System Acceptance Review
ESTIA

ESTIA Multi-Blade detector and electronics

ESS.NSS.H01.ESTIA.B01.B01
&
ESS.NSS.H01.ESTIA.B01.C01

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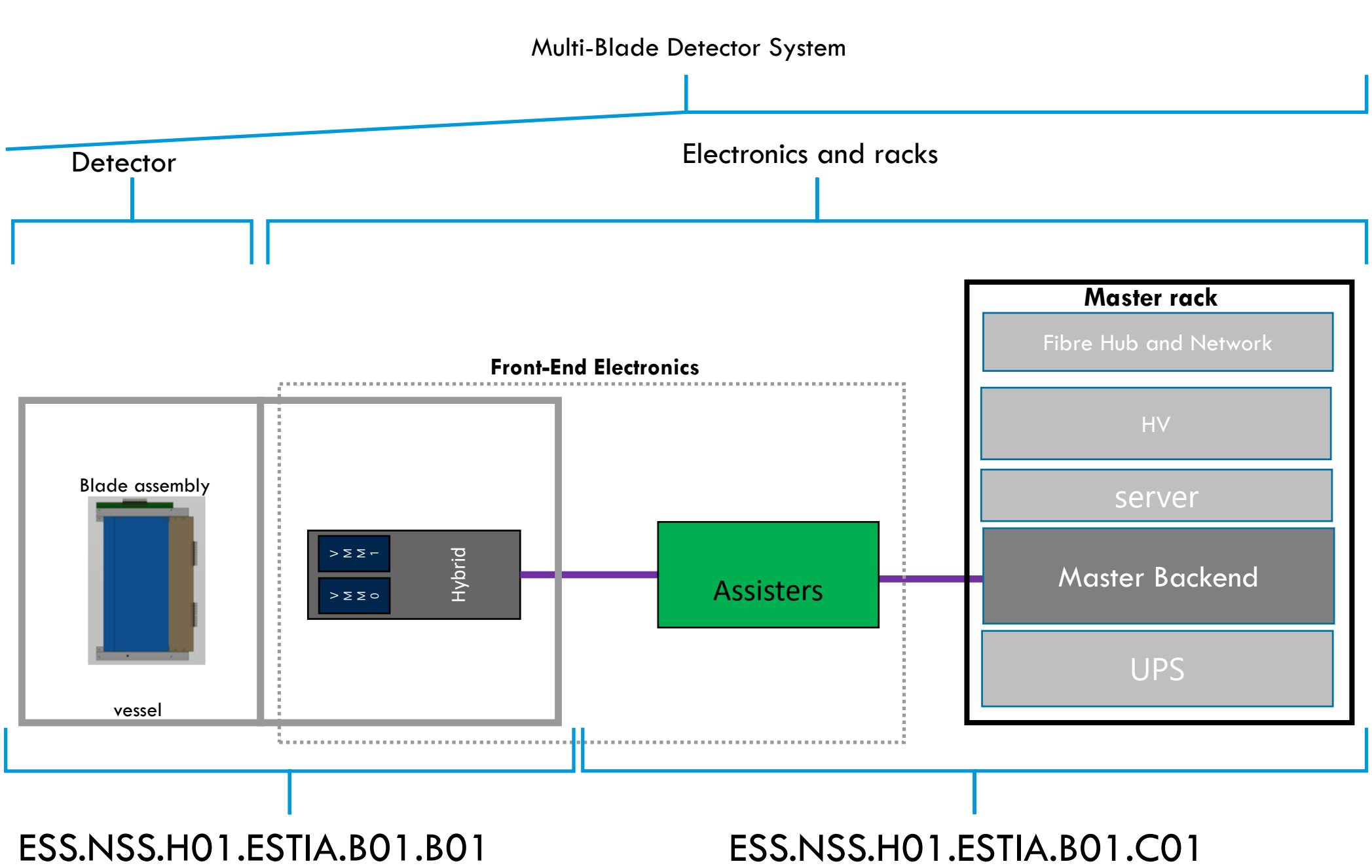
2026-06-17

ESTIA SAR – Detector report

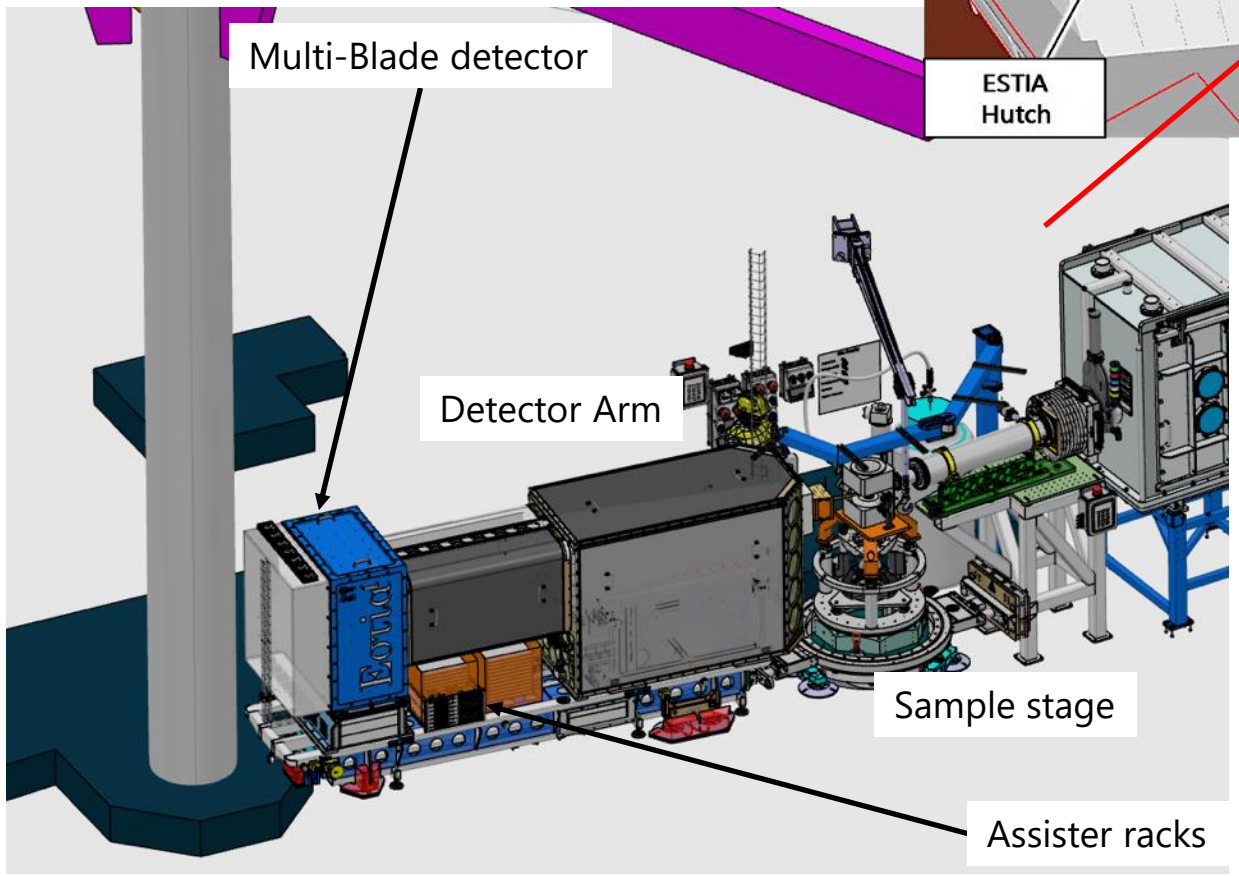


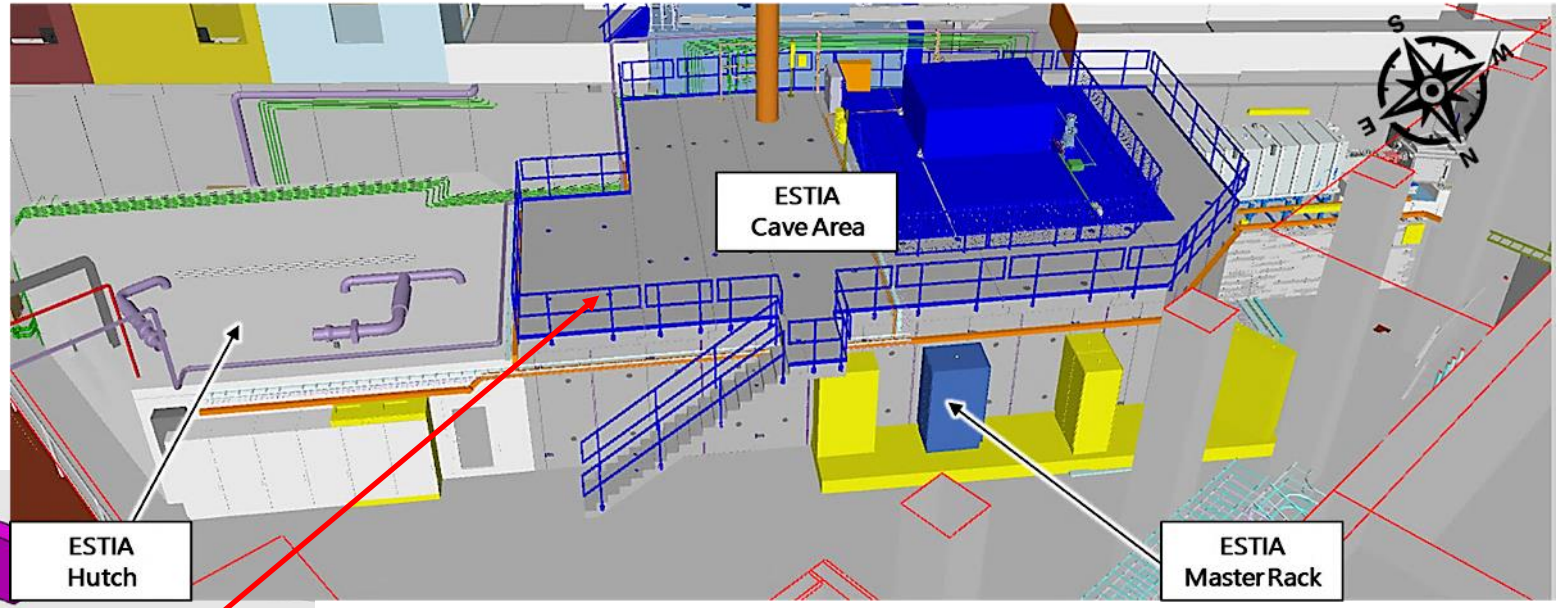
ESTIA SAR – Detector report

Neutron Detector System

ESS.NSS.H01.ESTIA.B01.B01

Designation:	Multi-Blade detector
Functional Location (FBS):	ESS.NSS.H01.ESTIA.B01.B01.B01
Physical Location (LBS):	ESS.D01.100.5312





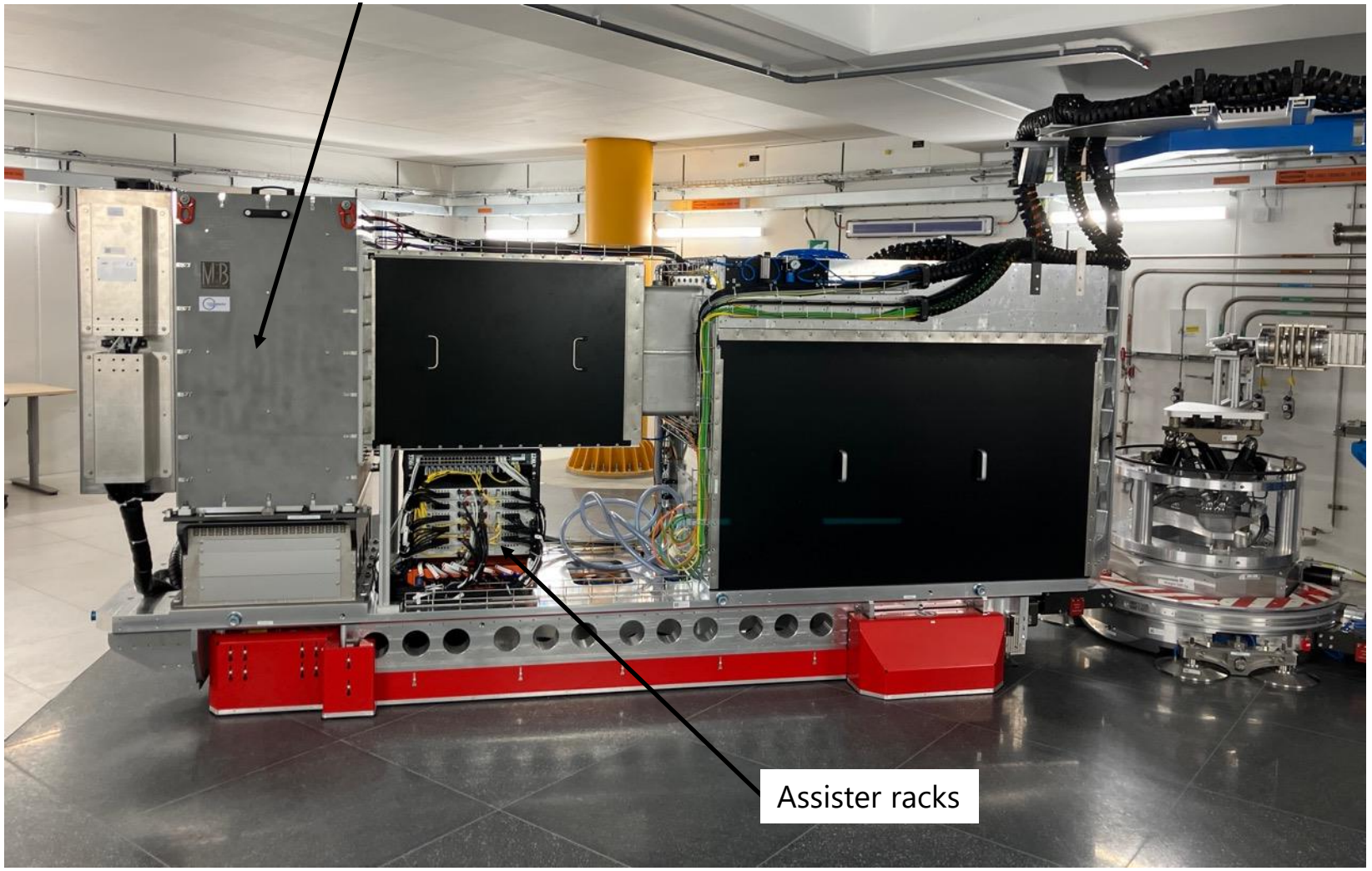
Designation:	Detector DAQ Master Rack
Functional Location (FBS):	ESS.NSS.H01.ESTIA.B01.C01.C01.UH01
Physical Location (LBS):	ESS.D01.100.5316.004

Neutron Detector Electronics

ESS.NSS.H01.ESTIA.B01.C01

Designation:	Detector Assister Racks
Functional Location (FBS):	ESS.NSS.H01.ESTIA.B01.C01.C02.UH01 and C03.UH01
Physical Location (LBS):	ESS.D01.100.5312

Multi-Blade detector



Master rack

ESTIA SAR – Detector report

System	FBS	LBS	EPL	Operation Man.	FAT	SAT	Compliance
Neutron Detector System	**NSS.H01.ESTIA.B01.B01**	ESS.D01.100.5312	ESS-5611251	ESS-5844272	ESS-5517834	ESS-5838358	CE-marked ESS-5754051
Neutron Detector Electronics	**NSS.H01.ESTIA.B01.C01**	ESS.D01.100.5316 and 5312	ESS-5605174, ESS-5491499 and ESS-5520855				

System purpose: to detect scattered neutrons fom the sample

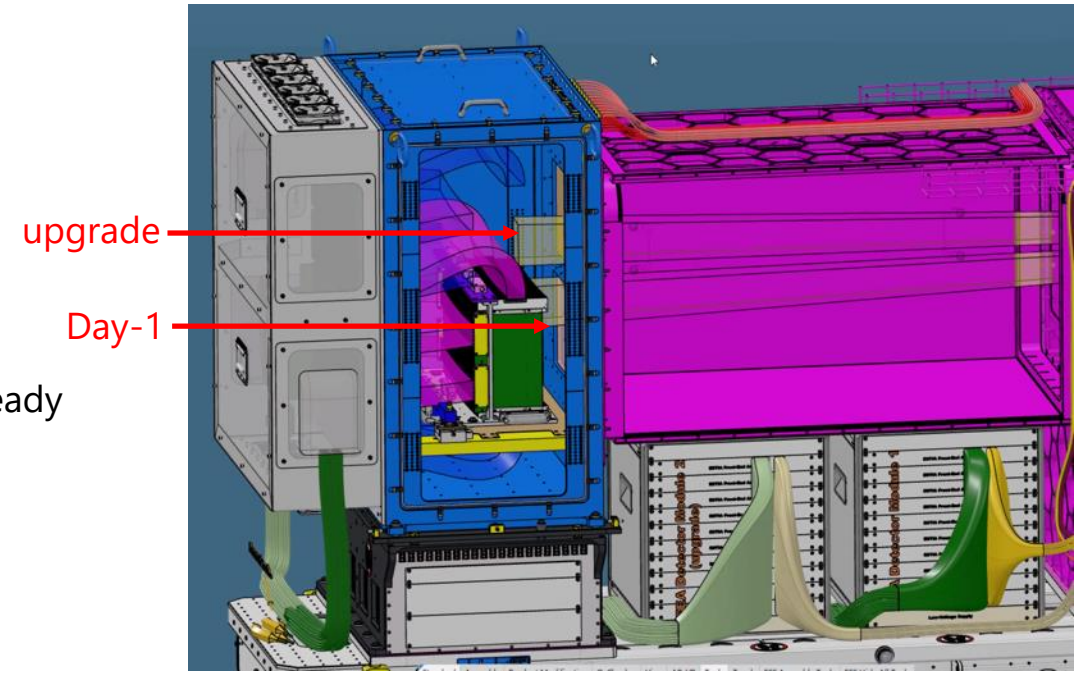
Status: installed and tested/commissioned with neutrons, gound stable and very low noise

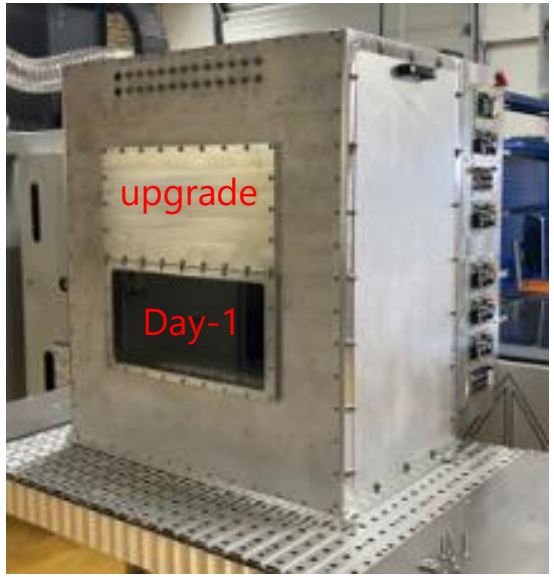
Day-1 scope: (installed and tested)

- In-house detG built
- 1x 48-unit detector (480x260mm^2)
- 48 units Front-end electoronics VMM based
- 1 Master rack (incl. UPS and RMM)
- 1 Assister rack
- HV and LV power supplies
- Cables

Upgrade scope:

- 1x 48-unit detector (480x260mm^2) -> vessel ready
- 1 Assister rack -> already installed but empty
- 48 units Front-end electoronics VMM based
- No modifications to gas/master rack or cables (excl. HV cables)

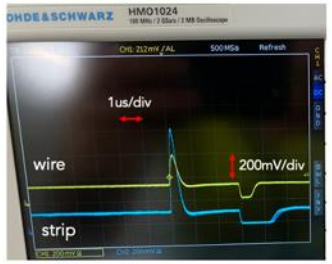


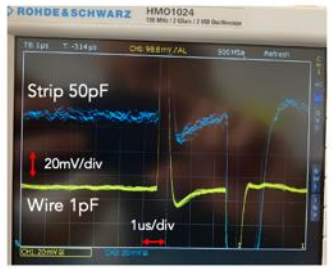


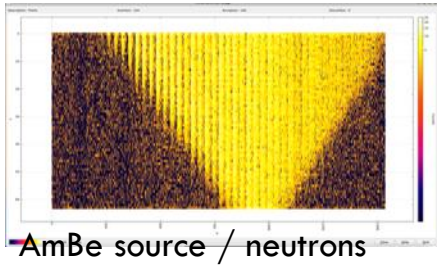
ESTIA SAR – Detector report

	Test cases	Pass/Fail
1	Verification of system document completeness.	Pass
2	Inspections (hardware).	Pass
3	Interface for detector control and monitoring (ESS firmware and ESS software).	Pass / 1 fail -> see next slide

Grounding - Noise

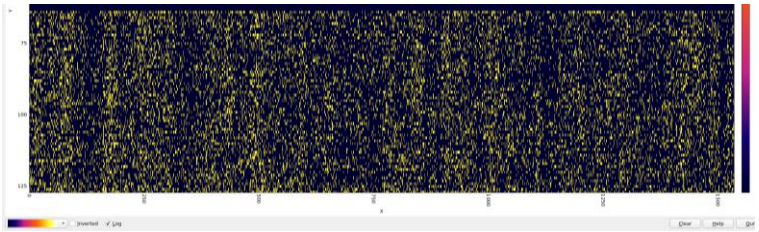


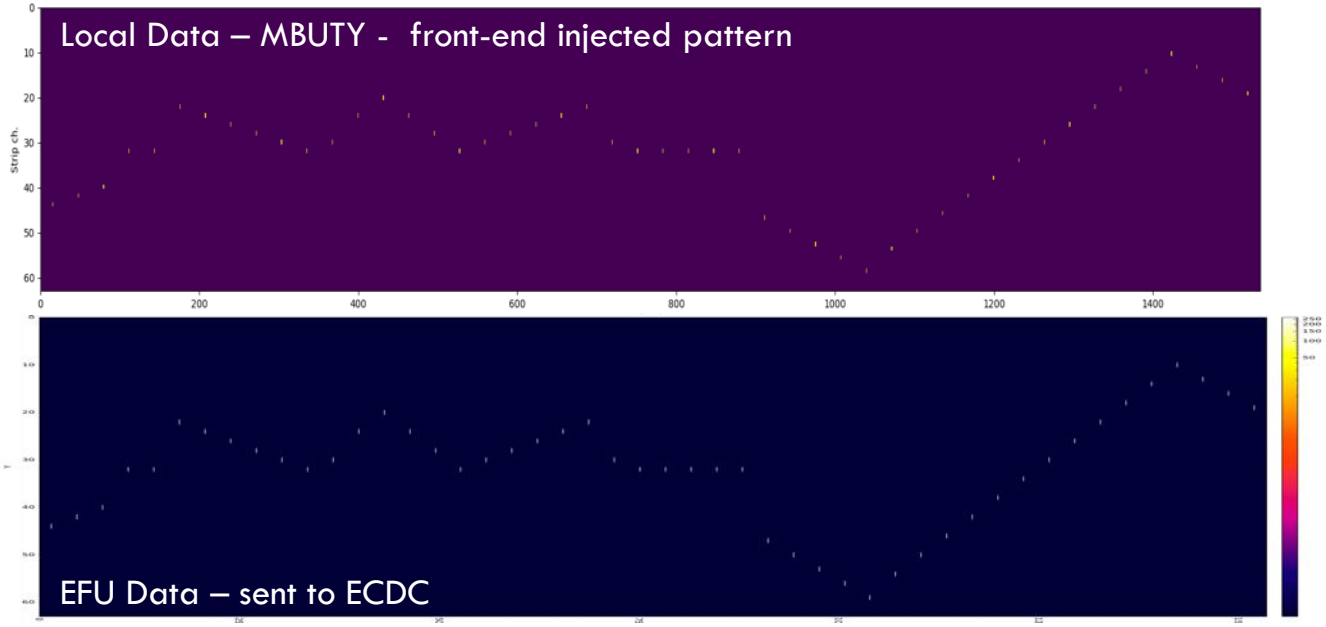




AmBe source / neutrons

Cosmic Muons

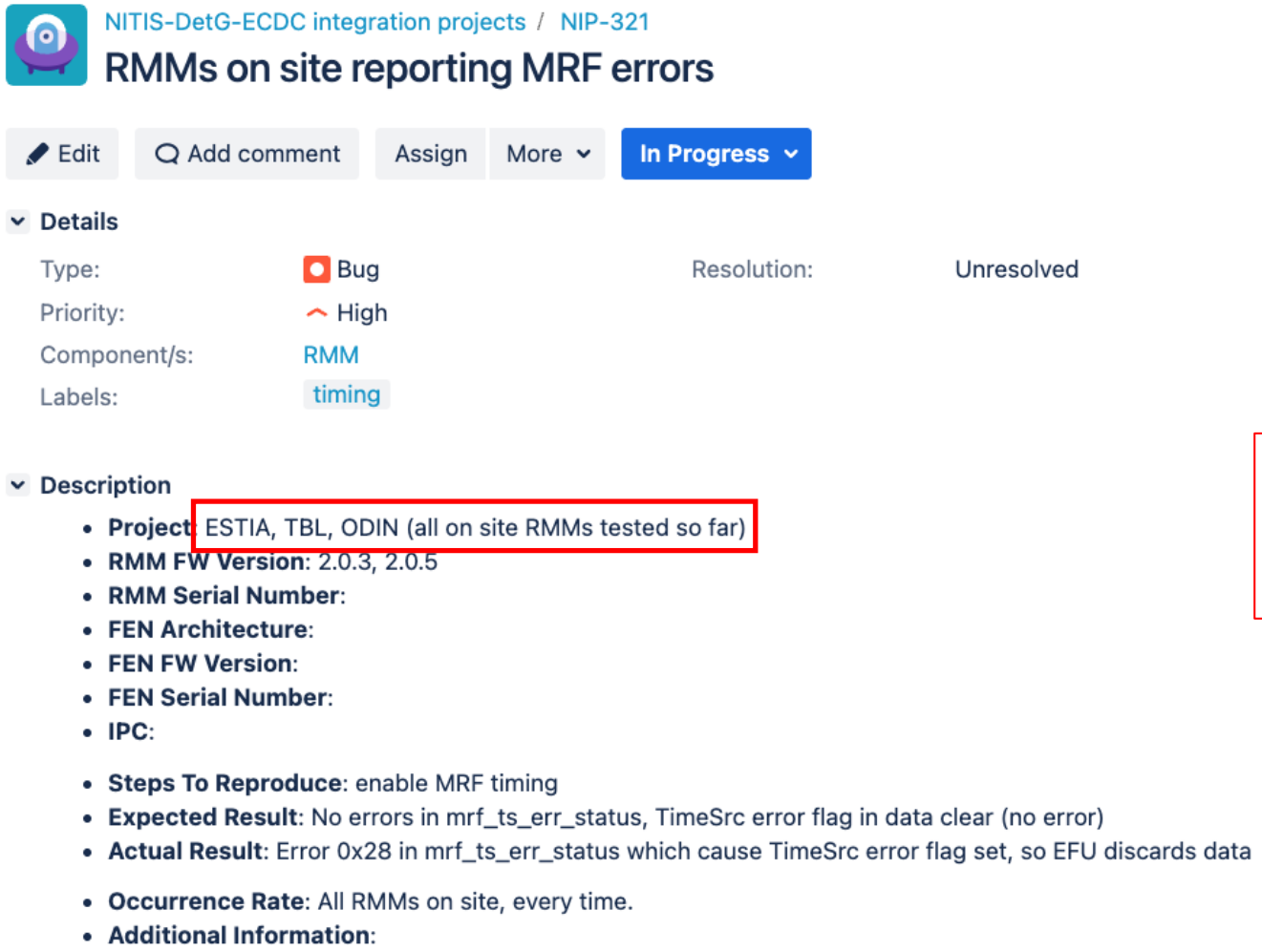




ESTIA SAR – Detector report – Open issue

https://jira.ess.eu/browse/NIP-321

Master Oscillator is providing 88052500.039Hz to the EVG on site, making 1 in 25 seconds 1 tick longer, as the length of "1 second" for the EVG (and hence sending of E125) is defined by an external PPS unrelated to the master clock frequency.



NITIS-DetG-ECDC integration projects / NIP-321

RMMs on site reporting MRF errors

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Details

Type:	Bug	Resolution:	Unresolved
Priority:	High		
Component/s:	RMM		
Labels:	timing		

Description

- **Project**: ESTIA, TBL, ODIN (all on site RMMs tested so far)
- **RMM FW Version**: 2.0.3, 2.0.5
- **RMM Serial Number**:
- **FEN Architecture**:
- **FEN FW Version**:
- **FEN Serial Number**:
- **IPC**:

- **Steps To Reproduce**: enable MRF timing
- **Expected Result**: No errors in mrf_ts_err_status, TimeSrc error flag in data clear (no error)
- **Actual Result**: Error 0x28 in mrf_ts_err_status which cause TimeSrc error flag set, so EFU discards data

- **Occurrence Rate**: All RMMs on site, every time.
- **Additional Information**:

1. Currently Under test in Utgard
2. Will be tested at TBL as pilot
3. Then upgrade on all Instruments

ESTIA SAR – Detector report – Hot Commissioning

ESTIA detector and readout is ready for HC as soon as the MRF timing issue is resolved.

HC will be supported by the extensive experience we have with the Multi-Blade at AMOR – PSI

DetG activities planned for HC:
Support the instrument team with detector-related activities

Displaced working hours or on-call support: as required.

EUROPEAN
SPALLATION
SOURCE