



Elettra Sincrotrone Trieste

The **ESS** WS OFE

Sandi Grulja



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Introduction



Themes:

- OFE test at CERN PSB
- OFE the latest news



5th BI Forum - Lund

Sandi Grulja, Nov 20. – 22. 2018

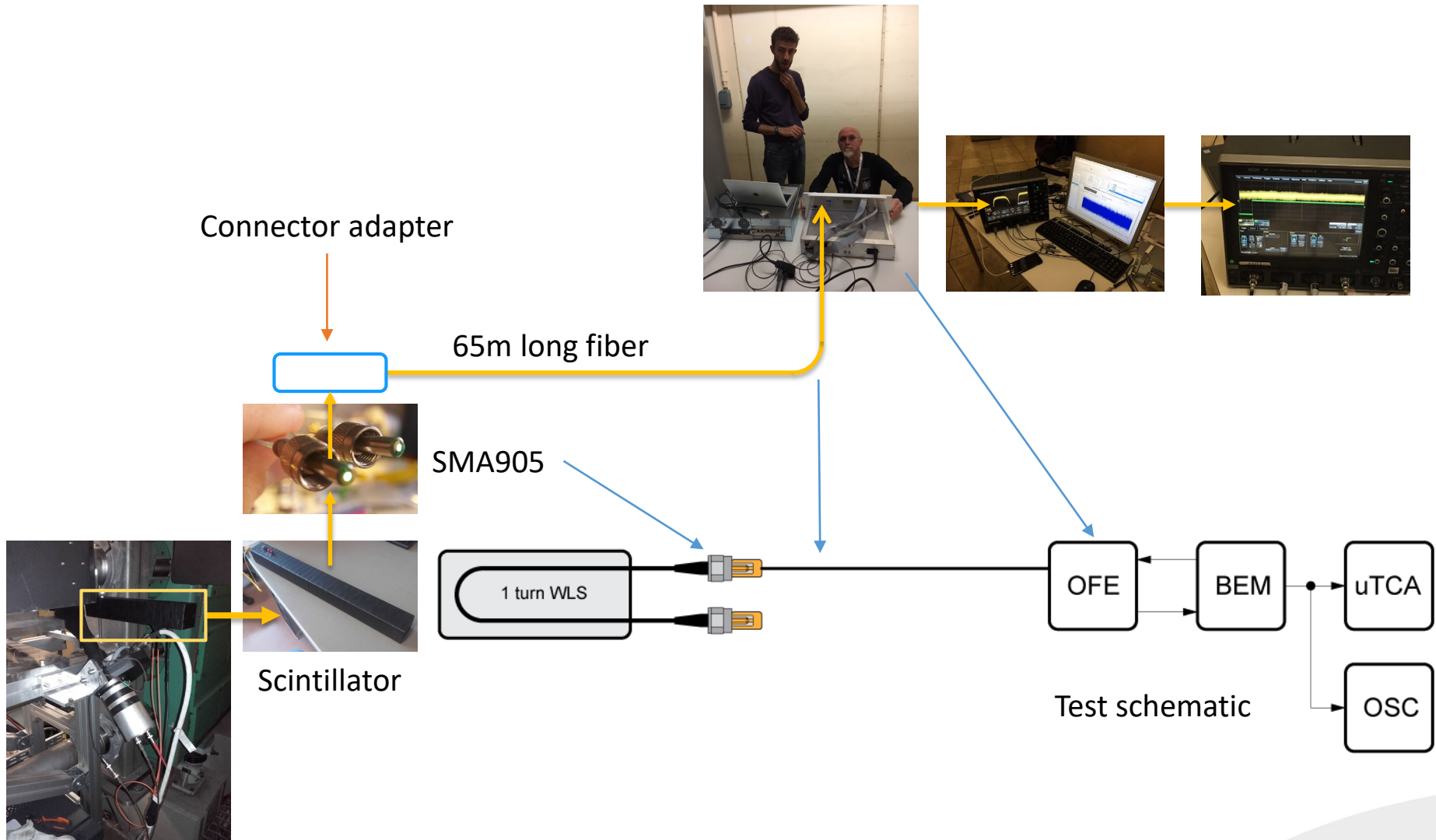




- A scintillator EJ200/BC408 with geometry 45mm by 300 mm installed to wire scanner LIU-BWS in location 4L1
- WLS Kuraray Y11 1mm core diameter, 1 loop inside the scintillator with sma 905 termination
- 65 m long run fiber from scintillator to OFE
- Adapters where used to connect different type of connectors
- OFE unit attached to BEM
- Oscilloscope Lecroy 1 GHz for data visualizing
- uTCA digitizer platform with acq software

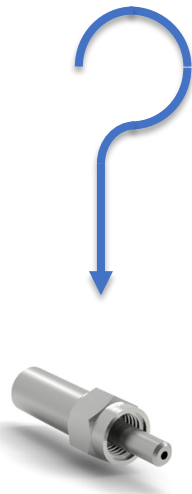
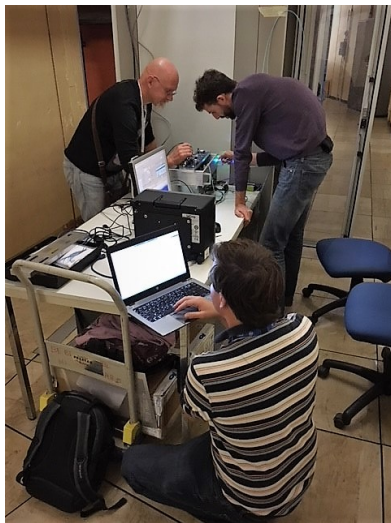


The test configuration

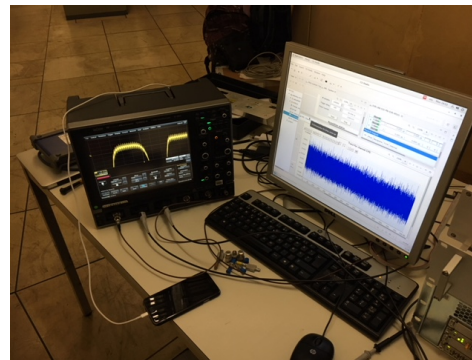


- **Signal acquisition from scintillator:**

- light is in the visible spectrum
- With LED we tested the optical connection through scintillator through the fiber to the Optical Front End
- The test was started and hoping to see the light
- Big silence all eyes pointed to the electronics and



- During the test with wire scanner we were not able to see any light coming from scintillator with OFE
- What is missing or where is the problem



With wire scanner we did several scans and hoping to see some light. Even with different measuring configuration we where not able.



Conclusion



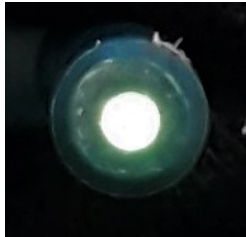
- 50 um core fiber was installed so the light power from the scintillator was not sufficient to detect it with OFE
- Loses on connector adapters and fiber

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- New simulation for the new scintillator would be helpful
 - CERN is very busy with their own experiments and hard to manage all necessary for experiment



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Any doubt ?

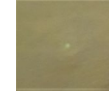
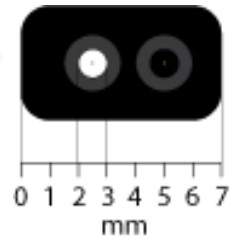


Same light power
500uW



Light from 1000um core fiber
Very well visible light spot

Light from 62um core fiber
Hardly seen light spot



Comparison between 1000um and 62um fiber core



Real light spot dimension



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The **latest news** of Optical Front End



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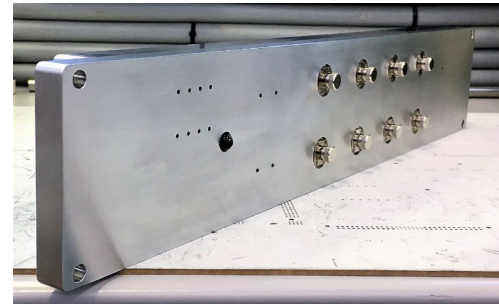
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Optical Front End old



Aluminum
milled body



Connections
on the back



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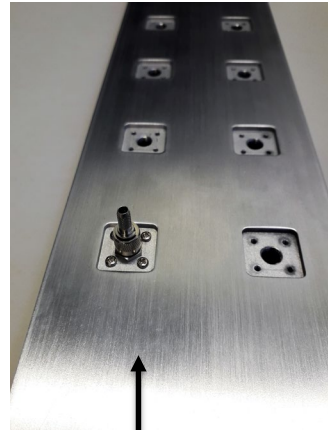
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Optical Front End new



Close view



New SMA 905 front panel connectors



Internal view





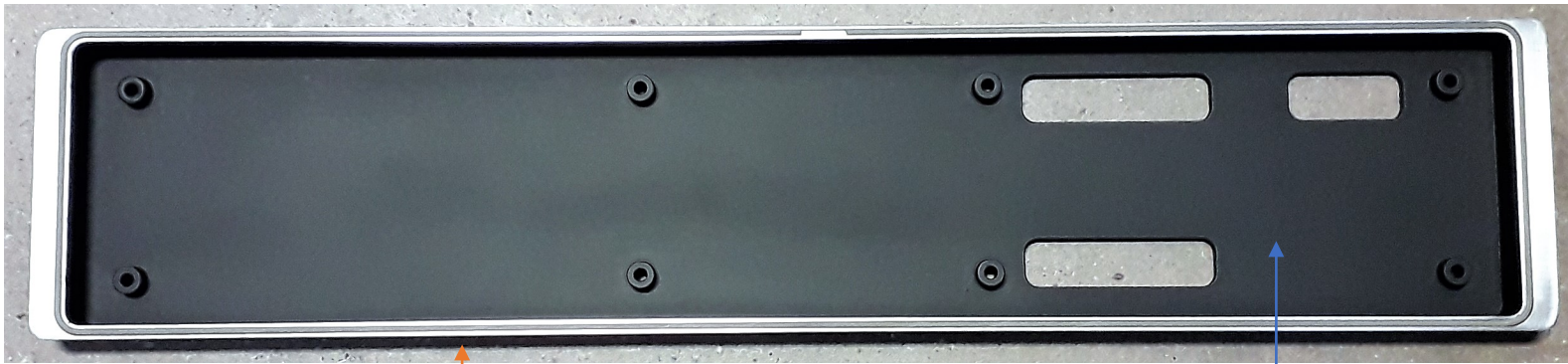
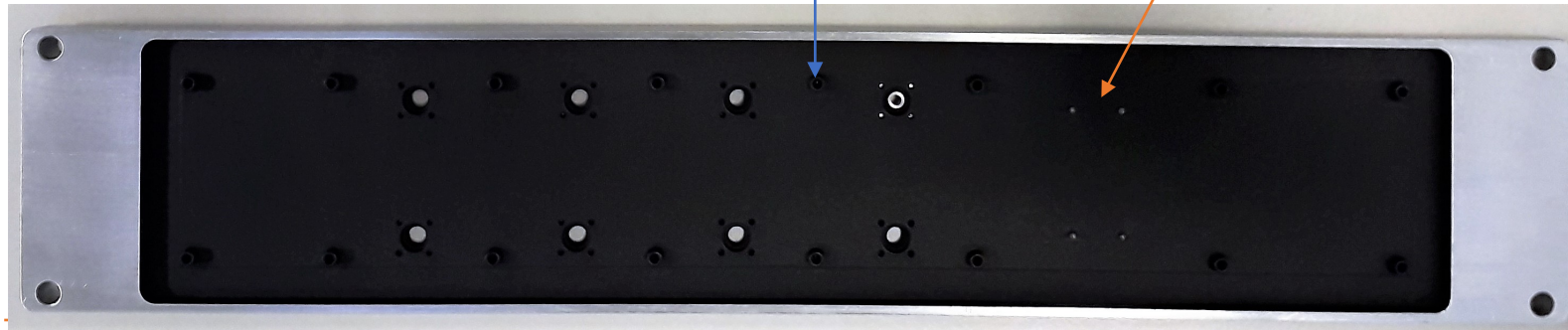
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Optical Front End hardware



Photodetectors

LED guides



EMI shielding

Internal black mate color in both panels



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OHSAS 18001



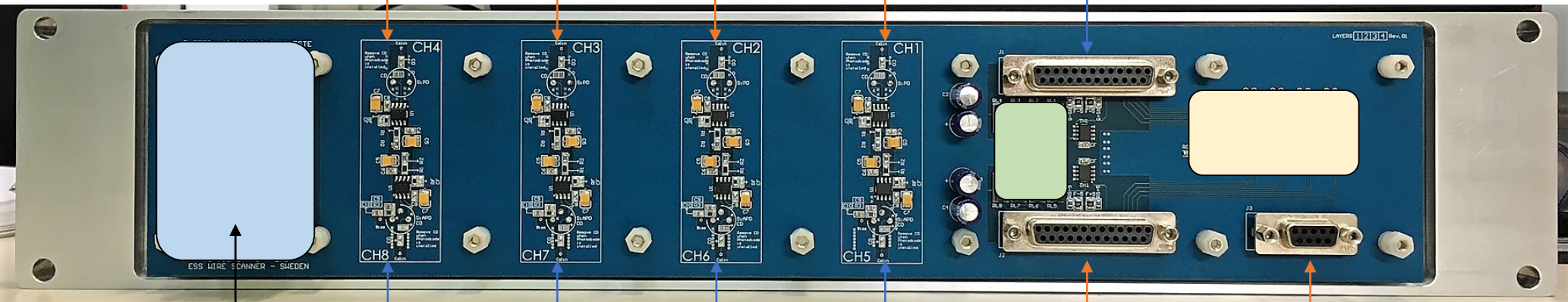
Optical Front End hardware



Assembled OFE electronics in Aluminum milled body

SiPD amplifier

Back End controlled PS and
Signal Output



SiAPD amplifier

Back End controlled PS, HV
biasing, Signal Output and Temp
measurement

Some On PCB modifications



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Optical Front End Production



- All electronic components arrived for assembly of first 5 units
- PCBs for 10 units are in production
- Aluminum body in examination for sma connectors and preparation the tech documentation for milling
- In December 2018 one more final test for VIT test
- In 1Q of 2019 the final assembly production of all 10 units will start





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Thank you !