

MC Test Systems

Chamber Commissioning System - MC Test

MC Portable Test System

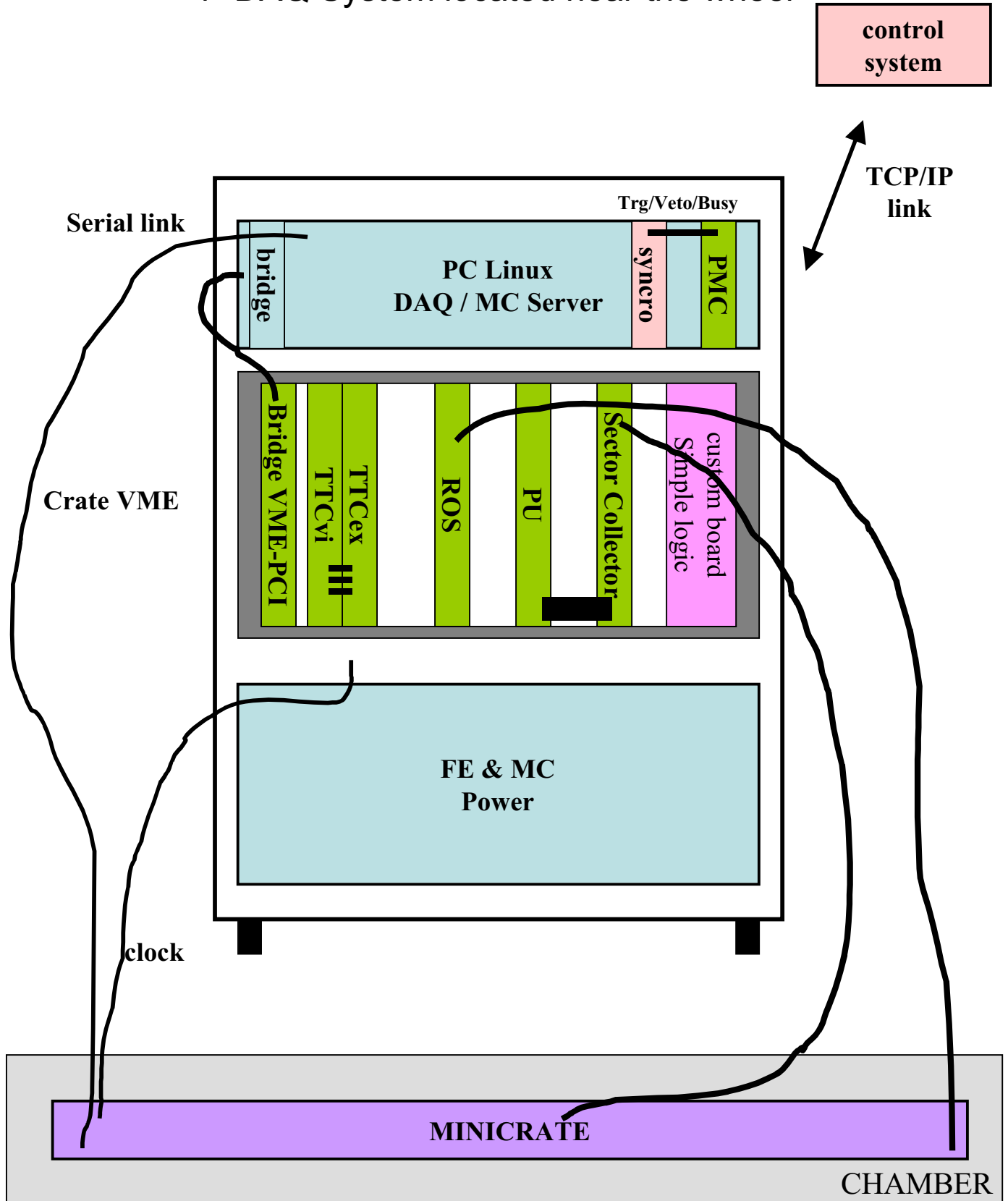
**MC Portable Test System
Integrated in the standard xdaq System
at ISR**

Boundary Scan Test System

Marco Zanetti for **Franco Gonella**

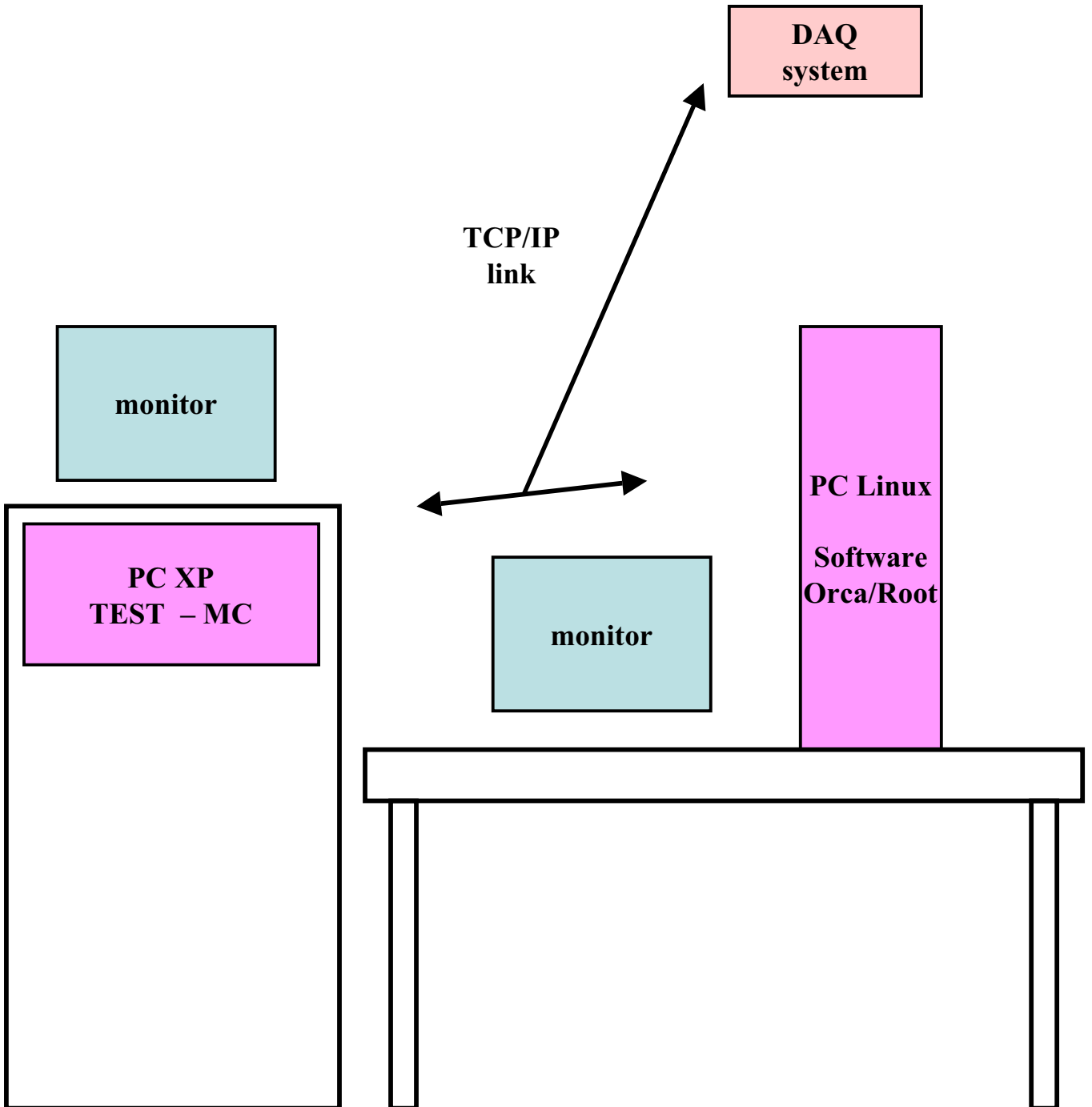
Chamber Commissioning System - MC Test

1- DAQ System located near the wheel

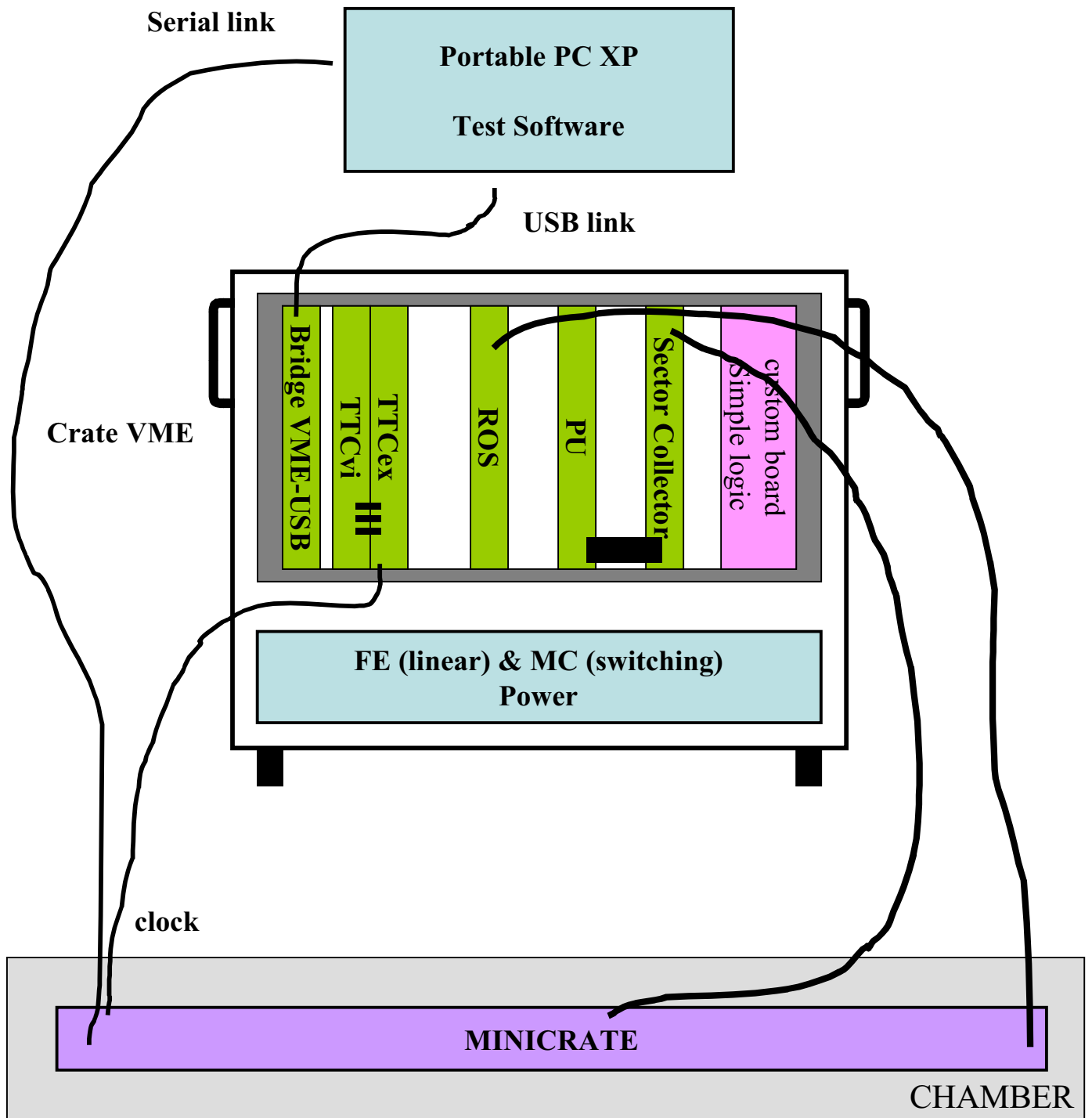


Chamber Commissioning System - MC Test

2- Test Control System

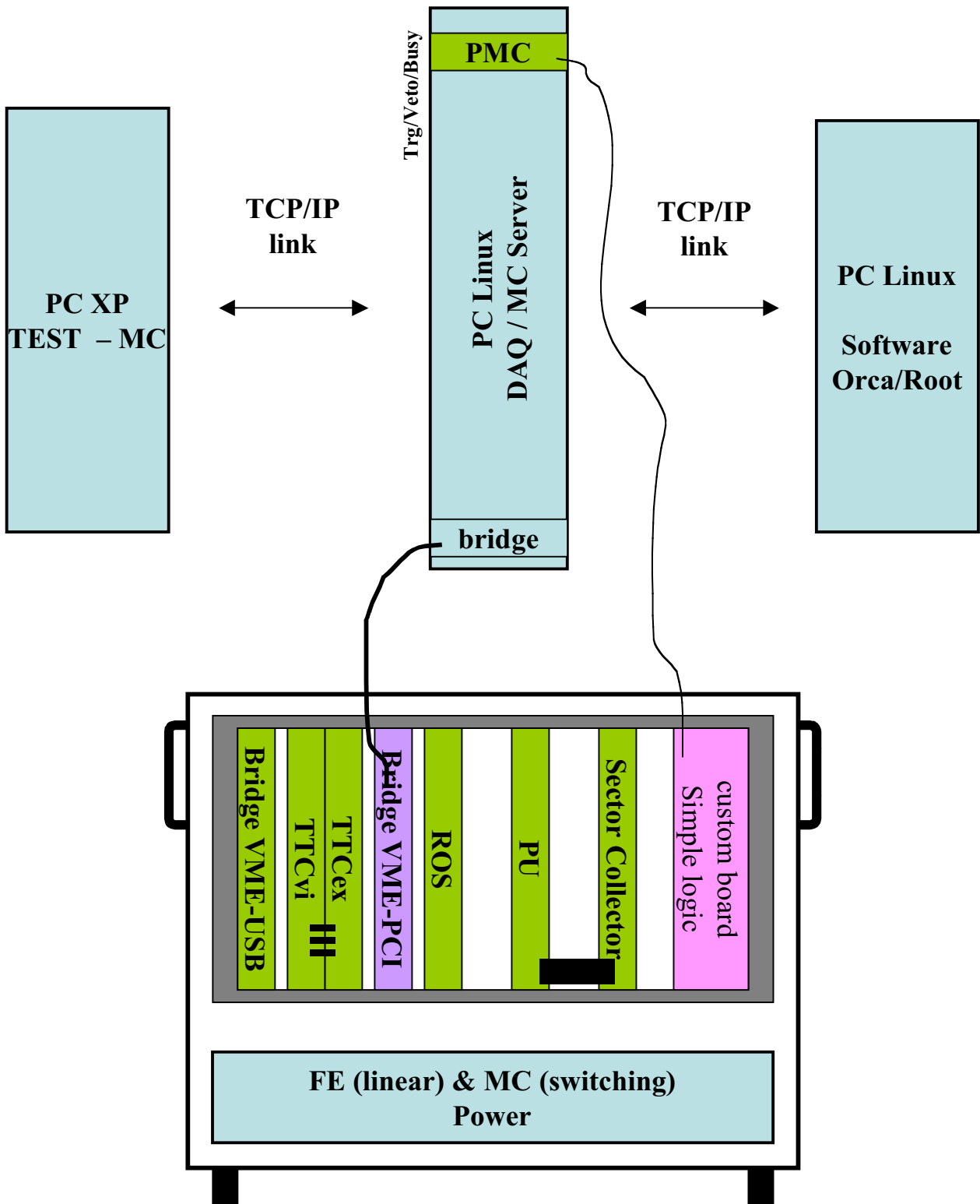


MC Portable Test System

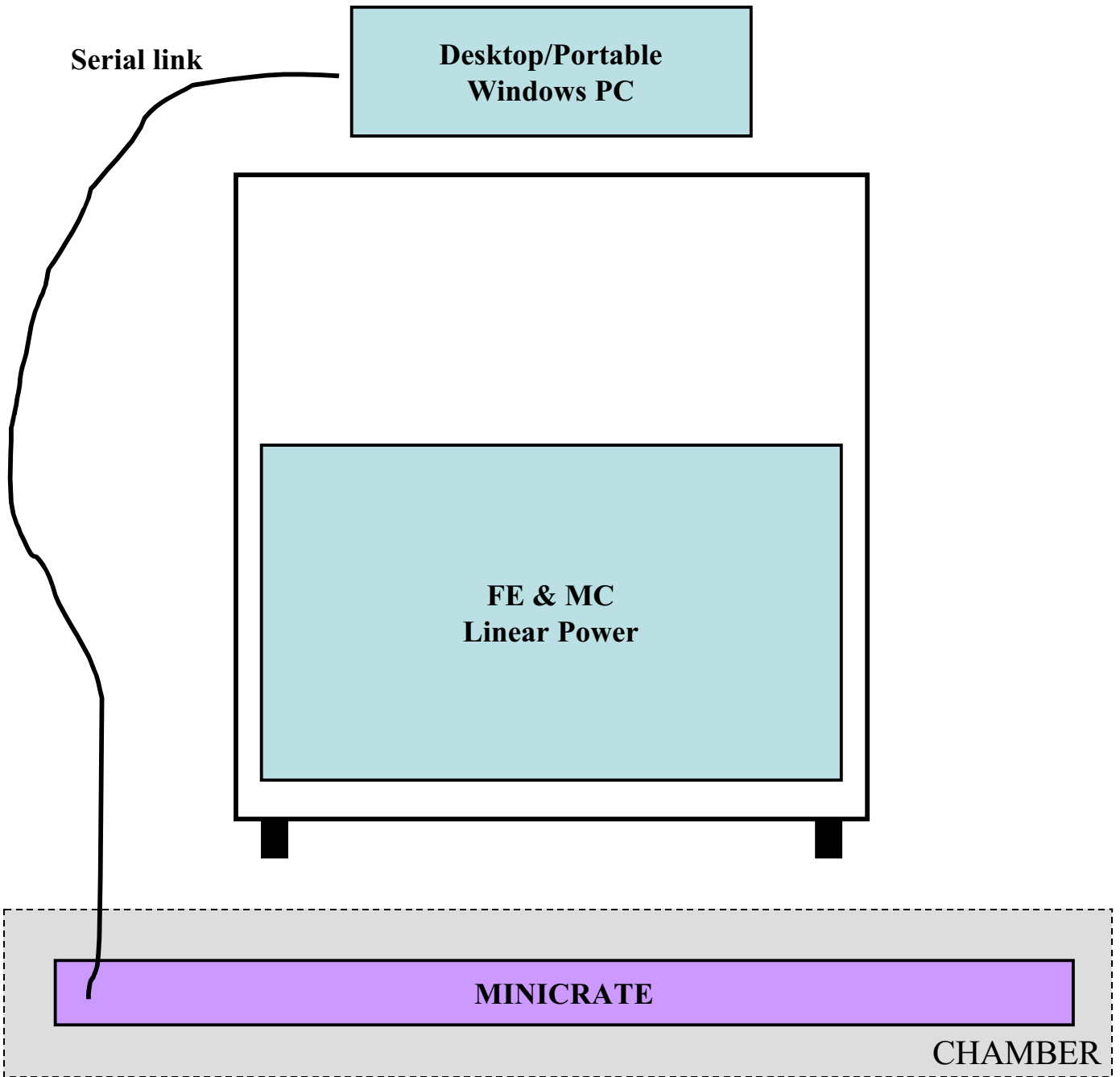


- 1- MC full functionality test
- 2- Cosmics acquisition

**MC Portable Test System
Integrated in the standard xdaq System
at ISR**



Boundary Scan Test System

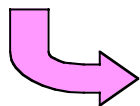


MC Test Procedure

Test types used for YB+2 and YB+1

1. test after MC transport at ISR
2. test after MC installation on chamber at ISR
3. test before chamber installation at SX5
4. test after MC installation at SX5 (same as 2.)

Standard procedure



MC Test Procedure

test of mc after transport at ISR

about 30-40 minutes

easy to do, necessary only a pc or portable

- test boot info (info send by mc on boot)
- test serial ports
- test mc program info (info send by mc after loading internal control program)
- check results of the mc internal test
- boundary scan test to check all internal connections
- check configurability (BTI, Traco, TSS, TSM, TDC, Threshold, Width)

MC Test Procedure

test of mc after installation on chamber

about 2 h

Full MC functionality test

- test boot info (info send by mc on boot)
- test serial ports
- test mc program info (info send by mc after loading internal control program)
- check results of the mc internal test
- test boundary scan
- check configurability (BTI, Traco, TSS, TSM, TDC, Threshold, Width)
- check tdc functionality
- bti connectivity test (emulation and with test pulse)
- test xtalk (cables, connections) with testpulse
- test correctness of cabling
- test alignment functionality
- test PADC

MC Test Procedure

test of mc before chamber installation

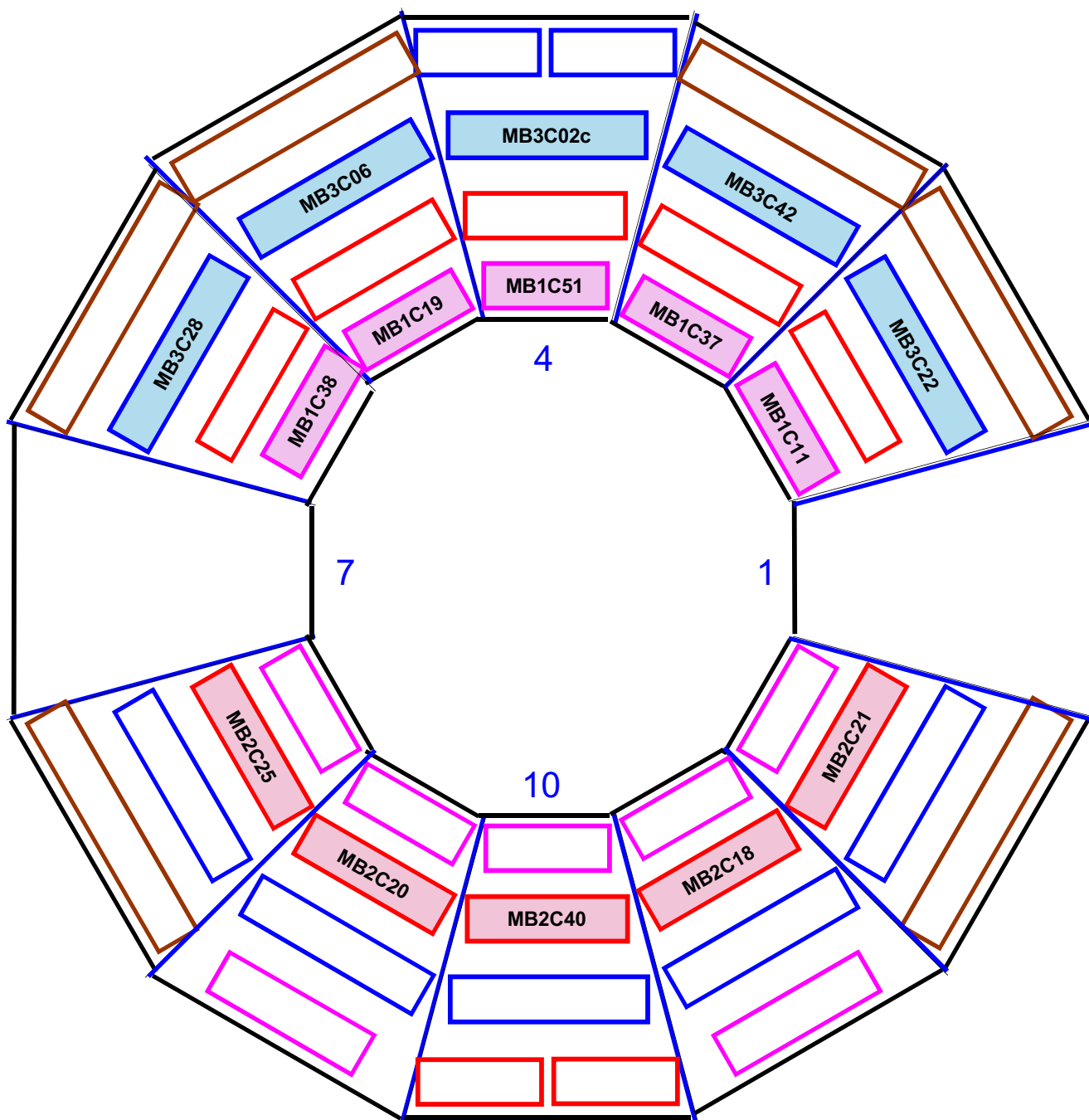
about 30-40 minutes

easy to do, necessary only a pc or portable

- test boot info (info send by mc on boot)
- test serial ports
- test mc program info (info send by mc after loading internal control program)
- check results of the mc internal test
- boundary scan test to check all internal connections
- check configurability (BTI, Traco, TSS, TSM, TDC, Threshold, Width)
- test RPC/LED/PADC interface

5 mb1
5 mb2
5 mb3

All tested with
standard procedure



YB+2 Status

06/20/05

10 mb1

10 mb2

10 mb3

2 mb4_4

2 mb4_10



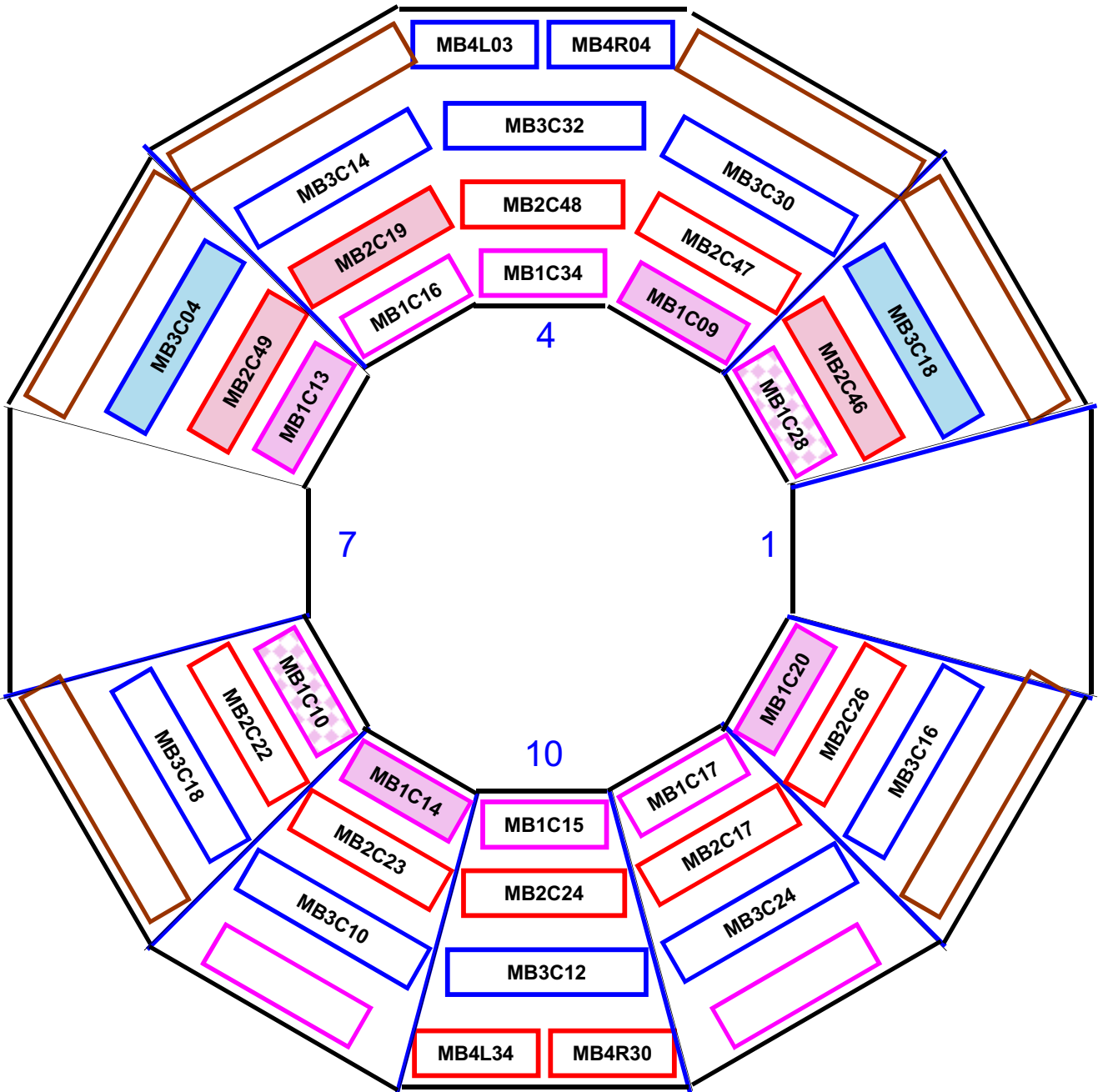
standard test (1, 2 and 3)



1 and 2 (only for the first 2 chambers installed with mc)



1, 3 and 4



MCs for YB+2

Total MCs: 42

- Installed on chambers at SX5: **34**
(10 mb1, 10 mb2, 10 mb3, 2 mb4_4,
2 mb4_10)
- Installed on chambers at ISR: **6**
1 mb4_9: partially tested (chamber
problem to be fix)
5 mb4: *successfully tested*
- Ready for installation at ISR: **2**
(1 mb4_9, 1 mb4)

MCs for YB+2

Test Results

- Test after transport at ISR: **42** (1 failed)
 - Bad connection SB-TRB (flat cable and TRB changed)
- Test after installation on chambers at ISR: **16**
 - *Cabling: 7*
 - *Mc: 2*
 - *Chamber: 8*
 - *Noise: 4 (need addition ground connections)*
- Test before chamber installation: **8**
 - *No problem*
- Test after chamber installation at SX5: **24**
 - *Cabling: 18*
 - *Mc: 2*
 - *Chamber: 7*
 - *RPC: 4*
 - *Noise problems: 6 (need addition ground connections)*

Problems at ISR

16 chambers (5 mb1, 3 mb2, 2 mb3, 1 mb4_9, 5 mb4)

- mb1C10: malfunctioning fast mask on feb1 theta -> feb and slowctrl bus changed
traco jumper on TRB3 (32channels) fixed (forgotten opened at legnaro)
- mb1C28: short on feedthr board 8L1 phi2 -> opened fe cover and repaired
- mb1C20: 53L1 theta tp failure with $V_{th} > 20mV$ (present with scalers) -> feb changed
bad connection of signals connector on mc -> fixed
- mb1C13: malfunctioning fast mask on theta -> feb and slowctrl bus changed
- mb1C9: bad connection of signals connector on mc -> fixed
- mb2C49: bad connection of 3 signals connectors on mc -> fixed
problem on TRB6 (no trigger out) -> TRB changed
- mb2C46: malfunctioning fast mask on feb13 theta -> feb and slowctrl bus changed
- mb3_18: bad insertion signals connector on feb -> fixed
bad connection 67L2 phi1 on feedthr -> internal signals cable changed
- mb4_9_29: tp problems, missed 100 ohm fast mask termination -> TO BE FIXED
- mb4_8C1: noise some channels layer1 phi1 and phi2 -> need addition ground connections
fast mask phi2 problem -> feb changed
- mb4_8C2: noise some channels layer1 phi1 and phi2 -> need addition ground connections
24L1 phi1 missed connection on feedthr -> internal signals cable changed
- mb4C4: noise some channels layer1 phi1 and phi2 -> need addition ground connections
- mb4C3: noise some channels layer1 phi1 and phi2 -> need addition ground connections

Chamber: 8

Cabling: 7

Noise: 4

MC: 2

Problems at SX5

24 chambers (5 mb1, 7 mb2, 8 mb3, 2 mb4_4, 2 mb4_10)

- mb1C34: inner and outer rpc with same I2C address -> fixed
noise theta 1L1 1L2 7L2 13L2 3L4 -> need addition ground connections
- mb1C16: problem on slowctrl theta -> splitter changed
bad insertion theta signal connector on mc -> fixed
- mb1C14: problem on T_out theta -> slowctrl flat cable (SL-Splitter) changed
inner and outer rpc with same I2C address -> fixed
- mb1C17: bad insertion connector phi on mc -> fixed
- mb2C47: feb13 theta, problem on 1 fast mask -> NOT FIXED
- mb2C48: signals cable feb1 and feb 2 swapped between phi1 and phi2 -> fixed
- mb2C19: cabling not completed -> to be fixed
- mb2C22: signal cable feb15 swapped between phi1 and phi2 -> fixed
- mb2C23: bad insertion signal connector of phi1 on trb0 -> fixed
trb3 bti 18 (149) and 19 (150), trb 2 bti 30 (124) no tp -> broken wires inside chamber NOT FIXED
- mb2C24: inner RPC bus in cc -> flat cable changed
- mb2_17: signal cable feb 11 and 12 (phi2) swapped -> fixed
- mb3C30: noise channels layer 4 feb 5 phi 1 -> need addition ground connections
- mb3C32: theta slow control bus not connected on splitter -> fixed
bad insertion 2 connector theta on mc -> fixed
noise channels 28 and 30 layer 4 phi1 -> need addition ground connections
- mb3C14: problem on 1 fast mask feb2 phi1 -> NOT FIXED
- mb3C18: slowctrl bus phi cut -> fixed (recrimped a new connector)
bad insertion connector theta on mc -> fixed
5L1 e 5L3 phi no tp -> problem in the chamber NOT FIXED
- mb3C10: bad insertion connector slowctrl theta on splitter -> fixed
feb13 theta, problem on 1 fast mask -> NOT FIXED
RPC scl line short -> fixed
- mb3C12: connectors rpc/padc swapped -> fixed
- mb3C24: 48L3 theta signals in cc -> NOT FIXED (problem in the chamber)
noise on phi1 and phi2 (last channels) -> need addition ground connections
- mb3C16: first channel all layers (all sl) noisy -> need addition ground connections
- mb4_4C03: noise 1L1 phi1/phi2 -> need addition ground connections
- mb4_10C34: connectors rpc/padc swapped -> fixed
bad connection threshold flat cable on CCB -> fixed
cc Vcc/Vth phi1 -> opened FE cover phi1, 40pins signal flat changed
bad connection TP cable on CCB -> cable changed
- mb4_10C30: connectors rpc/padc swapped -> fixed
cable feb 1 phi1 swapped with feb 1 phi2 -> fixed

RPC: 4

Chamber: 7

Cabling: 18

Noise: 6

MC: 2

Undefined: 1

MCs for YB+1

Total MCs: 24

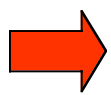
- Installed on chambers at SX5: **15**
(5 mb1, 5 mb2, 5 mb3)
- Installed on chambers at ISR: **9**
(3 mb1, 5 mb2, 1 mb3)
all successfully tested

MCs for YB+1

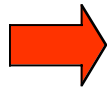
Test Results

- Test after transport at ISR: **24** (**2** failed)
 - 2 missed bti-traco connection (TRBs changed)
- Test after installation on chambers: **22**
 - *Cabling: 8*
 - *Mc: 3*
 - *Chamber: 4*
 - *Noise: 4*
- Test before chamber installation: **15**
 - *No problem*

Conclusions

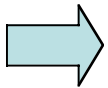


Problems on chambers after full test sequence
(only Fast Mask required mc to be seen)

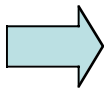


5 TRB changed on MCs

All problems can be fixed at ISR....



Intervention on chamber or mc very difficult at SX5



Problems on theta SL required chamber extraction

Noise under study,
not completely solved yet



Improve ground connections