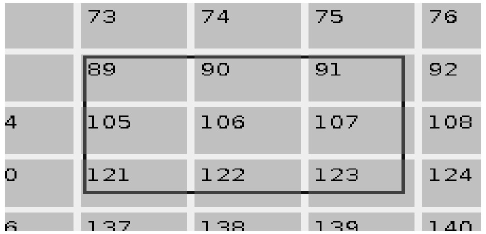
Partition selection



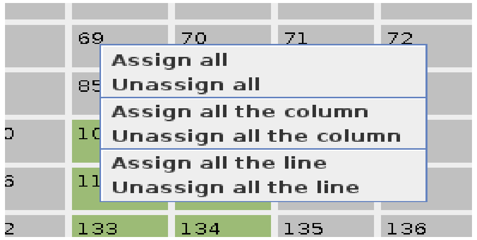
Channels assignment to a partition

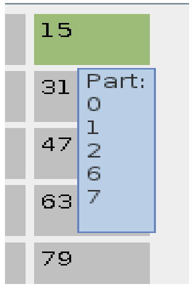


- By shape selection (in green) :

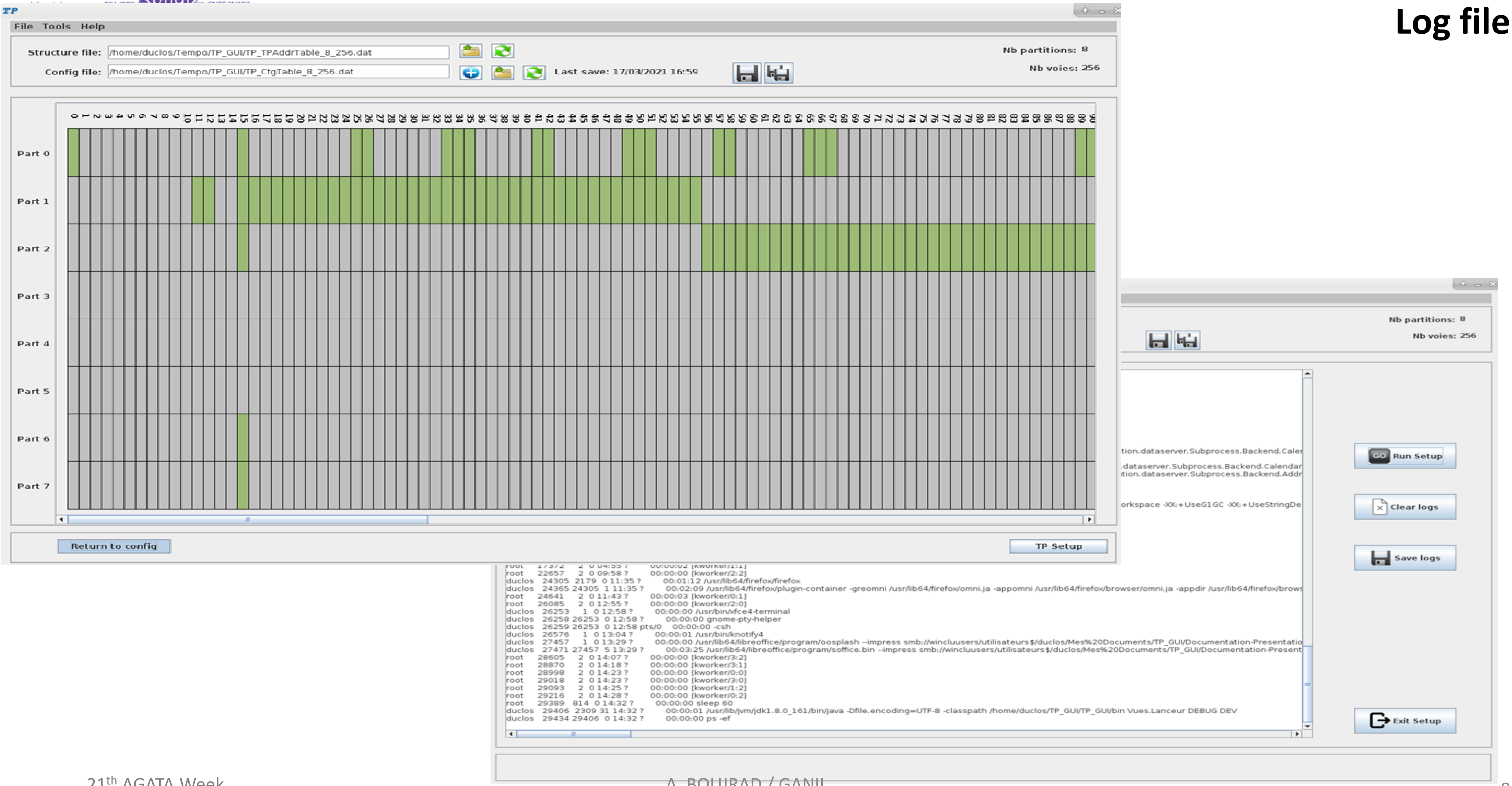


- By using the context Menu :

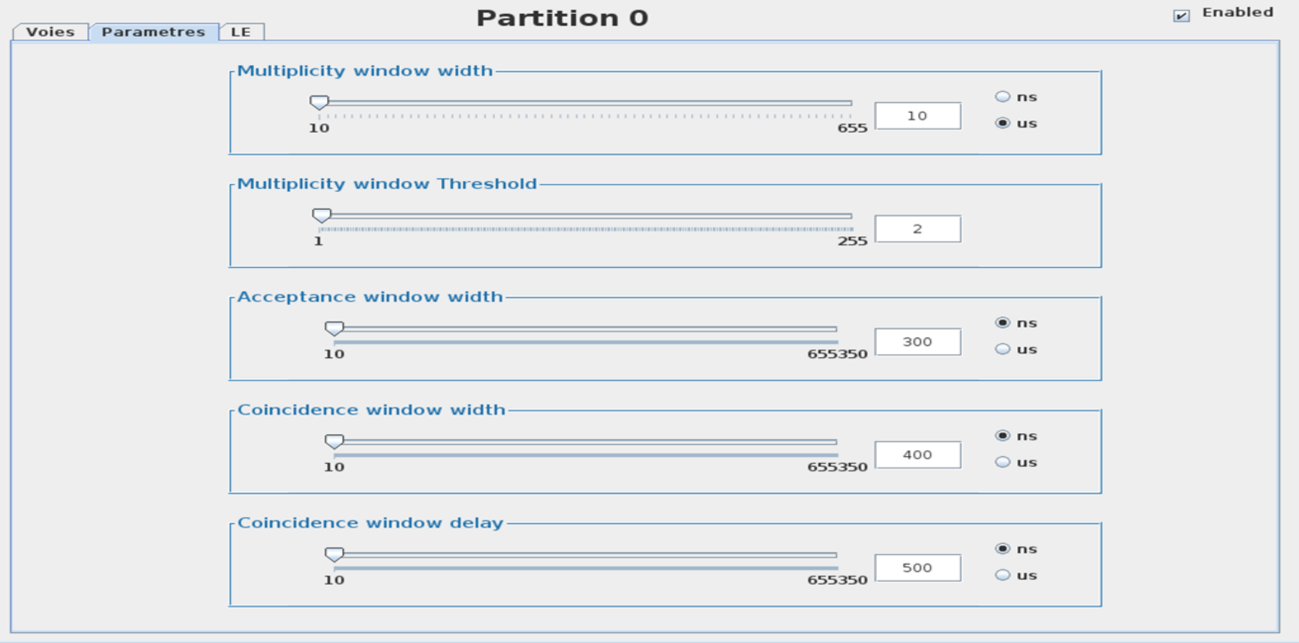




A Global view
Log file

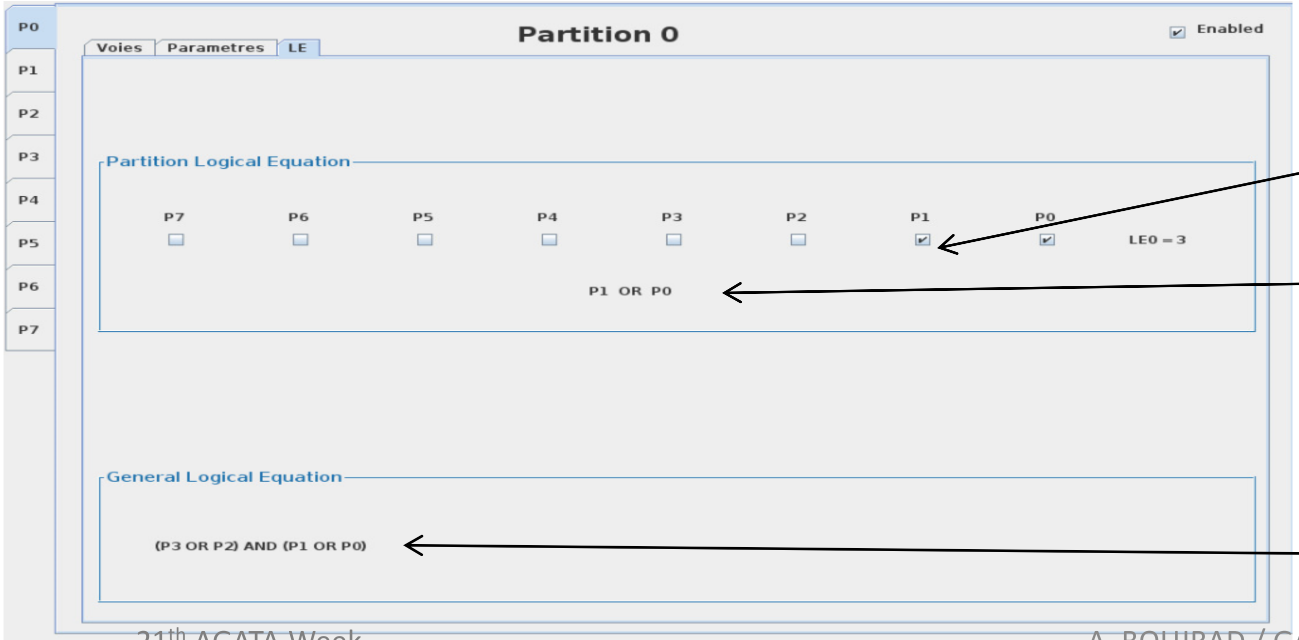


TP setup



TP Windows

- Multiplicity window width
- Multiplicity window threshold
- Acceptance window
- Coincidence window width
- Coincidence window delay



Logic equation

- Partition selection
- LE Formula
- Logic equation expression

TO DO

- **Continuation of the TP tests With AGATA system's**
  - High counting rate on April 2021
  - AGATA/NUMEXO2 coupling

- **Tests and validation of The GUI**
  - In the next weeks
- **Document finalization**