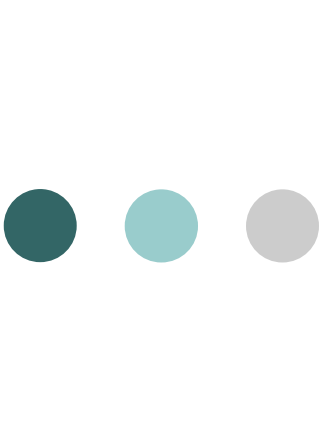
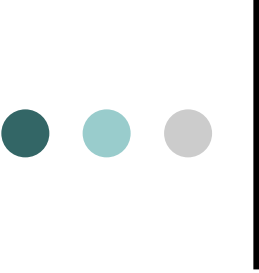




BLS Cable Transition system

Production Testing, Label application
and “Final assembly”

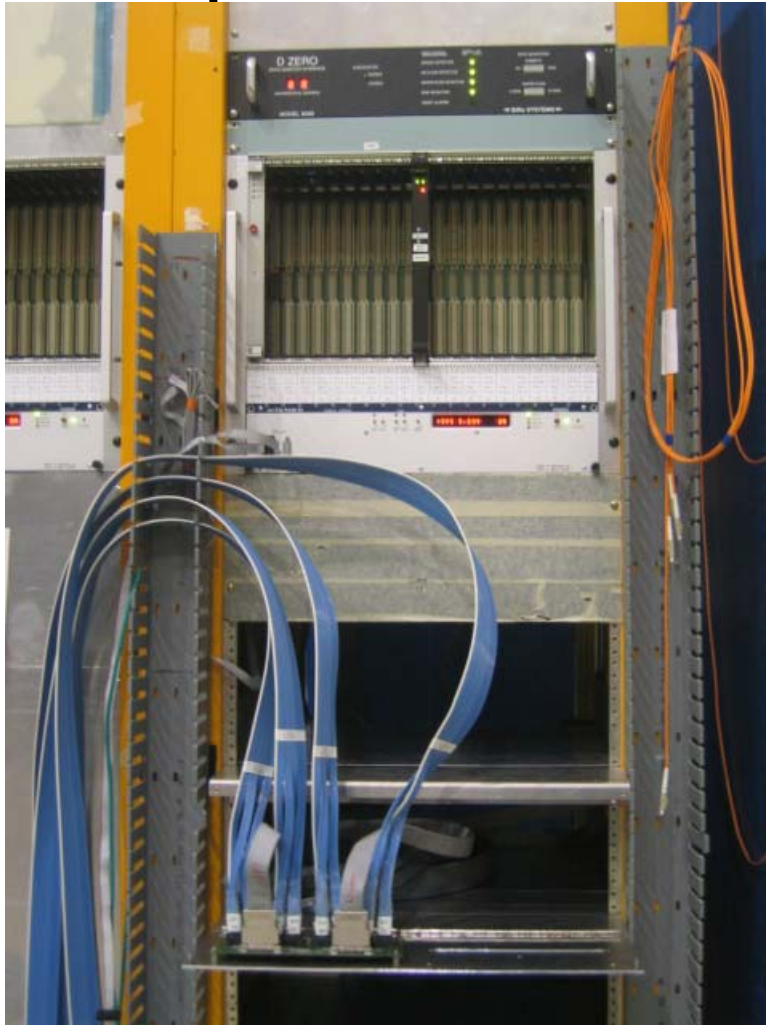
Jorge A. Benitez - MSU



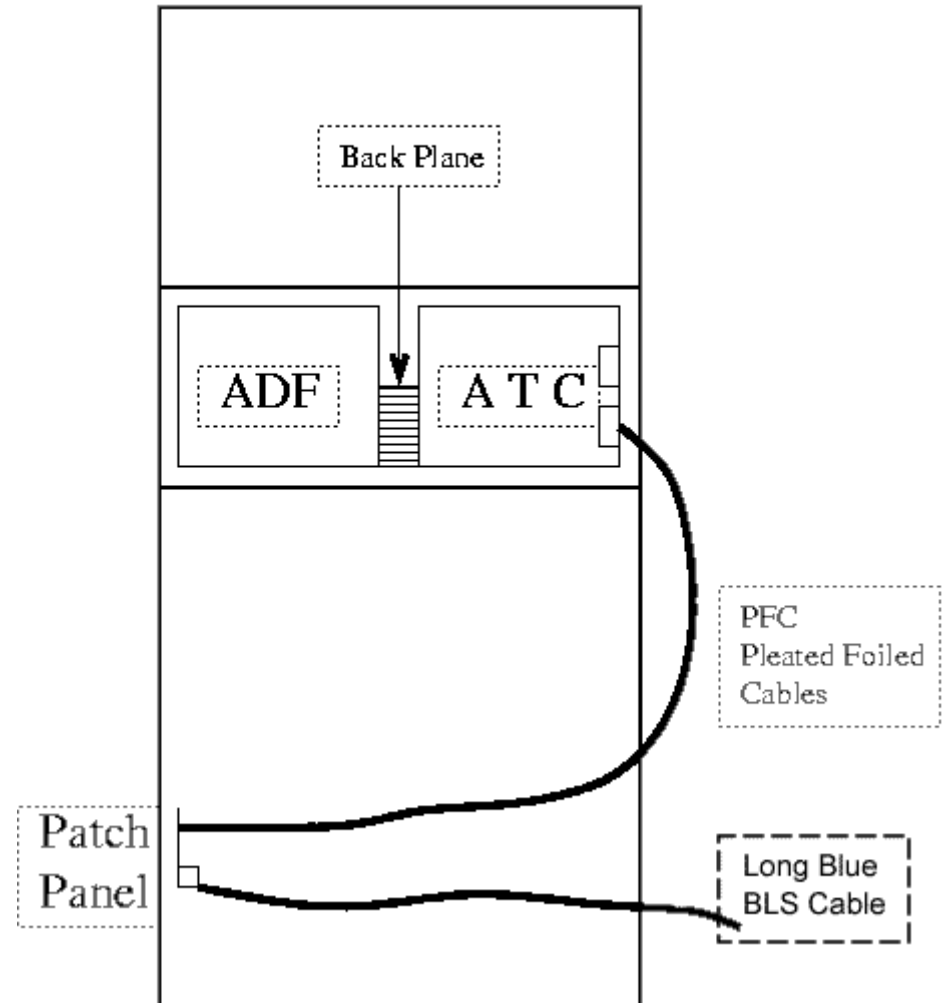
OUTLINE

- BLS Cable Transition System
- Testing system – ATTM-TWG
 - Components, location,
 - Comparison with Stefano-TWG
- Applications of the ATTM-TWG
- Labeling and Assembly
- Plans

THE SYSTEM



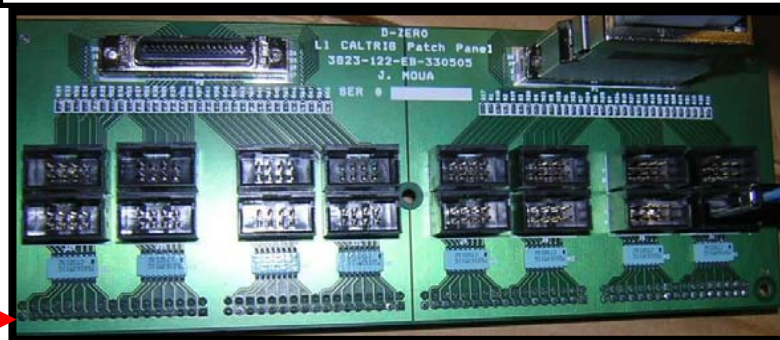
Rack Side View



Blue BLS Cables



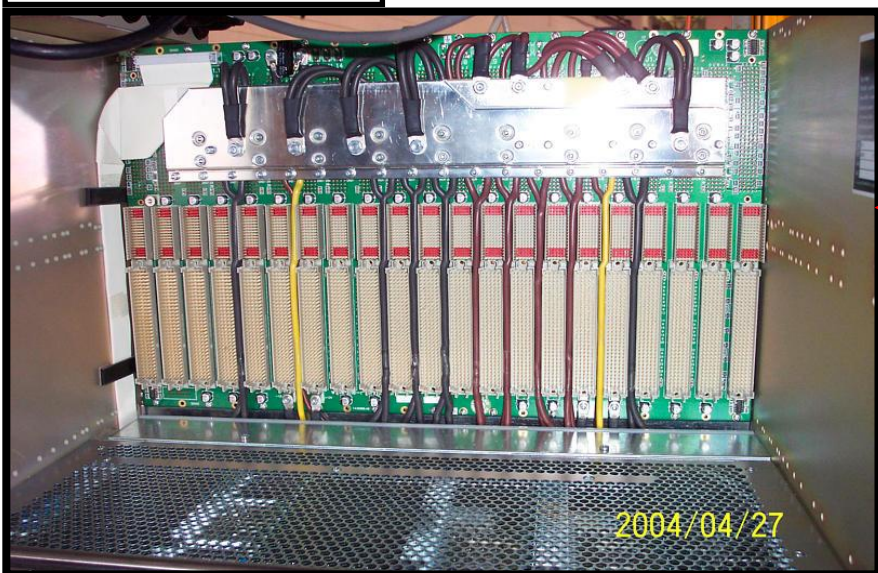
Patch Panel Card (2 Per Patch Panel)
-16 BLS trigger cable inputs
-2 Pleated Foiled Cable outputs to one ATC



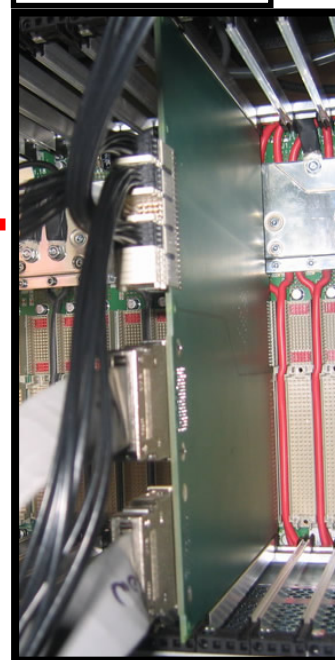
3M Pleated Foiled Cables



ADF Backplane

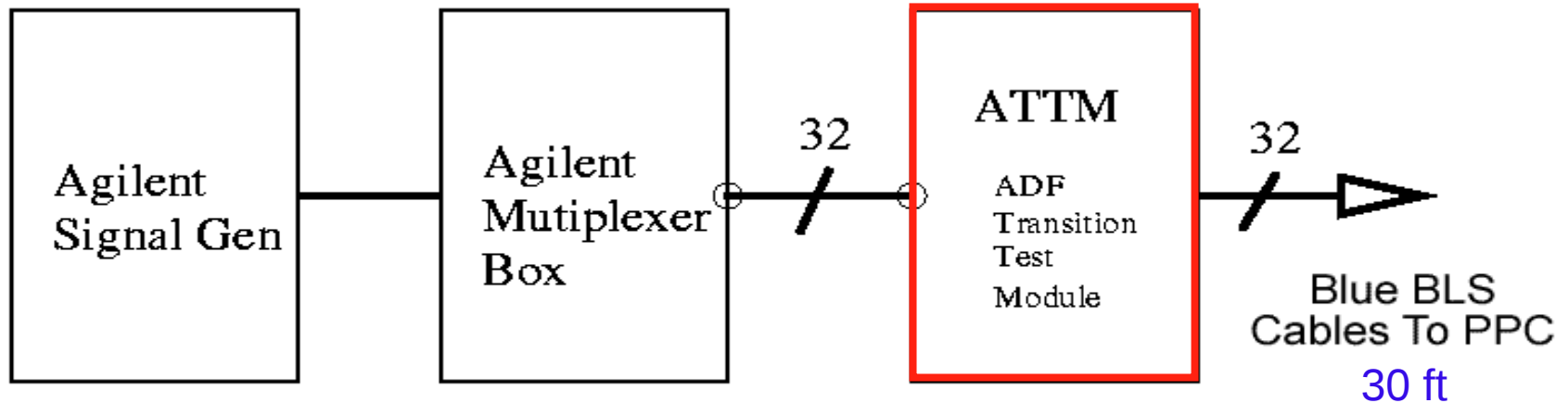


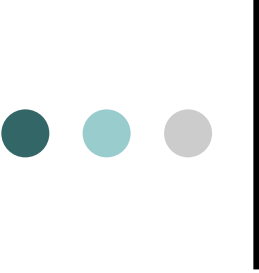
ATC Card



-2 Pleated Foiled cables Outputs
-3 LVDS Cables Output to TAB
-1 SCLD output

Testing System

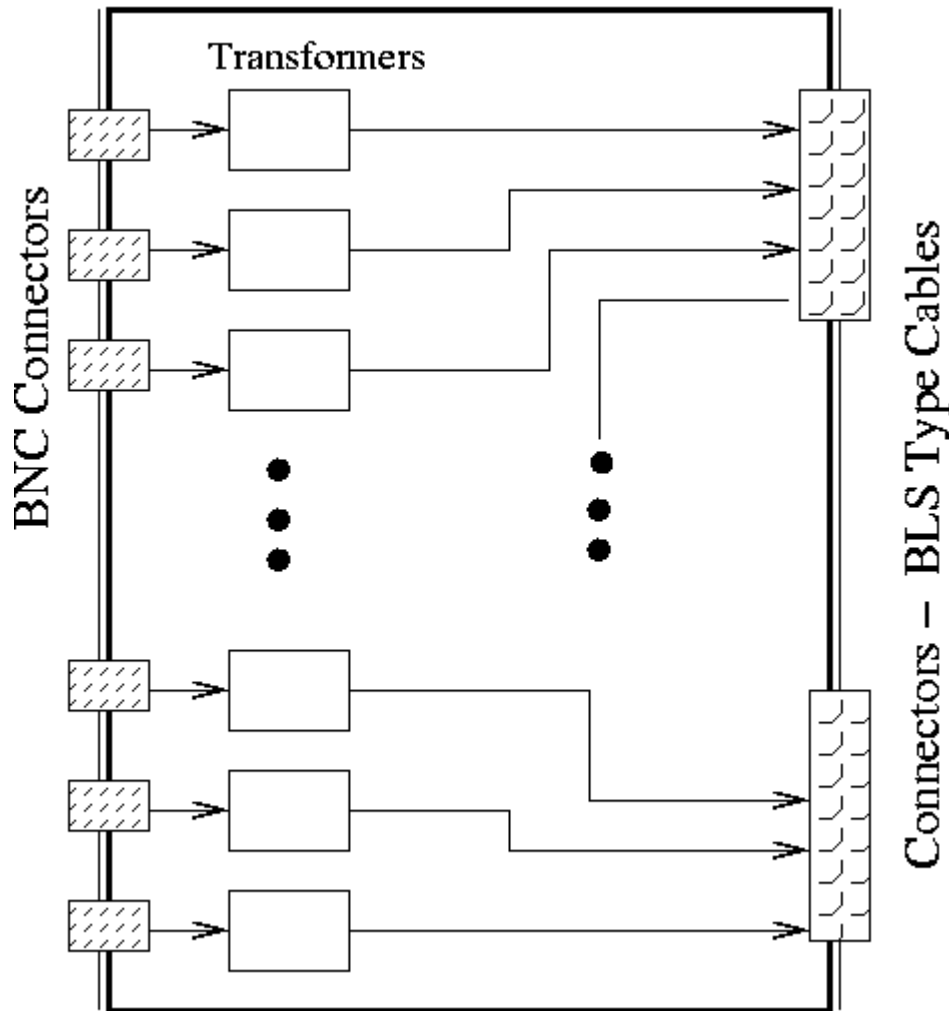




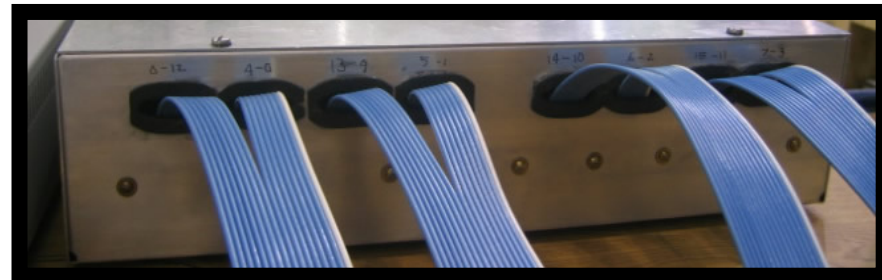
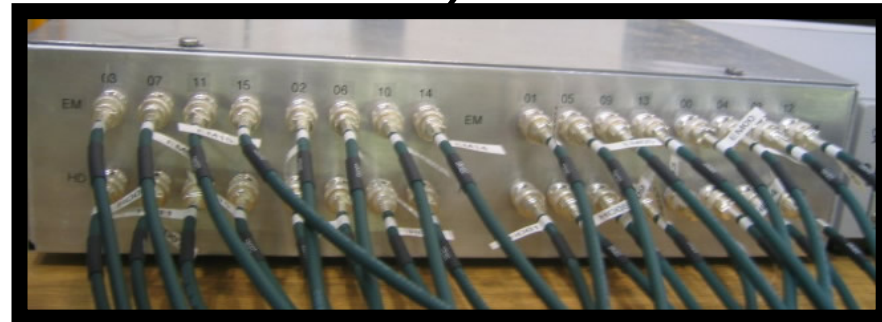
What does the testing system do?

- Func. Generator: Known signal - sine.
- MUX: One of the 32 channels is selected
- ATTM: A differential signal is produced, and send to the BLS cables.
- The output of the ATTM-TWG flows through the Patch Panel Card (PPC), Pleated Foiled Cables (PFC), ADF Transition Card (ATC), and into the ADF card

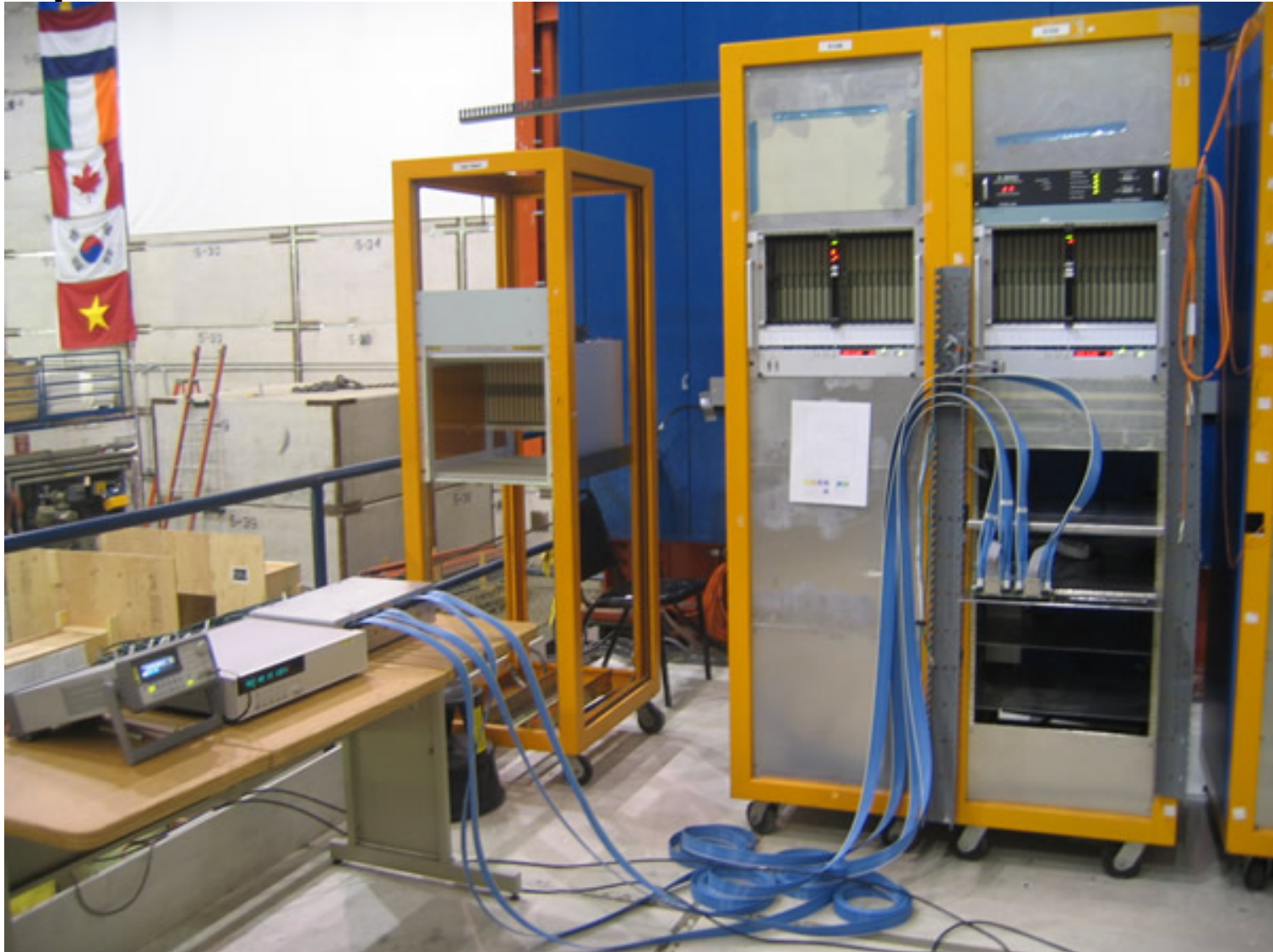
ATTM



- 32 Channels wide
- 32 BNC inputs
- 32 Transformers (Differential signal for the ADF)
- 16 BLS Trigger Tower Cable outputs (16 EM and 16 HD)



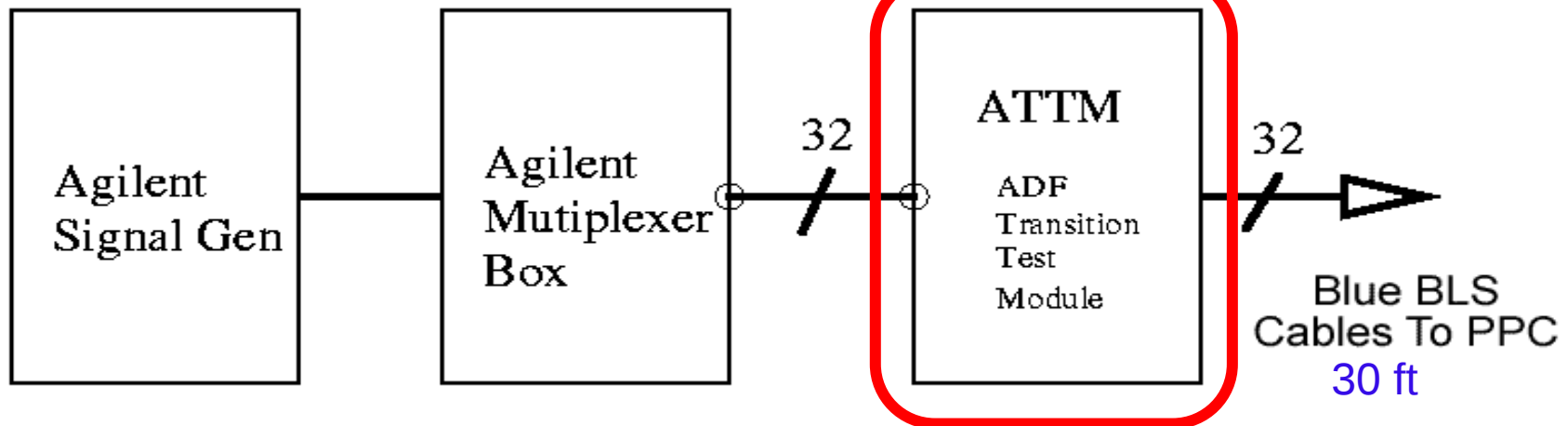
Connected Testing System



Proposed Final Location



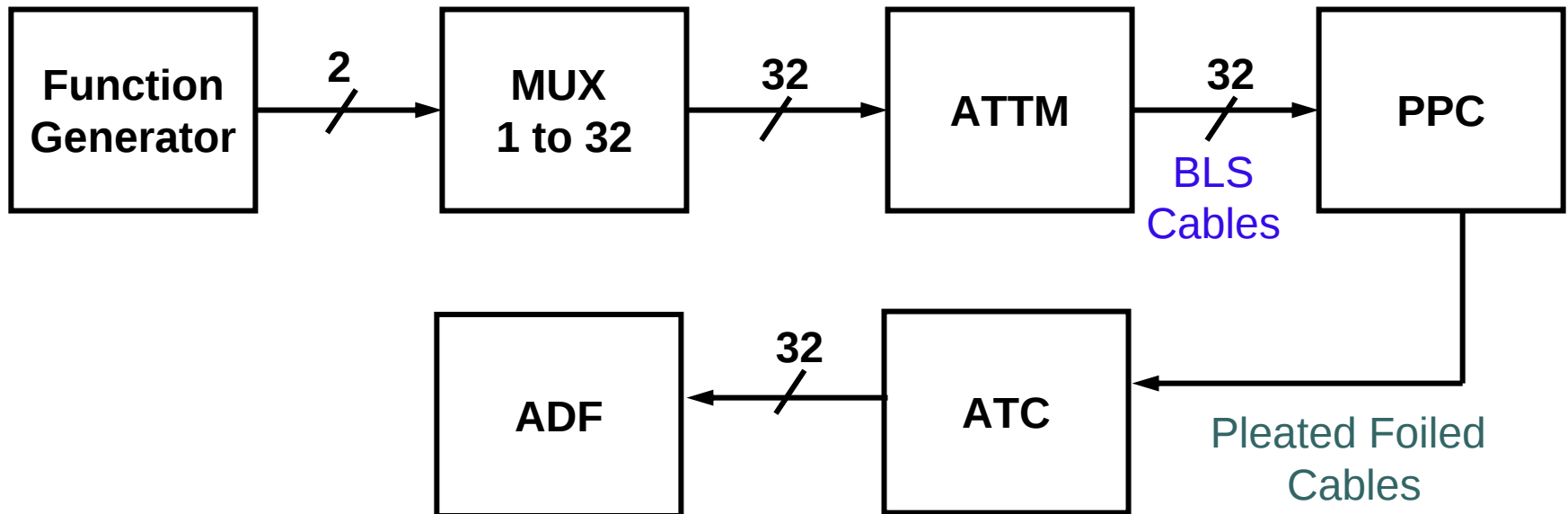
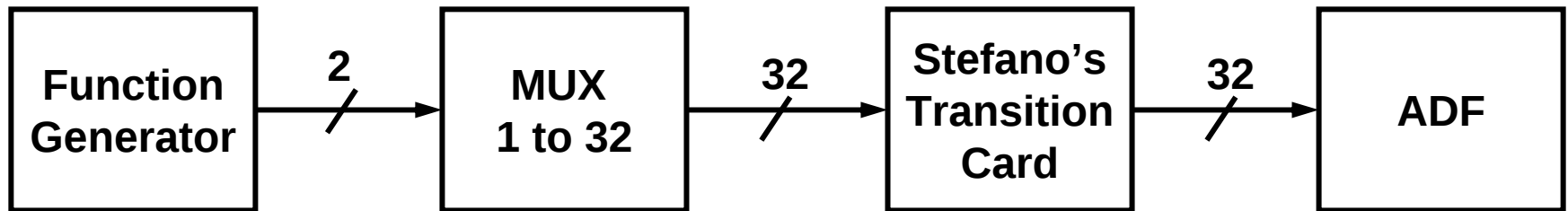
Testing System



For the production testing system (Stefano's-TWG): Stefano's card goes here



Stefano-TWG vs. ATTM-TWG

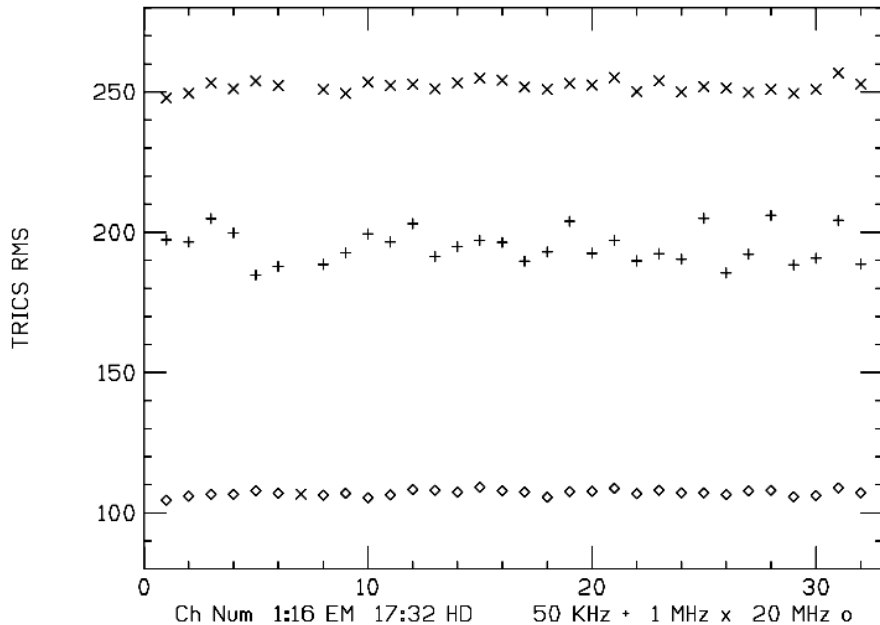


Stefano-TWG vs. ATTM-TWG

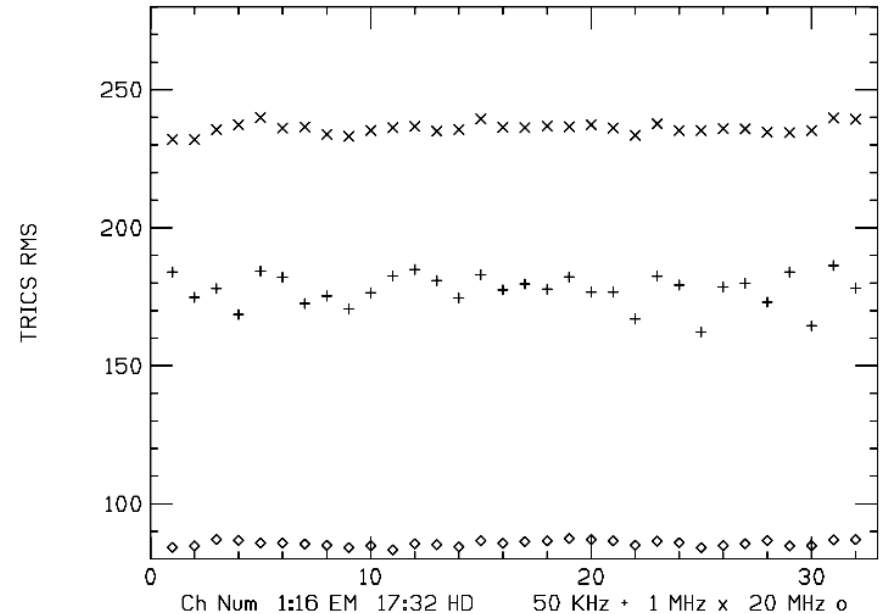
- Sends test signals directly to the back plane of the ADF

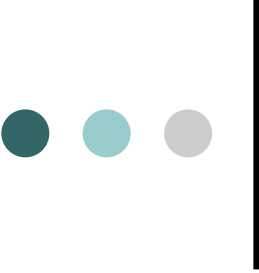
- Sends the signals through the full BLS-ADF Transition System

Scan Across all 32 Channels at 3 Frequencies ADF-2 SN #C4



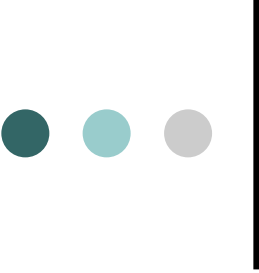
Scan Across all 32 Channels at 3 Frequencies ADF-2 SN #C4





What do we have?

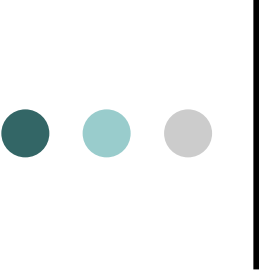
- 100 Fully tested ADF cards (20 spares), using Stefano-TWG
 - Frequency response test
 - FFT analysis
 - Ch. Link test
 - ...
- Results from the MSU Production Testing



Using the testing system

-Out on the sidewalk-

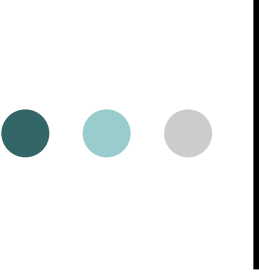
- **Measure** the response of the **ATTM-TWG** signals into an ADF card passing **through the BLS Cable Transition System**, and **compare** them with **Stefano-TWG** signals going **directly into** the ADF card
- “Production Testing”: Flow signals through the full path
- Verify the correc cabling of the full rack (20 ADF, 20 ATC, 40 PFC, 20 PPC)



Using the testing system

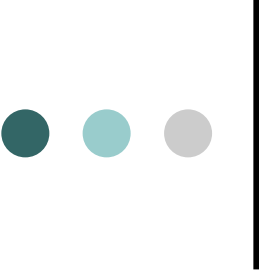
-In the MCH-

- Test and verify the correct installation of the BLS Cable Transition System in all racks
 - Miss-cabling
 - Bad signals (Damaged components)
- In case of bad Trigger Tower after installation. One can verify that the problem **is not** in the MCH (BLS Cable Transition System)



What other things can be done while testing?

- Getting labels applied:
 - Cables: PFC
 - Cards: ATC, Patch Panel Cards
- Mount Patch Panels – “Final Assembly”
 - Hinges to the front fold down metal panels
 - Cable clamps to the metal panels
 - Hinges to the horizontal metal panel



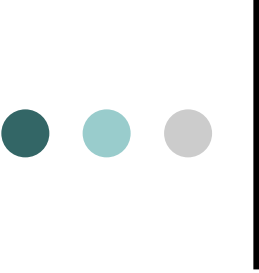
A GOOD SET

- SET:

- 1 Patch Panel Card
- 2 Pleated Foiled Cables
- 1 ATC card

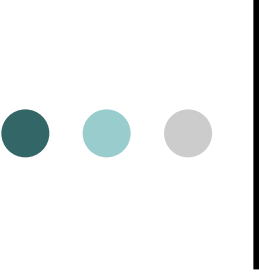
- GOOD SET:

- Set Tested OK
- Labels applied



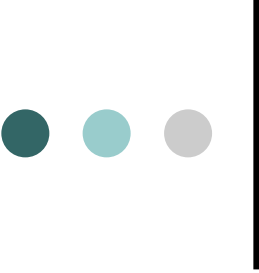
TIME per SET estimates

	Time (min)
○ Mechanical Assembly (Mount panels, PPC, hinges, clamps) ~20min / 2	20
○ Setting up test (Connect Cables)	20
○ Running test: (F. Resp + FFT)	10
○ Labeling :	
● PFC (2 ends), PPC, ATC	15
○ TOTAL	65



PLANS

- Starting date limited by the Patch Panel availability - Friday Jul 15
- Sidewalk time $1.1 \text{ h} \times 80 = 88 \text{ hours} \sim 3 \text{ weeks}$
- Practice fully cabling one ADF crate
- Find a place to store the good sets



Benefits

- Test BLS Cable transition system
- Tested and labeled sub-assemblies will speed up the installation this Fall 2005
- Have complete sub-assemblies ready to go into the MCH
- The testing system can also be used once the system is in MCH