# Status of fast control signals for CGEM
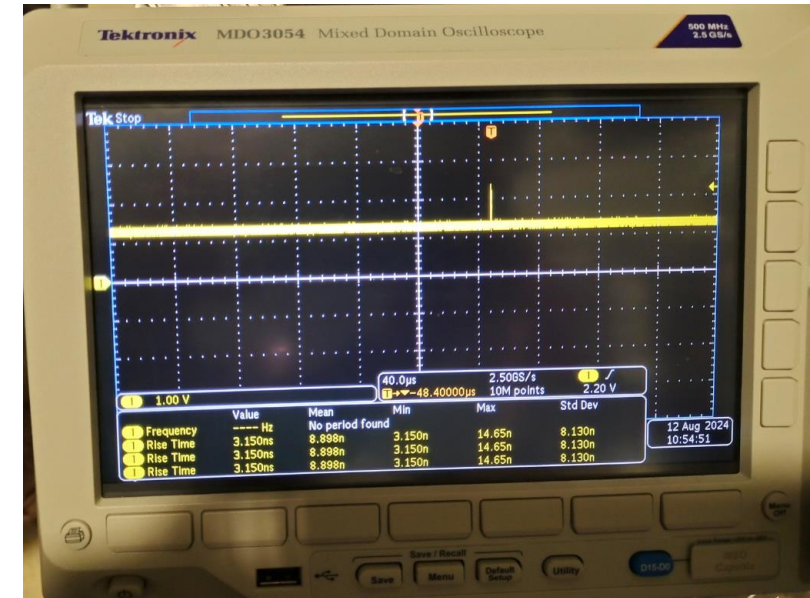
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# First step (August,2024)

- Totally, 6 fast control ports and 4 clk ports are all used,
  - Fast control:MDC, EMC, Muon, TOF1,TOF2 and ZDD
  - Clk : MDC,EMC,Muon and ZDD

**L1** 👉



- Mingyi decided to Use ZDD's fast control and clock fiber to give L1,CLK,CHK signals to CGEM and receive full signal from CGEM.

- In Aug. 2024, trigger team showed where the fast and clock signal's interface and how it works to Italy CGEM team on the First floor in ZDD system .
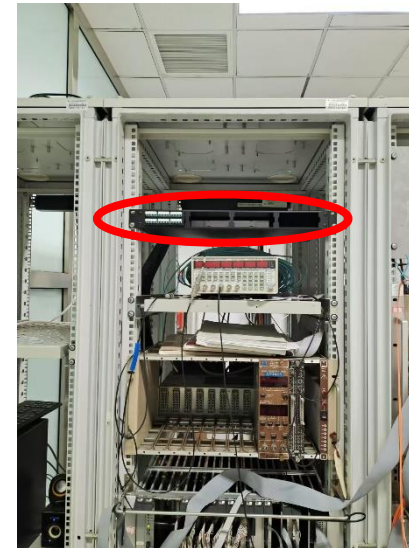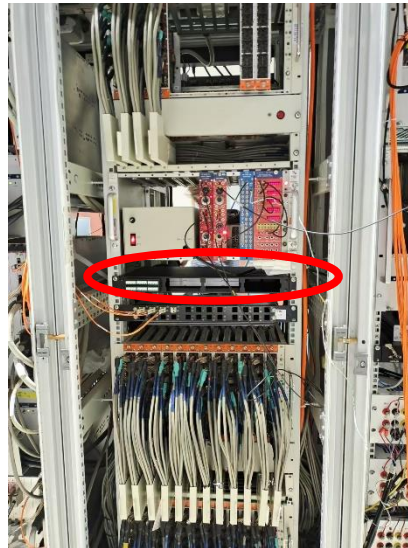
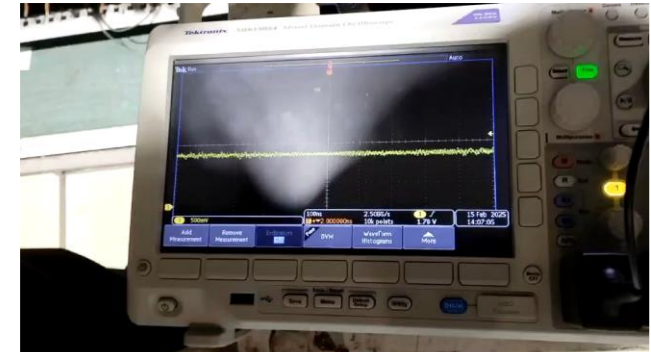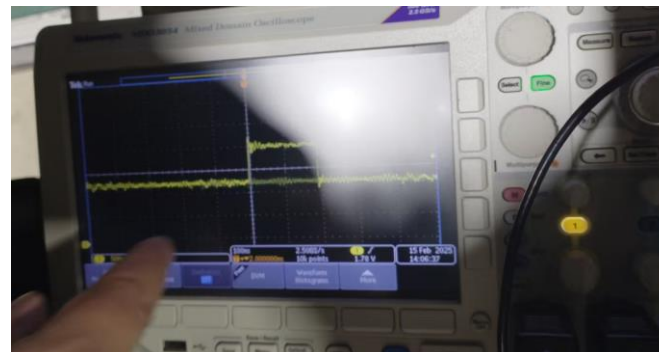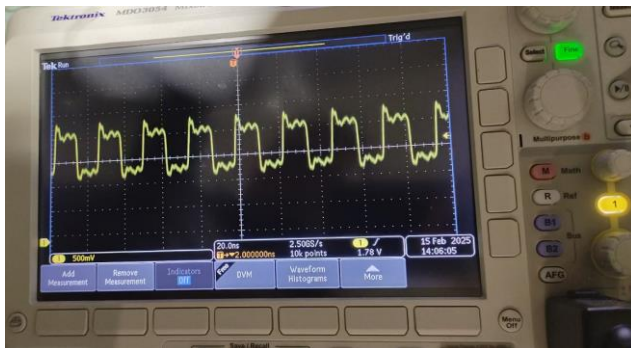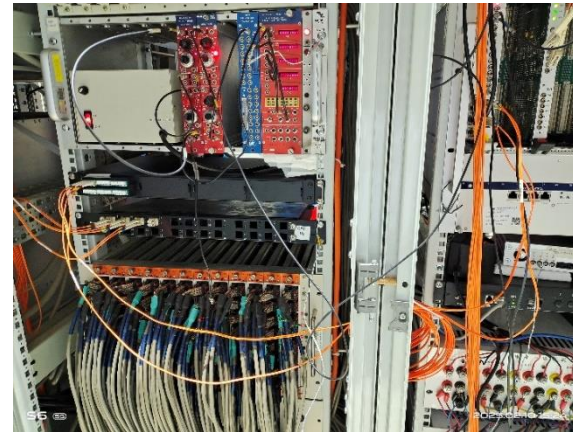**CHK** 👉

# Second step(November,2024)

- Because the CGEM VME crates was planed to be installed on the third floor of the BESIII hall, we purchased fiber optic cable and jumper boxes to create new fast control signal path.

- On November 13, 2024, we laid optical cables in the BESIII hall and tested works well.



- CGEM team still used signals from ZDD VME crate by long cable for temporary plan.
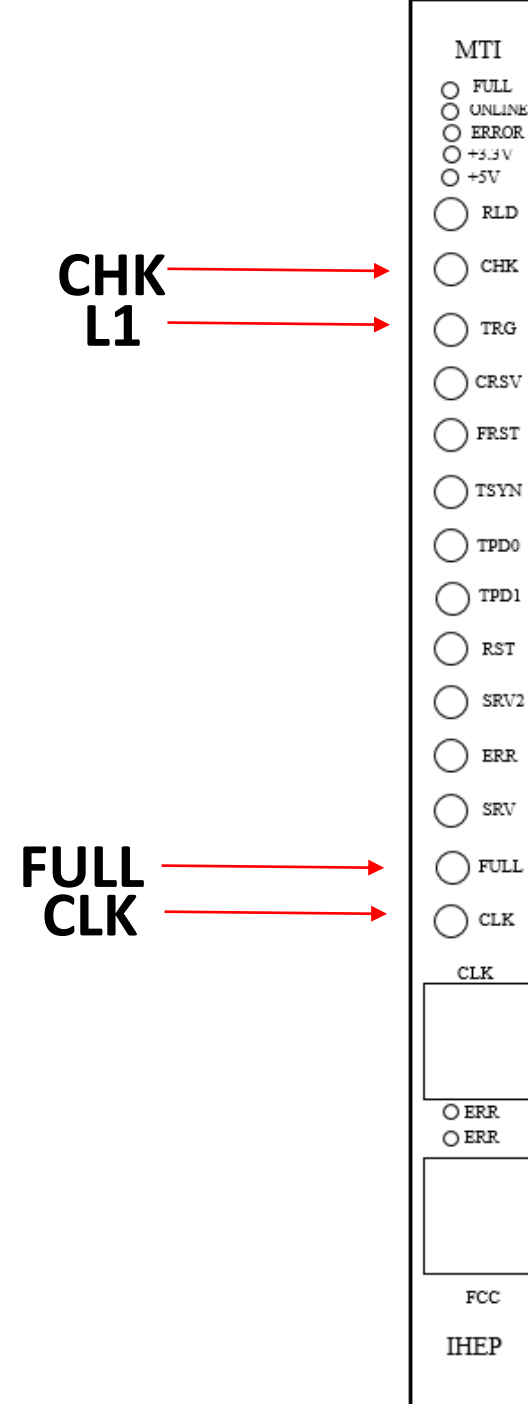
# Third step(February , 2025)

- The MTI and MCC module from VME crate of ZDD system was moved to CGEM VME crate on third floor at Feb. 10th 2025 and tested clock, L1 and CHK signal fanout to CGEM VME crate. Everything works fine.

- At Feb. 15th 2025, trigger colleague showed the fast signal work status to Italy CGEM colleague.
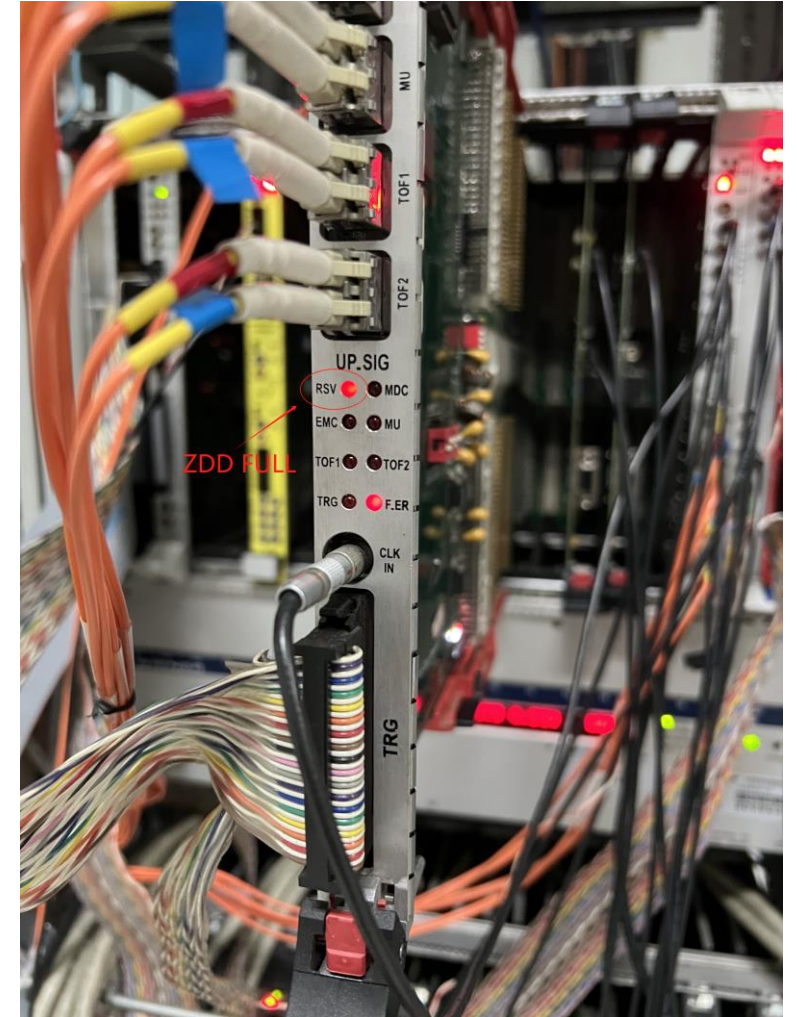
# MTI panel led identification

- We made labels on MTI's panel. It also can be checked from this picture that shows the port name of MTI. CGEM can use the CLK,L1 and CHK from MTI, and provide the full signal to MTI.

**CHK** →

**L1** →

**FULL** →

**CLK** →

MTI

○ FULL
○ ONLINE
○ ERROR
○ +3.3V
○ +5V
○ RLD
○ CHK
○ TRG
○ CRSV
○ FRST
○ TSYN
○ TPD0
○ TPD1
○ RST
○ SRV2
○ ERR
○ SRV
○ FULL
○ CLK

CLK

○ ERR
○ ERR

FCC

IHEP

# The Full signal test

- Now we haven't receive the  Full signal from CGEM.

- We generated a dummy Full signal via signal generator to test the uploading path last summer in 2024. The result shows that the hardware and optical fiber link of trigger system had no issues.

# Summary

- The trigger team worked hard to ensure that the trigger fast control could work properly in all stages of CGEM installation and testing.

- We will continue to cooperate with the debugging work.