

Introduction to CMX PRR

(thanks to P. Farthouat for most of the material
presented)

S. Veneziano

Sapienza Università di Roma and INFN

12th May 2014

Scope

- The PRR (Production Readiness Review) is meant to be the last paper exercise for any given project before starting series production and thus engaging important sums of money and manpower. The R&D phase is over and layout and design questions are no longer an issue and the final design review has been held.
- The production design must be almost finished and a prototype must have been built and evaluated.
- The spirit of the review should be one primarily of helping the designers ensure the success of their system.

Points to be addressed

- Specifications
- Environmental Conditions (location, power, connectivity)
- Motivation for choice of architecture
- Verification of performance: prototype studies, test system description, design robustness.
- Production test system description
- Components availability
- Schedule
- Production organisation
- Strategy for timing the system
- Deadtime evaluation as a function of L1A and LHC luminosity
- Plans for calibration
- Lifetime of the system, compatibility with Phase-II.

The prototype design

- Construction
 - Prototype construction documents
 - Description of assembly and test procedures
 - Description of testing procedures
 - Yield measurement
 - Experienced problems
- Test and results
 - System tests results
 - Reliability measurement

The production board design

- Schematics and FPGA files
- Bill of material
- Timing and logic verification Parameters used for simulation, Simulation outputs, ...
- Testability analysis
- EMC/EMI: Grounding, Shielding, Power distribution, Decoupling capacitances, Expected or measured interference with neighbour systems, ...
- Power consumption, Power supply turn-on sequence
- System thermal analysis
- Safety aspects Used materials, Protection (fuses, ...), ...