Progress Report

RIKEN/RBRC

Itaru Nakagawa

Scope for Readout Review

- HDI (Itaru)
  - Production Status
  - Thruhole quality control　(Outside the scope?)
  - Performance
- Bus Extender　(Takashi, …)
  - Length optimization (Dan, Rachid)
  - Preproduction fabrication (yield rate, thruhole, peel strength issue, etc..)
  - Electrical Performance
    - TDR (Kondo-san)
    - S-parameters (Kondo-san)
    - BER (Kondo-san?)
    - Eye-diagram (Kondo-san, Morita-san)
    - Actual data transmission (Half entry issue)
  - Mechanical Performance
    - Radiation resistance (Hikaru Imai/Takashi/Itaru)
  - Production Plan and Schedule (Takashi/Itaru)
- Conversion Cable (Itaru)
  - Curving Design (Dan)
  - Column-B,D (Itaru)
  - Production Plan and Schedule
- ROC (Itaru)
  - Regulator & replacement plan and schedule
  - 1008 ROC performance test status
- FEM & FEM-IB (Outside the scope or should be addressed as a back up of FELIX solution?)
- Data Acquisition (Outside the scope because It's a part of FELIX? Otherwise we can only report about 2018 beam test.)
- Slow Control & Debugging Tools
  - Readbacker for standalone (Takashi) and 1008 (Itaru)
  - Interception board for debugging (Itaru)

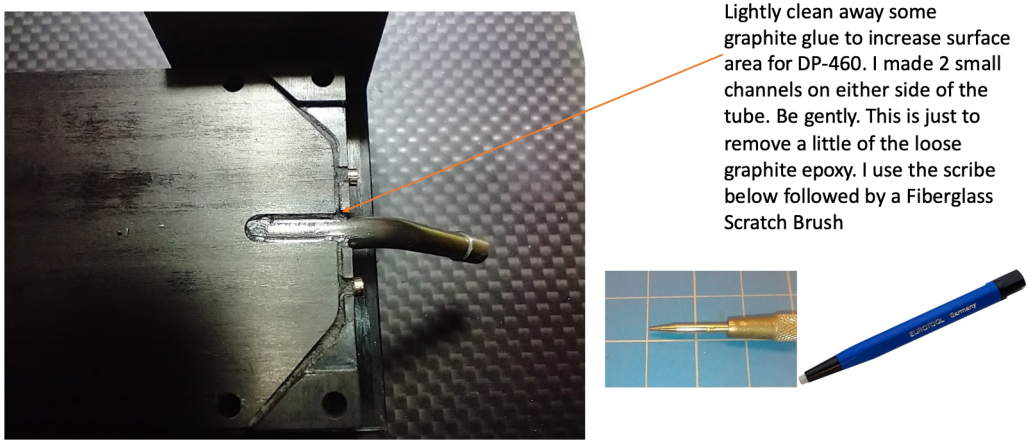
Half Entry Issue Debugging Strategy

1. Data analysis of the observed waveform (μ, YA, Taskahi, IN)
   - Waveform comparison
   - Eye diagram
2. Individual Chip Reset (Genki, Yasuyuki)
   - Keep resetting only the FPHX chip causes the half entry. Rests are to be remain un-reset between Runs.
3. Phase Follower Tuning at ROC-FPGA
   - FPGA code was developed in Taiwan and available for testing
   - Prepare ROC board for this testing. Another test bench ROC board to be dedicated for this study. There is potential risk we cannot re-install the original code to the ROC data FPGA. 3V regulator is to be installed to the ROC.
   - In the meantime, wait for #1 analysis

Stave Status

- Continue attempts using DP460, not DP460”EG” following Rob’s instruction
- Although Asuka hasn’t been demonstrated yet to achieve 1Nm torque test, the contract is being proceeded not to introduce further delay for batch-3.

Rob’s Instruction



The 3rd batch concept is the minimum number of staves to save the lead-time. Rest of production to complete the total ladder assembly is to be followed afterword. In the meantime, we’ll estimate how many more to be fabricated.

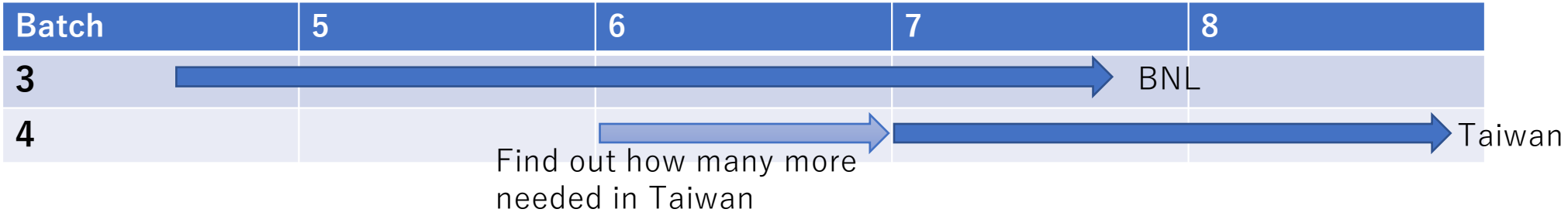
3rd Batch Stave Production

Stave Status		Layer-1		Layer-2		Layer-1+2
		Survived	Shortage	Survived	Shortage	Shortage
BNL	Assembled	18		6		
	Not Assembled	0		20		
Taiwan	Assembled	0		2		
	Not Assembled	1		24		
# of Staves BNL + Taiwan Available		19		52		
# of Ladders to be needed for 1008 barrel		24	5	32	0	5
# of Ladders to be needed for Spare barrel		24	24	32	12	36
# of Ladders needed for 1008+Spare		48	**29**	64	**12**	**41**
3rd Batch Contract (Tentative)			**16**		**16**	**32**
4th Batch Contract			?		?	?

Not tested yet

Not tested yet

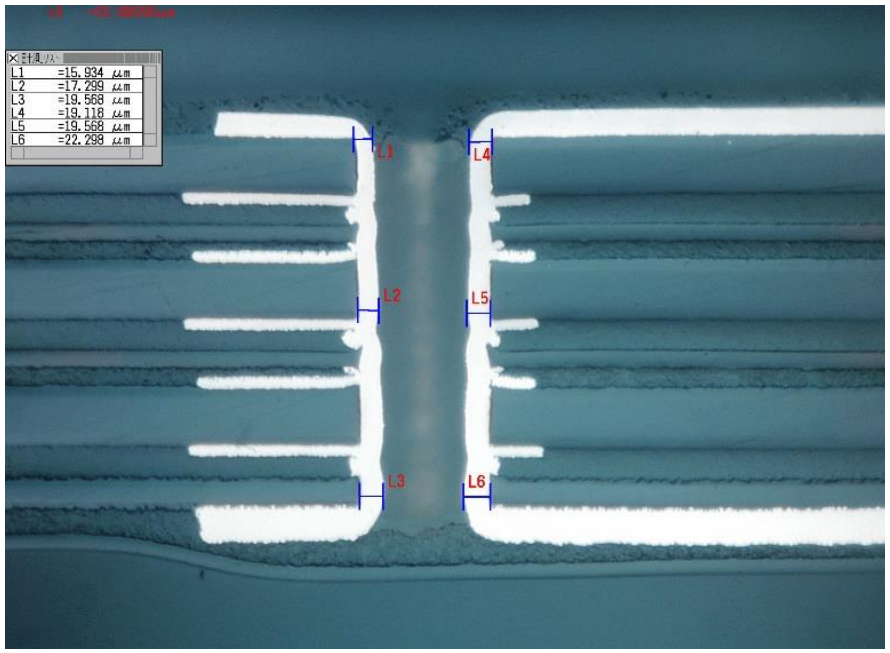
Stave Production Schedule



HDI Status

Optimization of thicker thruhole cupper plating is in progress (15~18 -> 20~22um)
1st batch delivery is still scheduled on June 28th.

U6



U9