EUROGAM Project
EUROGAM diagnostic software

Edition 0.1
september 1990

m.m. Aléonard
CENBG
Le Haut Vigneau
33175 Gradignan Cedex, France

EUROGAM diagnostic software

m.m.Aleonard

15 sept 1990 Draft 0.1

This is a first draft to present diagnostics for the EUROGAM data acquisition and tests.

1 Introduction

Diagnostic softwares to be implemented for EG data acquisition present several aspects: VME boards testing, data acquisition test and setup and online checkings. This document apply only to the data up to the Event Builder.

2 Overview

The diagnostic proposed here is in relation with both the VXI and VME crates. These tests and diagnostics may be divided in 3 categories:

-standalone tests and diag. ie without the EUROGAM environment.
-EG setup checkings: with the acquisition software environment.
-on-line EG checkings, while the experiment is proceeding.

Of course the associated conditions to use the diag software are quite different.

3 VXI boards chekings outside EG.

Once the board has been "electrically" checked without the crate, it needs to be controlled inside a VXI crate with the resource manager (cpu147).

We assume that the VXI autoconfiguration has been done, and registers checkings performed. At this point the diags are used to check the board setting parameters, ie set a threshold value and test the signal output....

A full list will follow....

We need dedicated tests for each board: Ge, BGO, trigger or ROCO board. Pulsers on each VXI board will allow for first calibrations of DAC units and analog signal outputs. If the Resource Manager (front panel access to trigger signals) is available some logic tests may be carried out.

The "scope function" in design for the extension of the resource manager can also be part of the diag procedures. Most of these softwares can be easily implemented through VxWorks, with a small configuration eventually with just a video terminal if needed. However more than a small facility we need most urgently specialised test software for EUROGAM VXI boards.

A further step of diags will be stability checks and qualification of the board caracteristics (enrgy resolution...). The best way is to use a reference detector in a lab. We need here a bigger environment mostly because graphic and more elaborate calculations are involved (centroid, fitting...); a Sun work station will be used on the general network of the lab to afford the local facilities (graphic display and spectrum analysis). The spectra are build in the memory available in the RM cpu board and transfered to the display software at request (RPC call).

The extension of this phase is the test of a module Ge +BGO shield. For thorough checks the ROCO board is needed that mean a test bench with tape storage, and analysis software (need to be ready for early spring??).

During these tests diagrams of caracteristics of detectors versus high voltage and other parameters need to be set for further use in a data base.

4 VXI boards EG checking in settup

All boards are supposed to be in operation individually. Checkings involved: timing, triggerring. In principle parameters in use (thresholds, delay for a.c...) checked versus the previous step.

Some standard sources data are taken to be checked. As the previous check a VXI crate and resource manager and all the acquisition chain is needed. To be performed in the EG installation lab.

5 Consistency tests of the data acquisition up to the Event buider.

The ROCO VXI board will output subevent data structure which will be forwarded seqentially to the HSM memory unit in the Event Builder. The token in this subevent structure are used to check the consistancy of data output from the VXI crates (event number,word count..presence of all ROCO)

One way to check VXI to HSM is to activate specific ADC using the pulser facility as well as software trigger and thresholds in ADC output. This will allow also to simulate various correlations between Ge, Ge BGO and check EB new data word sets. "Standard" patterns can be used as a systematic check.

6 On line chekings

related to scalers values, control of word count of subevent, rate of event types produced in the eventbuider, event number numering in VXI.... One need also periodic check of some typical parameters: nitrogen control, HV parameters...

7 Conclusion

This document need a suite with detailed procedures for the various control steps proposed.

We need also for coordination to have a data base structure of the equipments involved defined.