

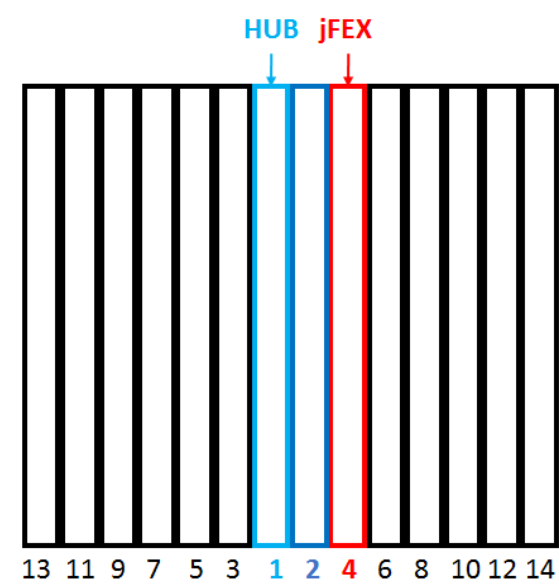
jFEX/HUB tests

Test Setup

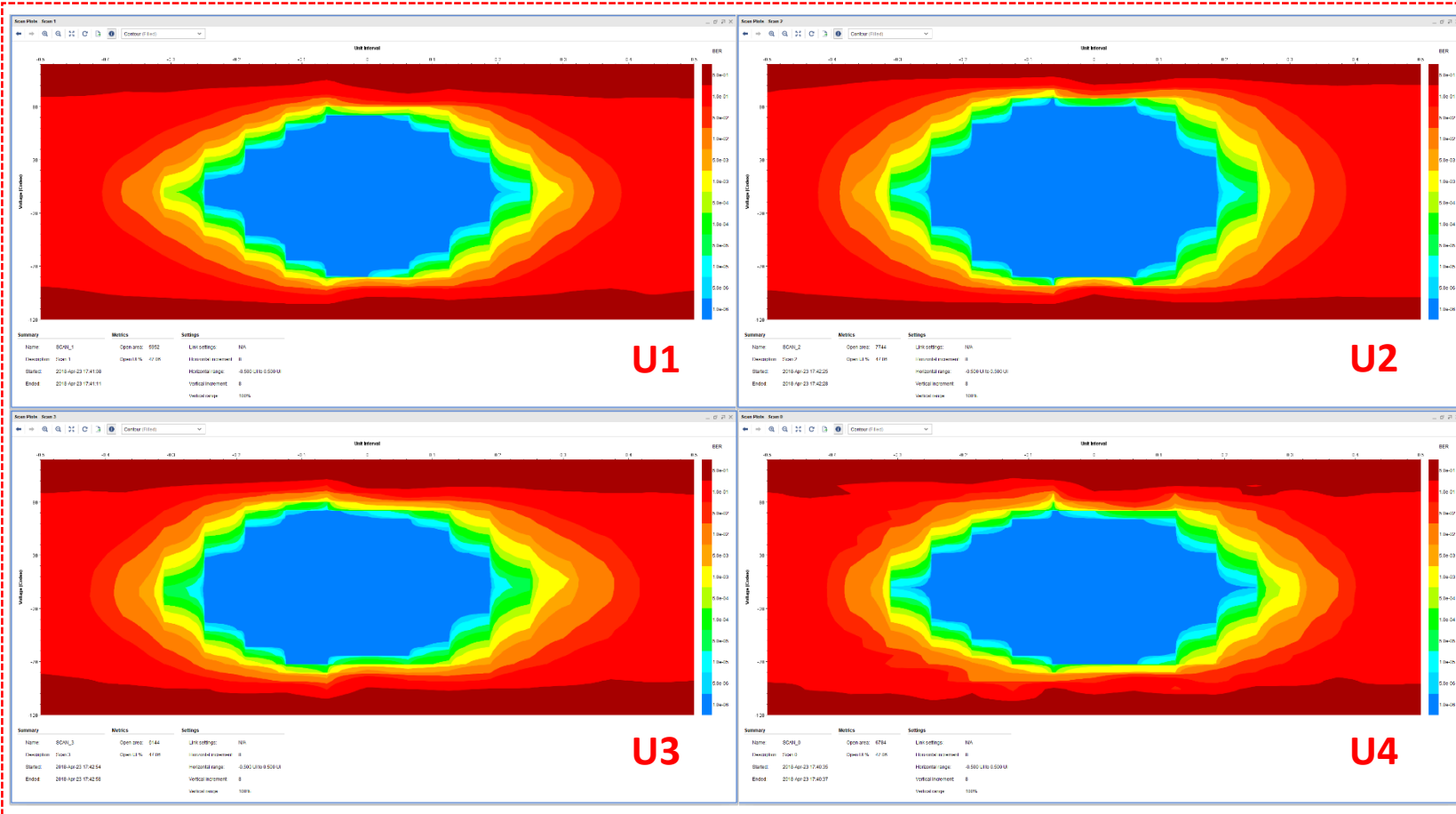
- Test the R/O and TTC data channels
 - Routed through the backplane
 - Longer high-speed traces on the PCB
- Evaluate the communication with different setups
 - HUB on slots: 1 and 2
 - jFEX on slots: 4, 5, 6, 7, 8, 9, 10, 11, 12
 - Not all node slots were tested because of current jFEX prototype construction (double slot)
 - Using IBERT @ 6.4 Gbps
 - Same Tx parameters for all setups
- REFCLK from HUB (internal 40.08 MHz oscillator)
- Confirm backplane pin mapping

HUB 1/jFEX 4

TTC data

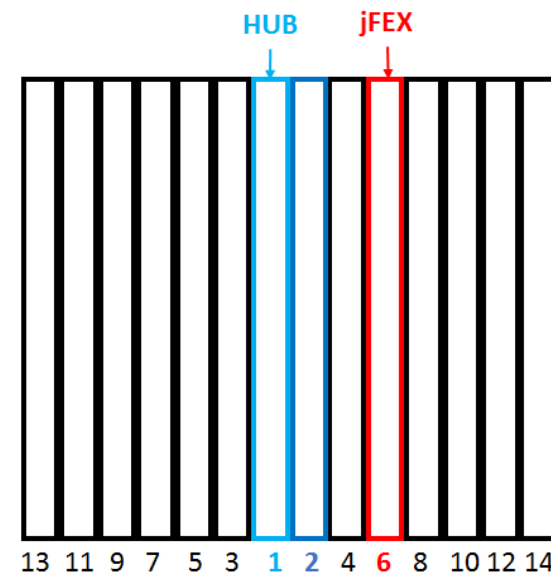


- **TTC data (Rx on jFEX)**
- 4 channels @6.4 Gbps without errors
- **IBERT parameters on HUB**
 - Rx Polarity: 0
 - Tx Pre-Cursor: 4.44 dB
 - Tx Post-Cursor: 4.44 dB
 - Tx Diff Swing: 933 mV
 - Tx Pattern: PRBS31
- **R/O (Tx on jFEX)**
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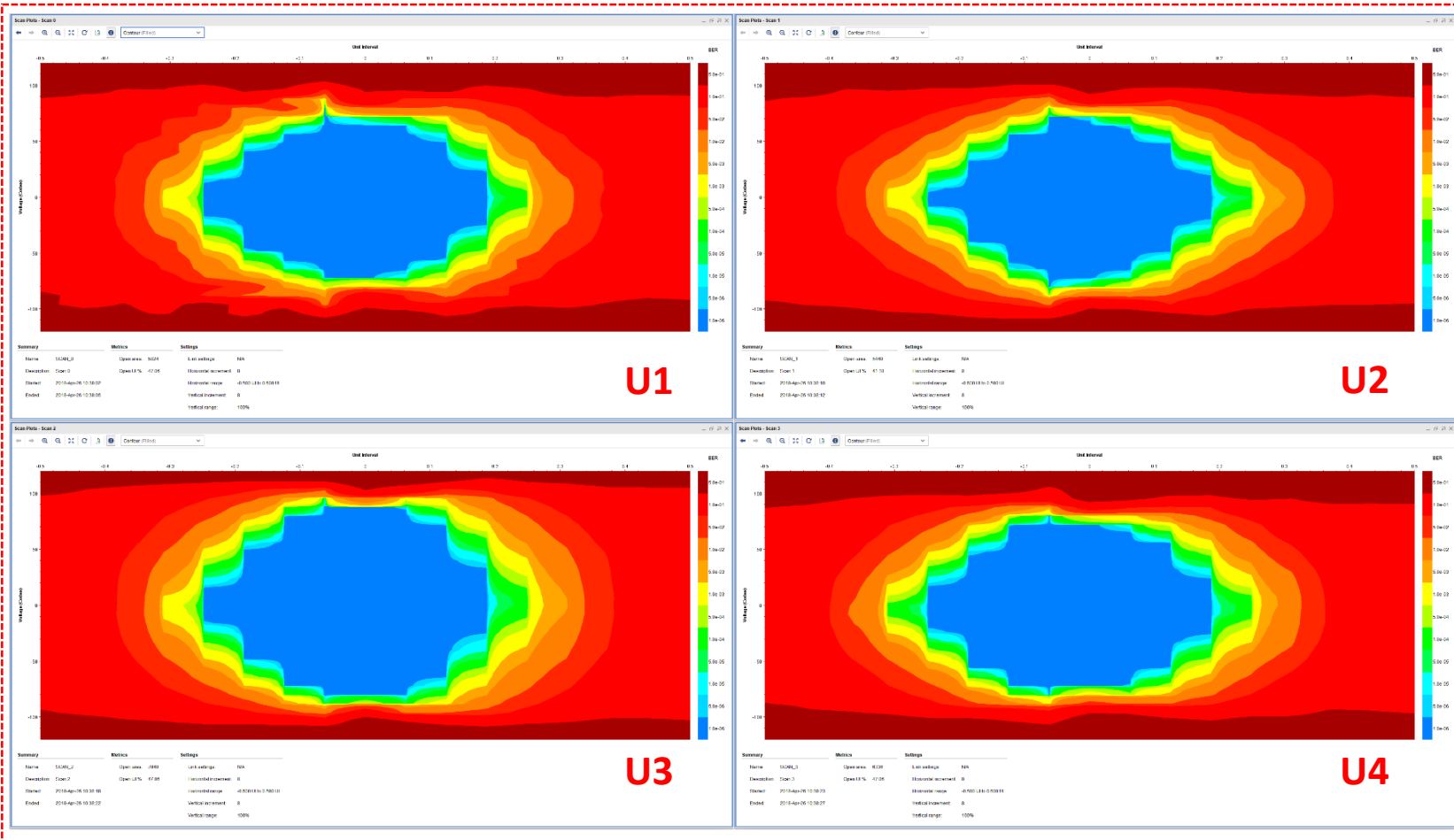


HUB 1/jFEX 6

TTC data

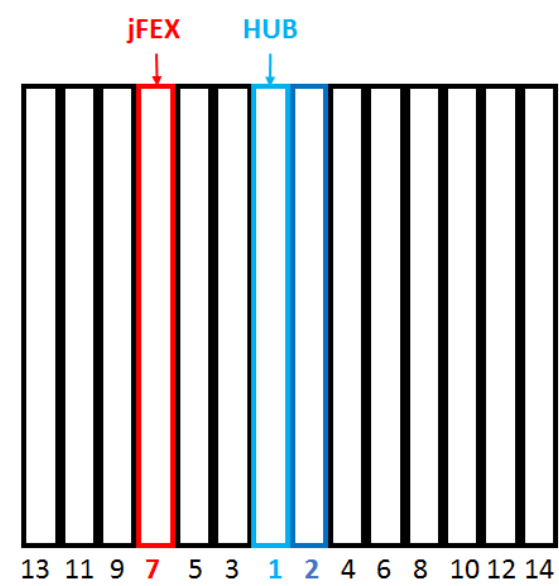
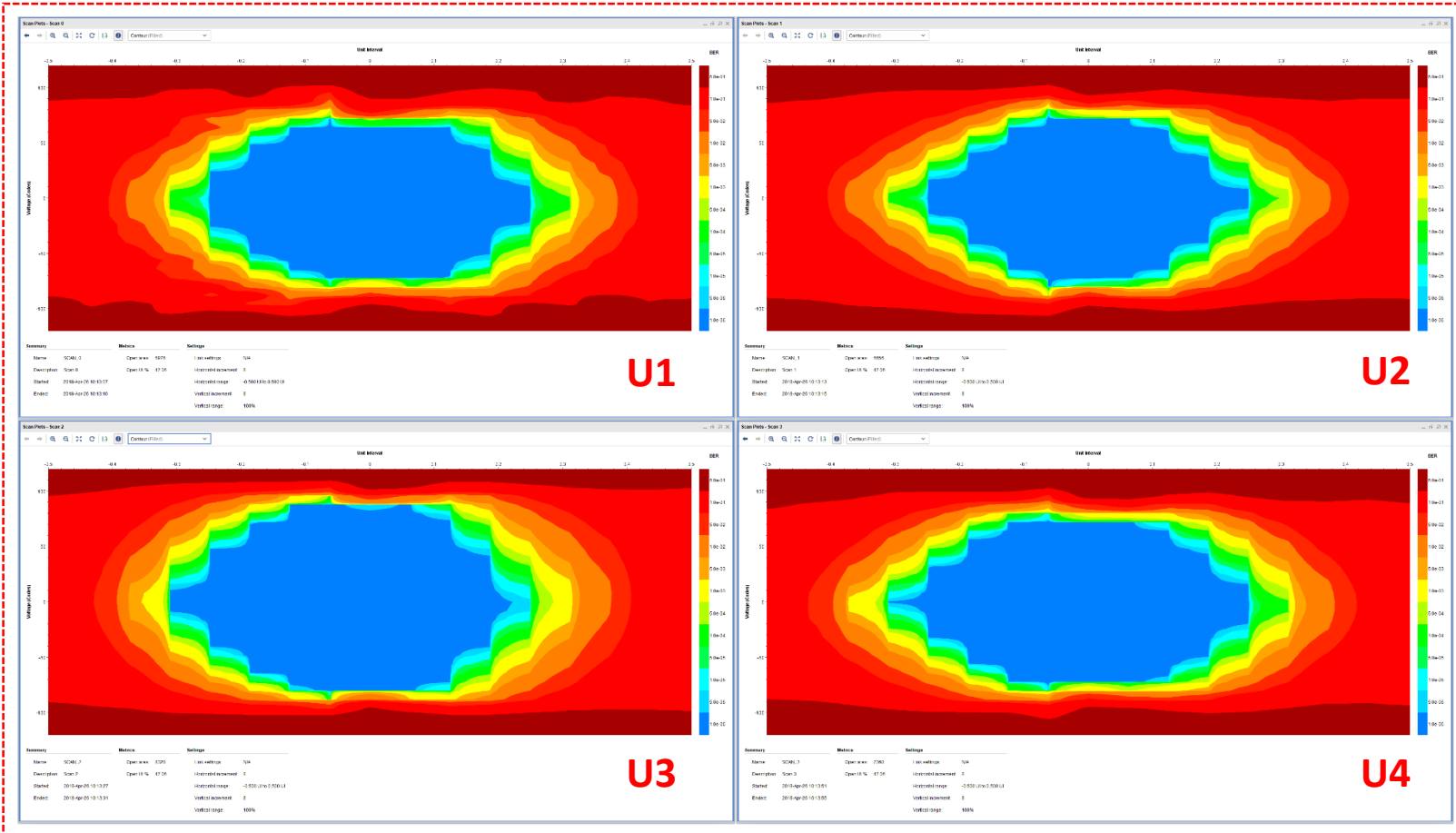


- **TTC data (Rx on jFEX)**
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HUB 1/jFEX 7

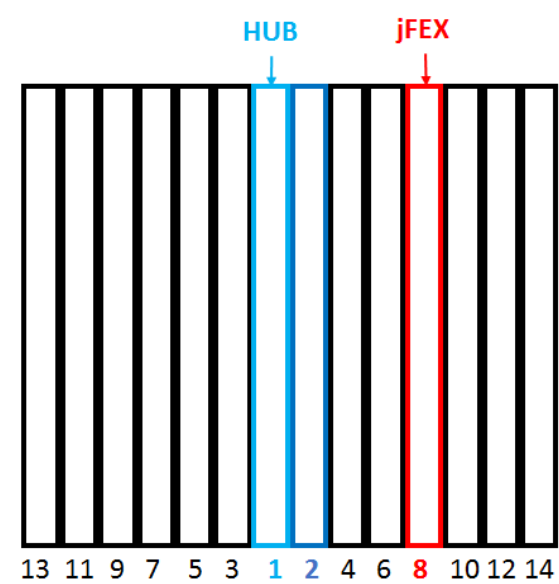
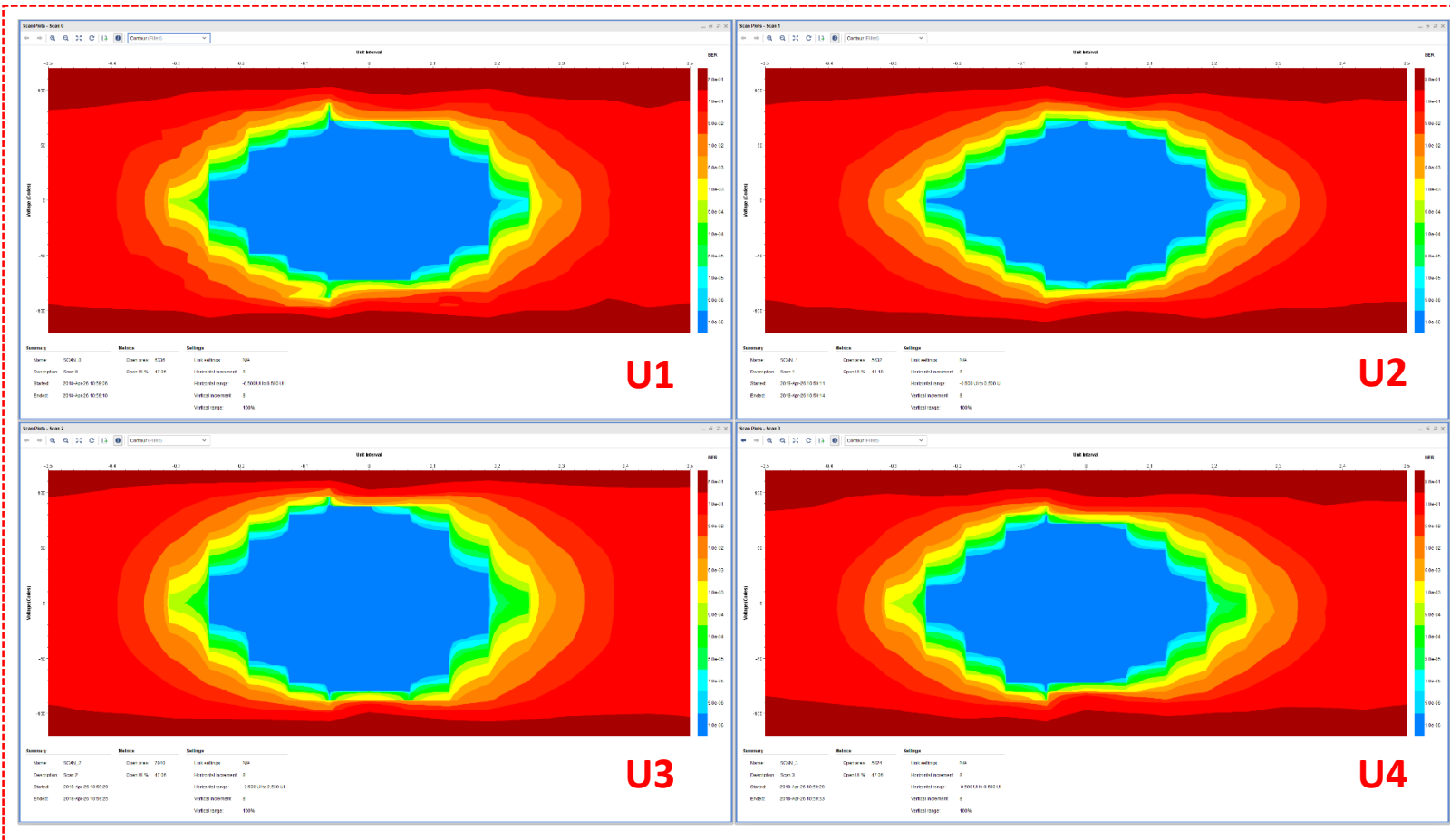
TTC data



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HUB 1/jFEX 8

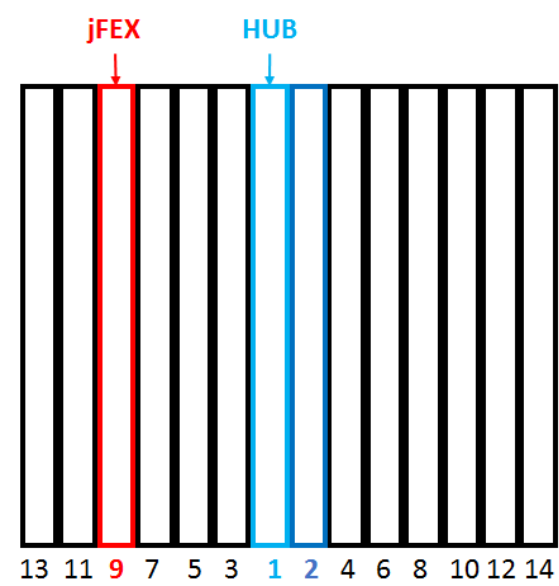
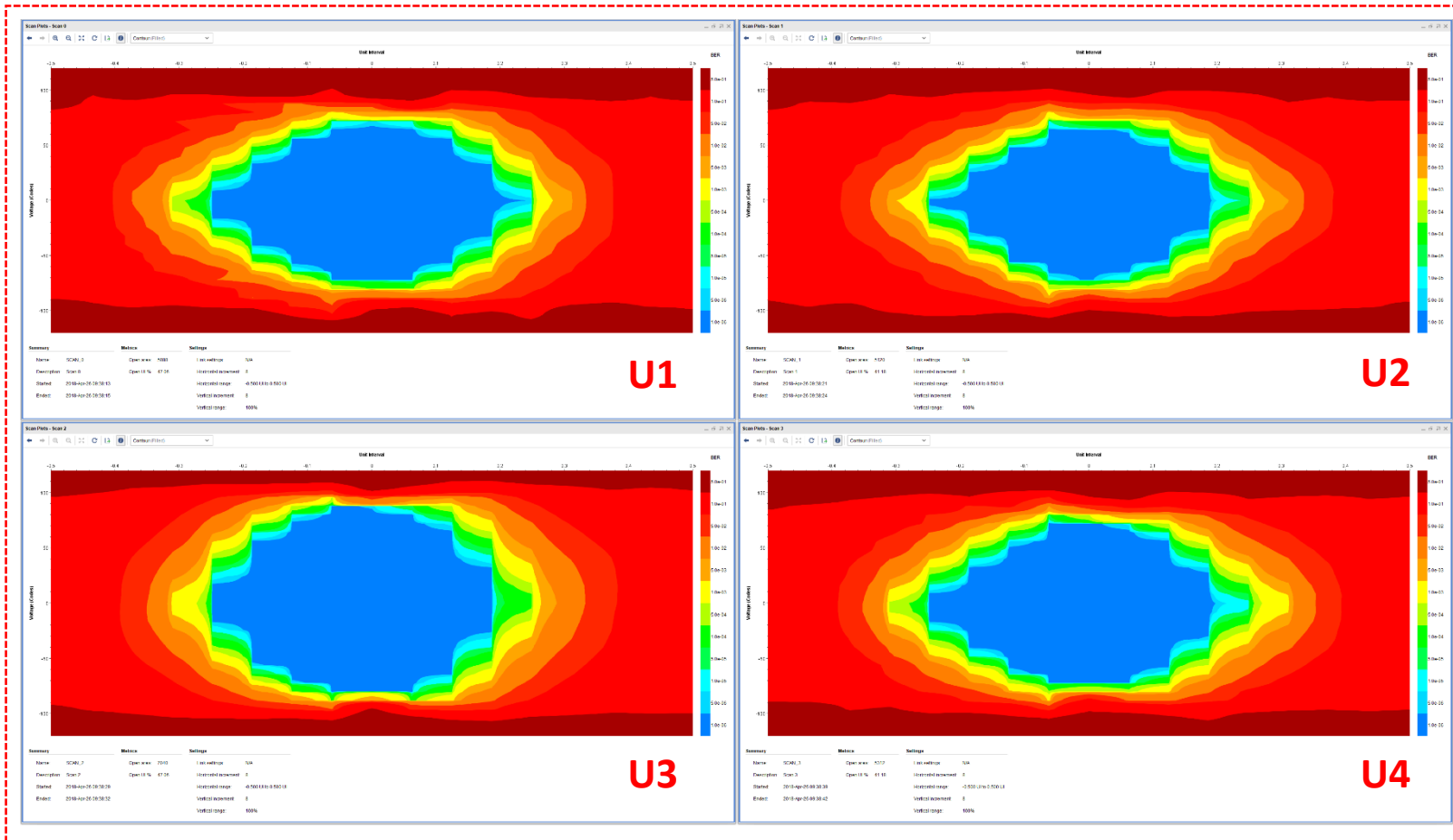
TTC data



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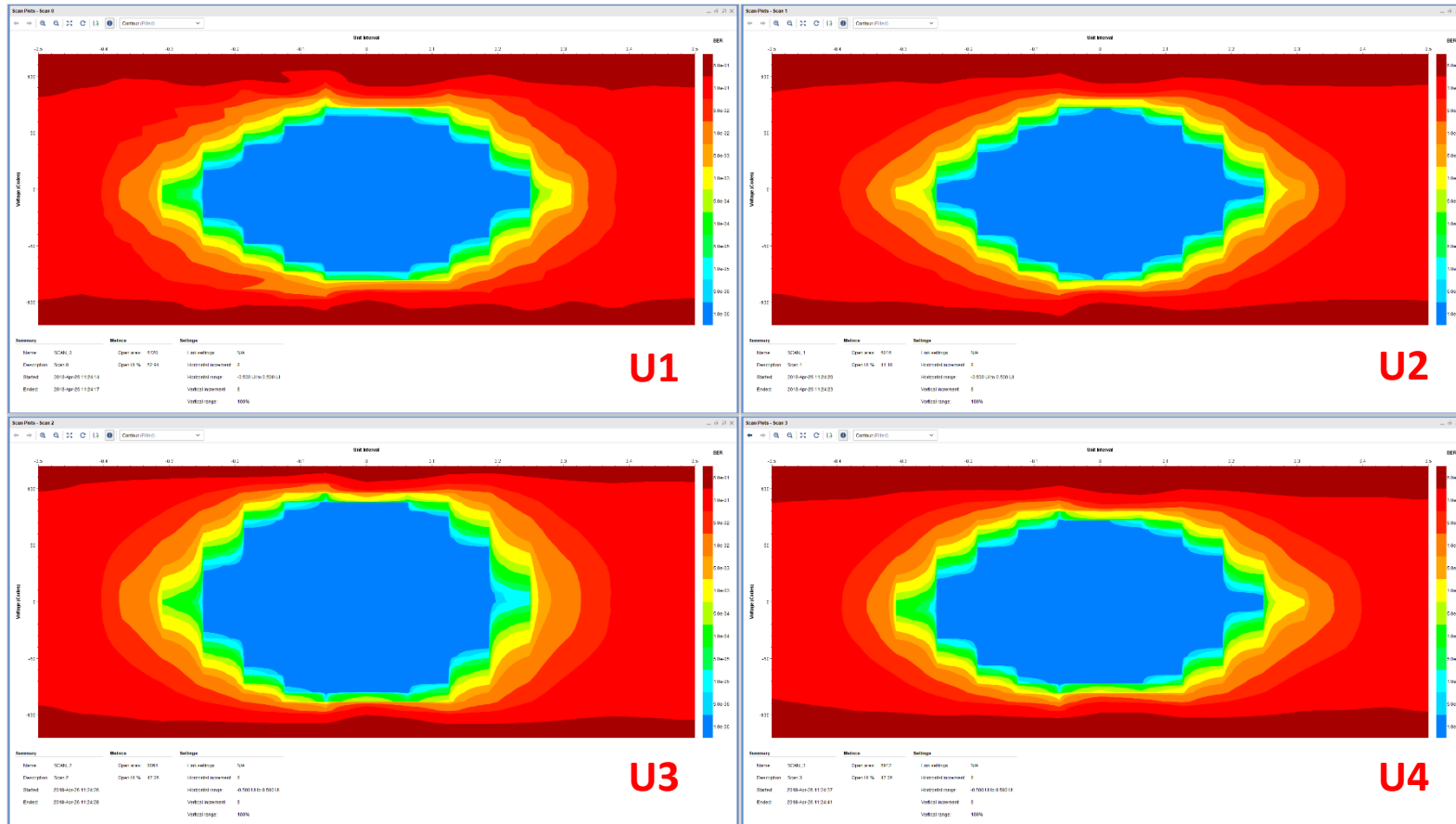
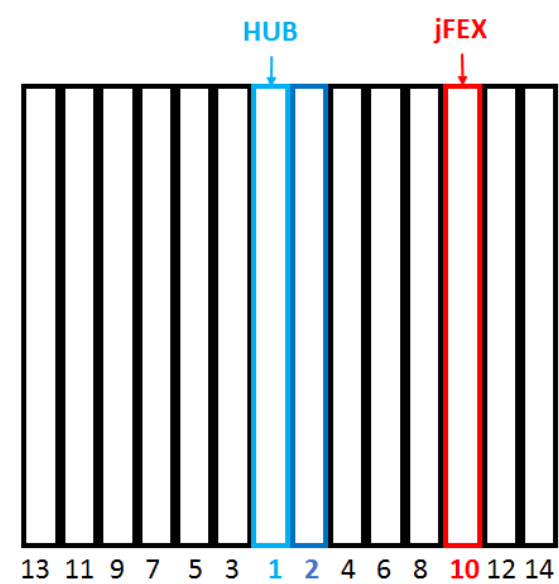
HUB 1/jFEX 9

TTC data



- **TTC data (Rx on jFEX)**
- 4 channels @6.4 Gbps without errors
- **IBERT parameters on HUB**
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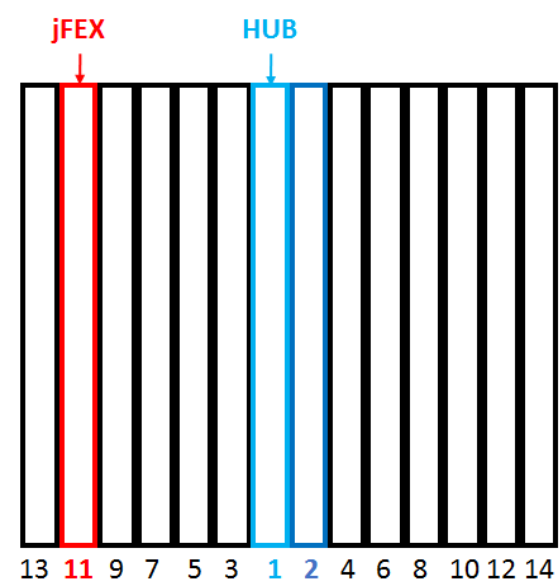
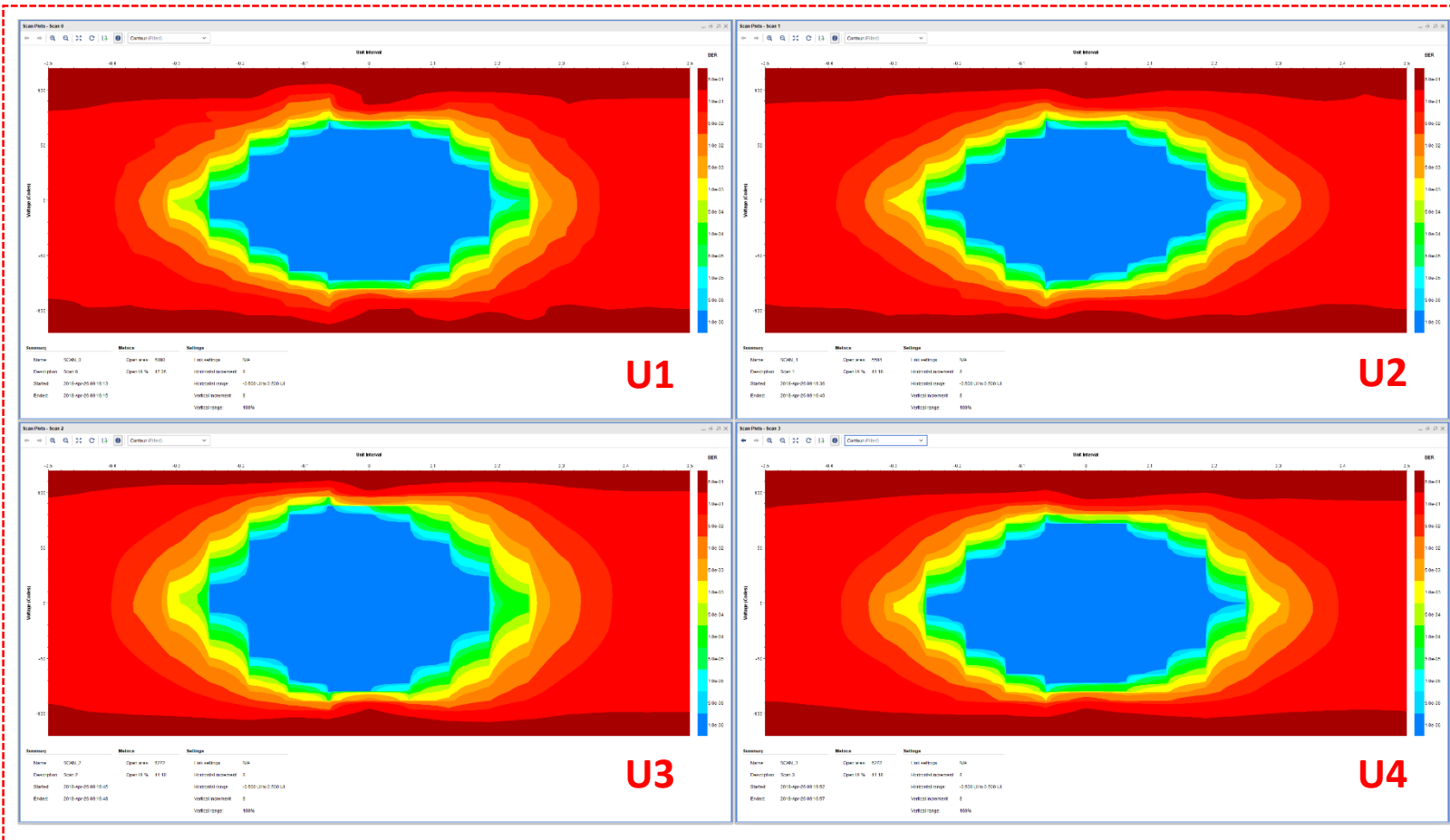
HUB 1/jFEX 10



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HUB 1/jFEX 11

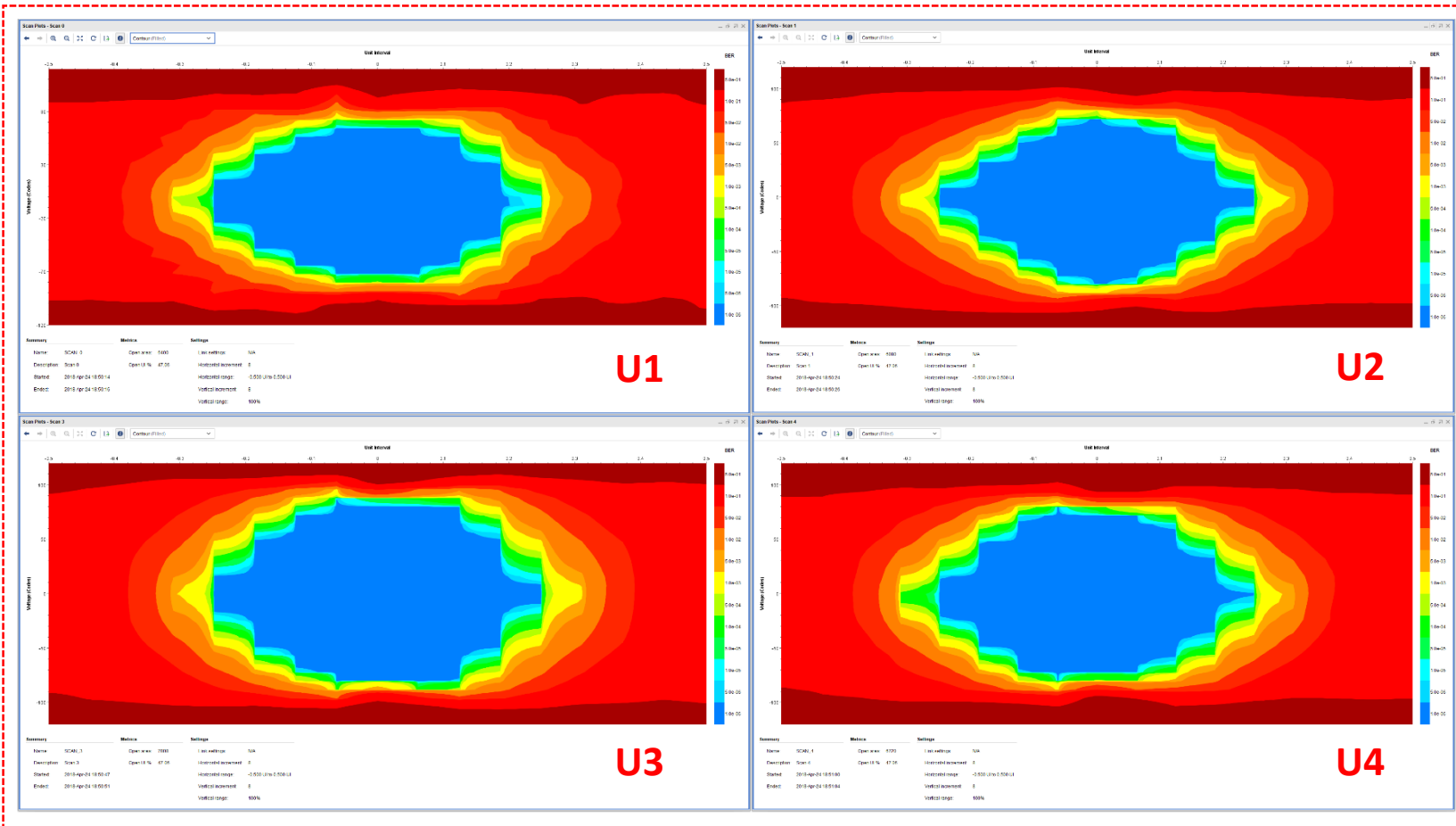
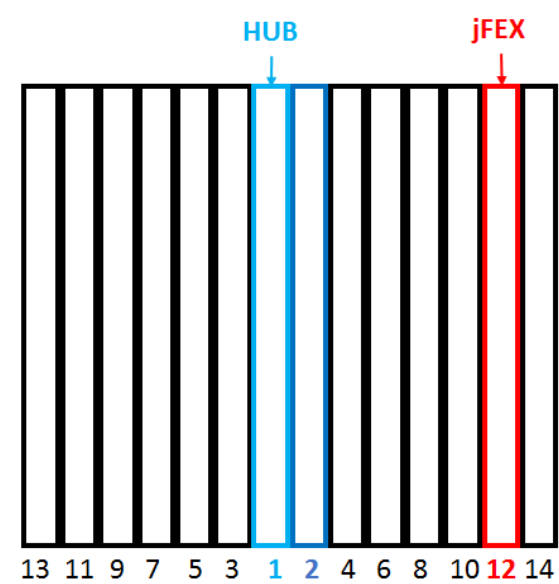
TTC data



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 - Rx Polarity: 0
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HUB 1/jFEX 12

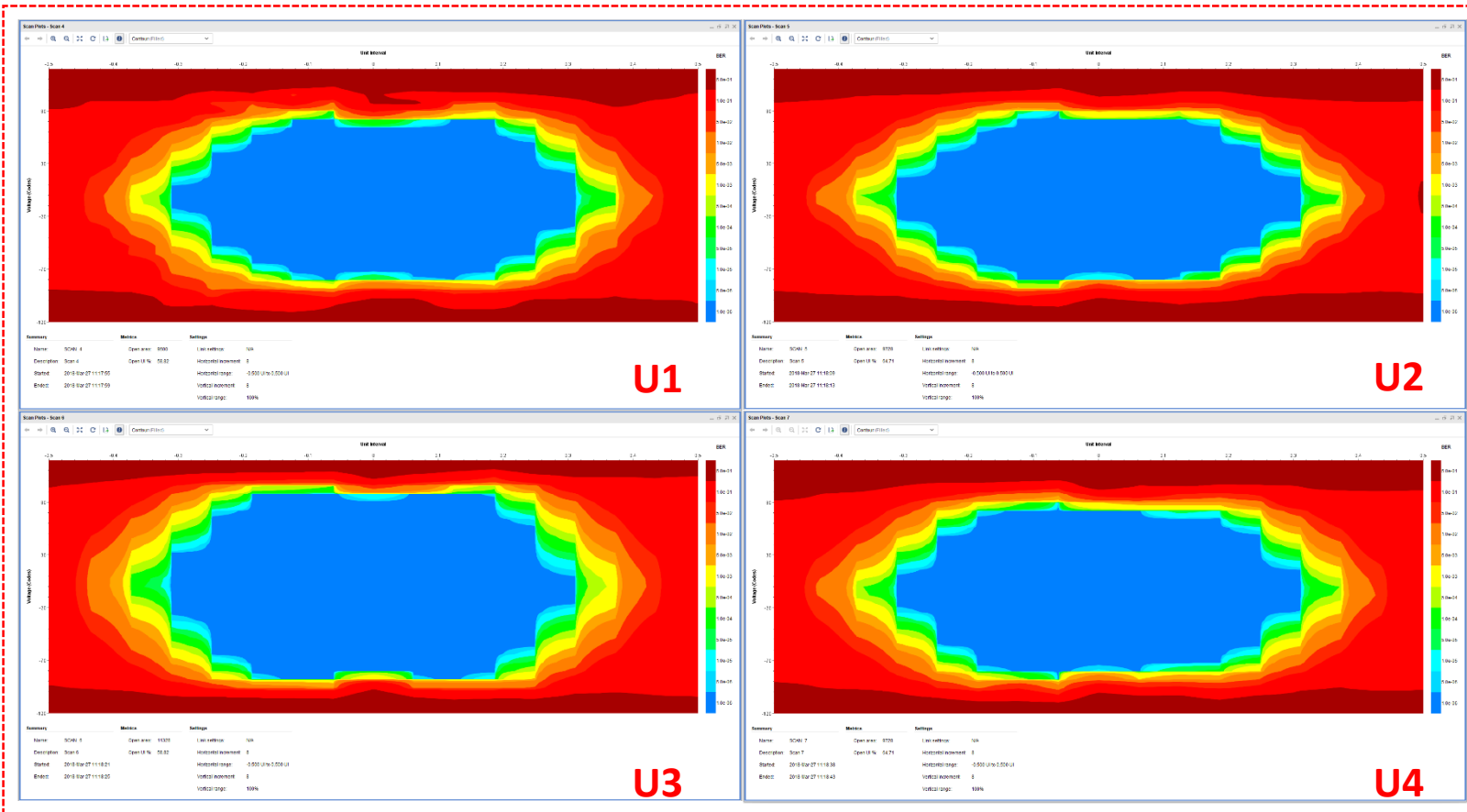
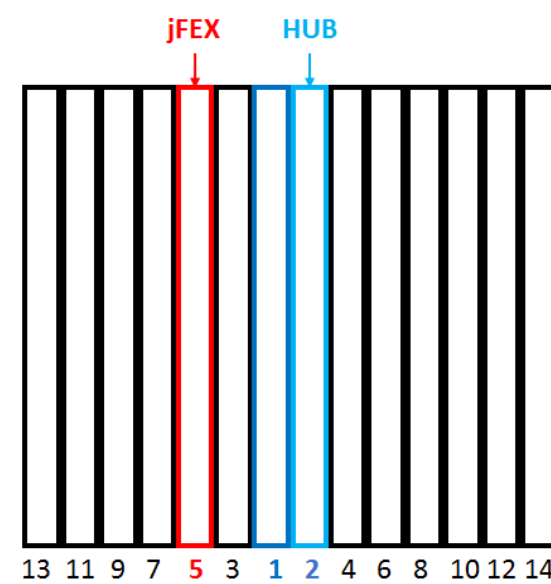
TTC data



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 - Tx Pre-Cursor: 4.44 dB
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 - Tx Diff Swing: 933 mV
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HUB 2/jFEX 5

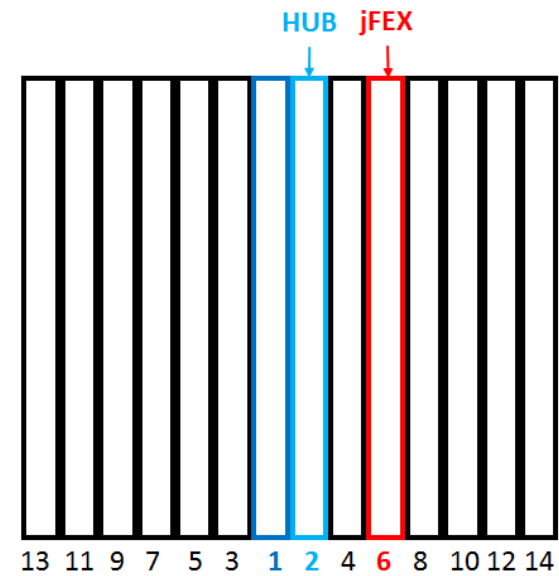
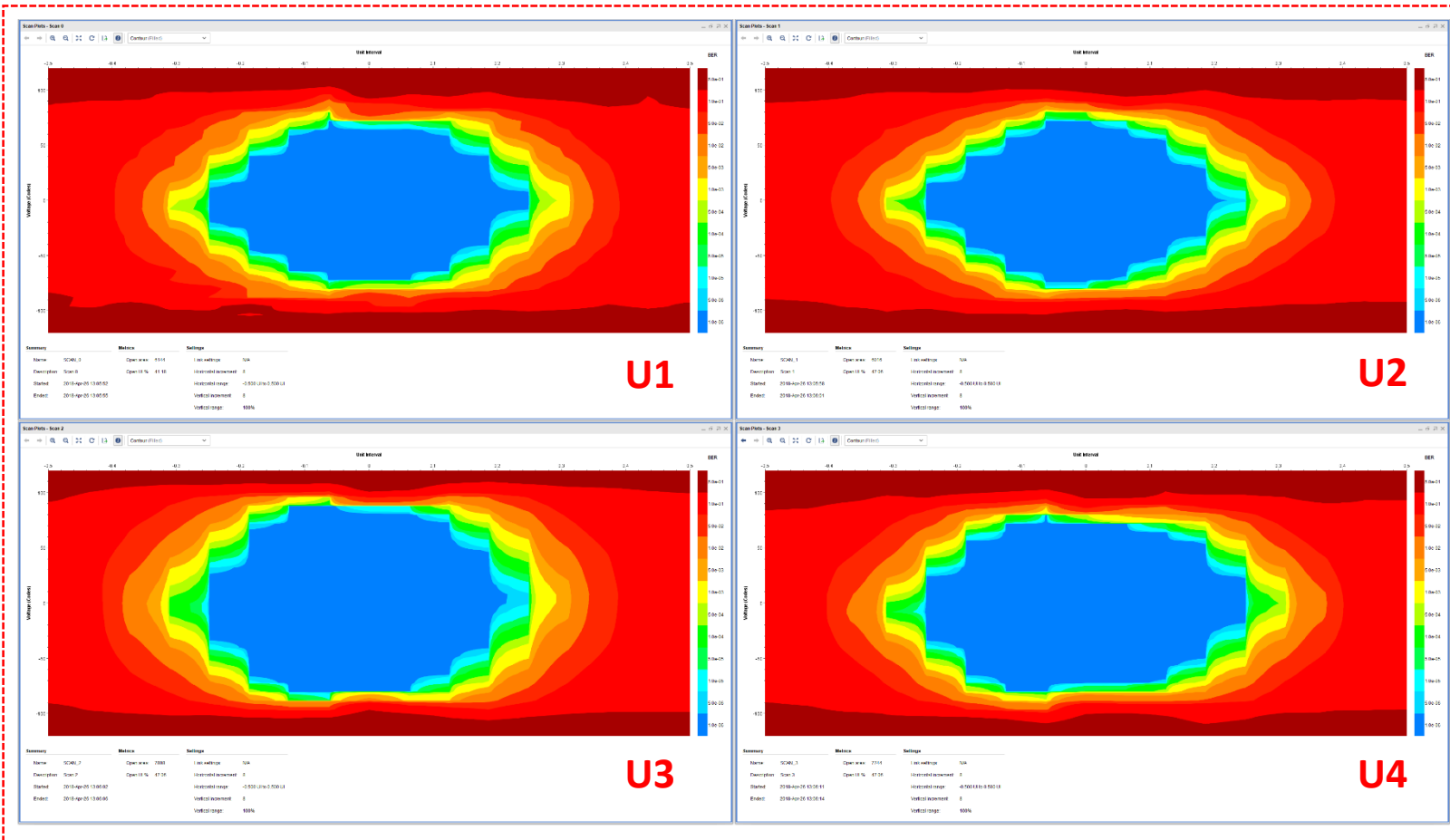
TTC data



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- **R/O (Tx on jFEX)**
- 5 R/O channels @6.4 Gbps without errors
 - 1 Broken channel (spare)
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 - Tx Pre-Cursor: 4.44 dB
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 - Tx Diff Swing: 933 mV
 - Tx Pattern: PRBS31

HUB 2/jFEX 6

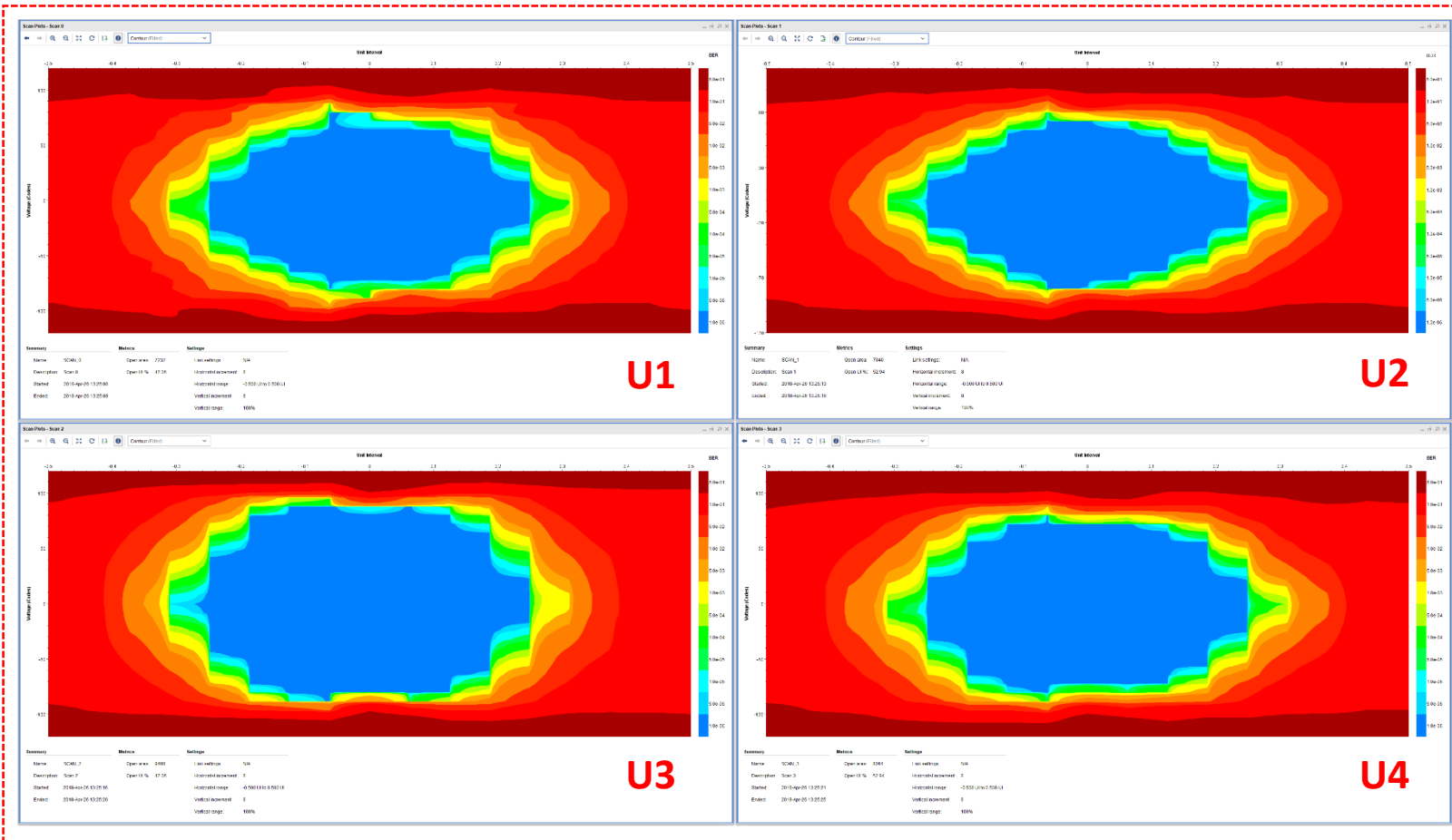
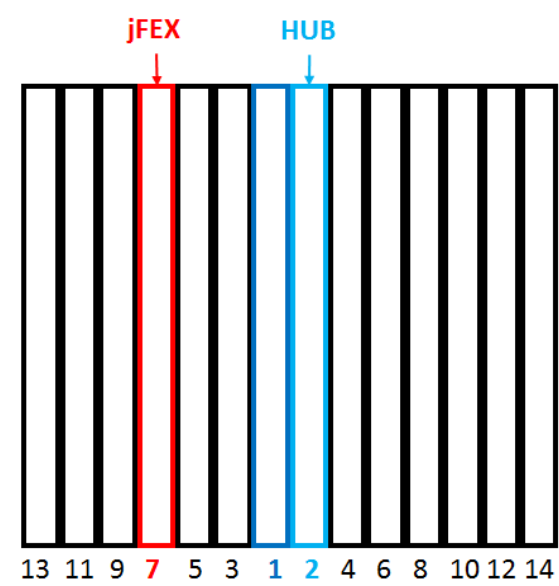
TTC data



- **TTC data (Rx on jFEX)**
- 4 channels @6.4 Gbps without errors
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 - Rx Polarity: 1
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HUB 2/jFEX 7

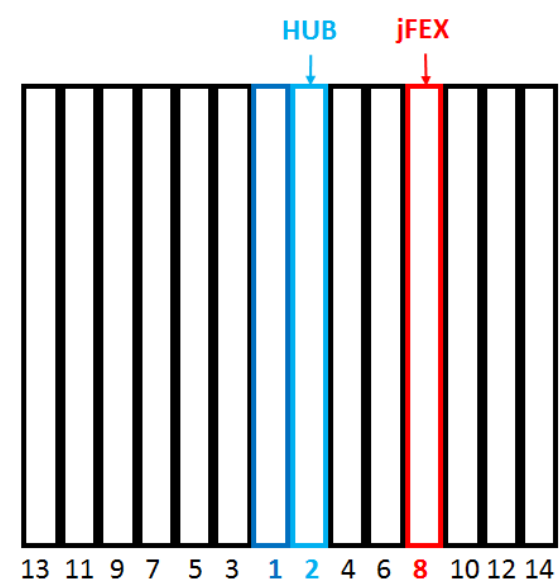
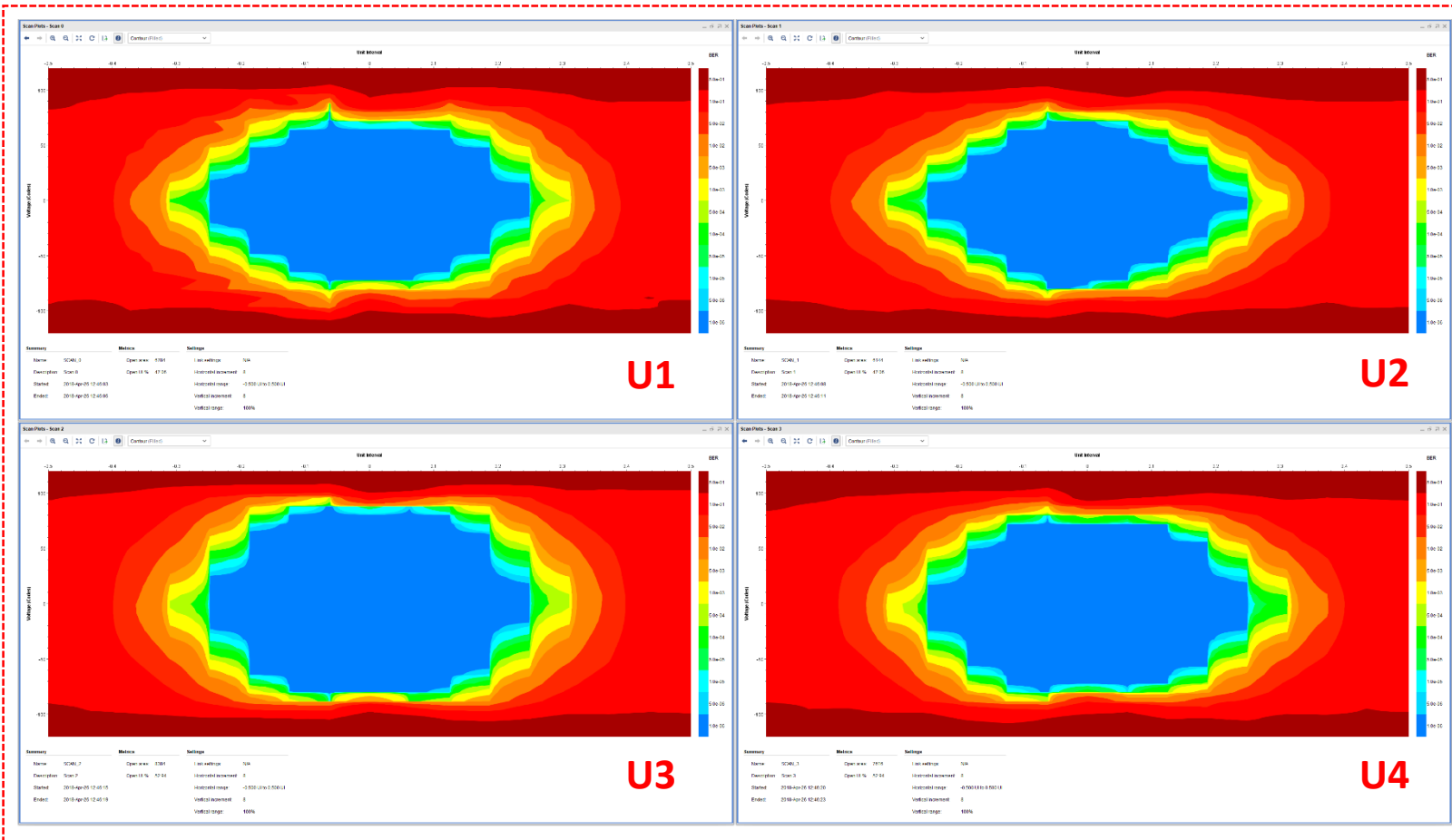
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HUB 2/jFEX 8

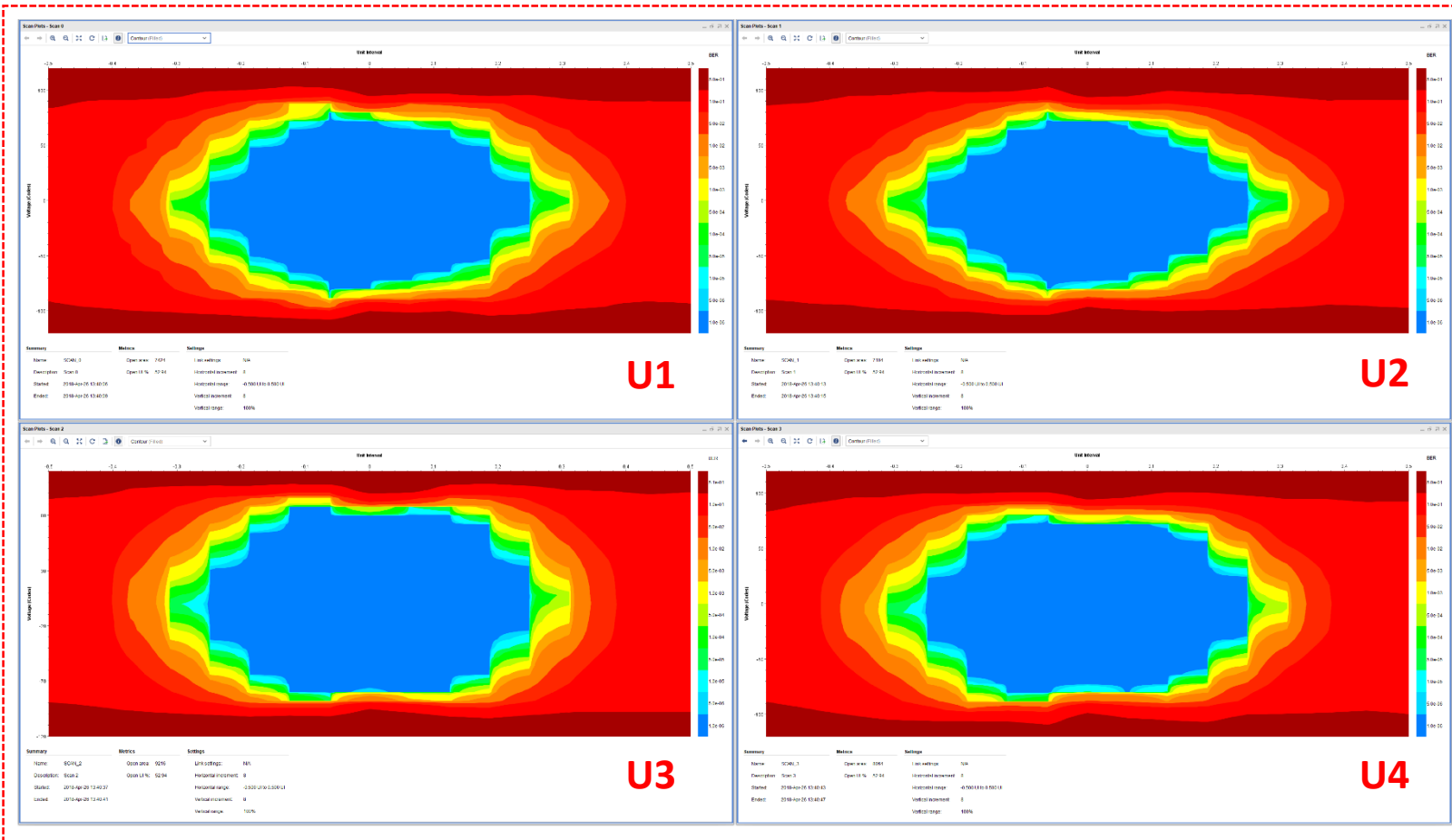
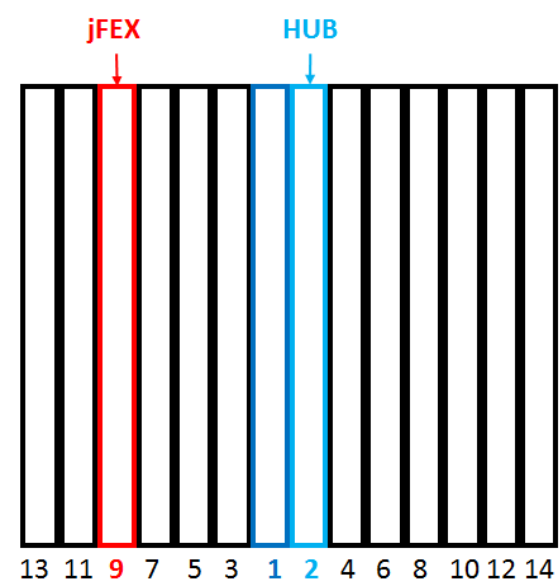
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HUB 2/jFEX 9

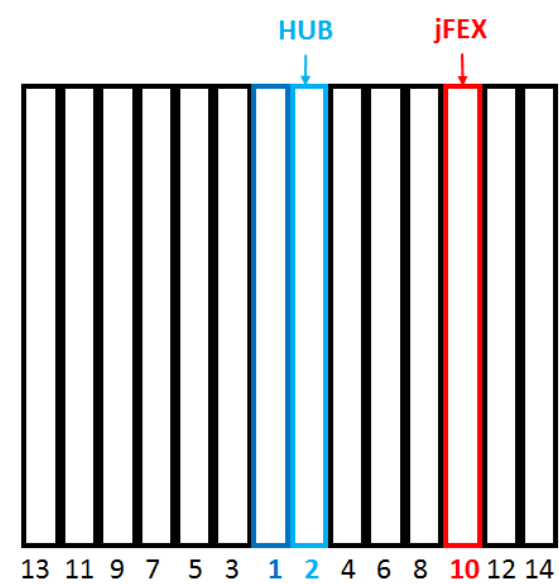
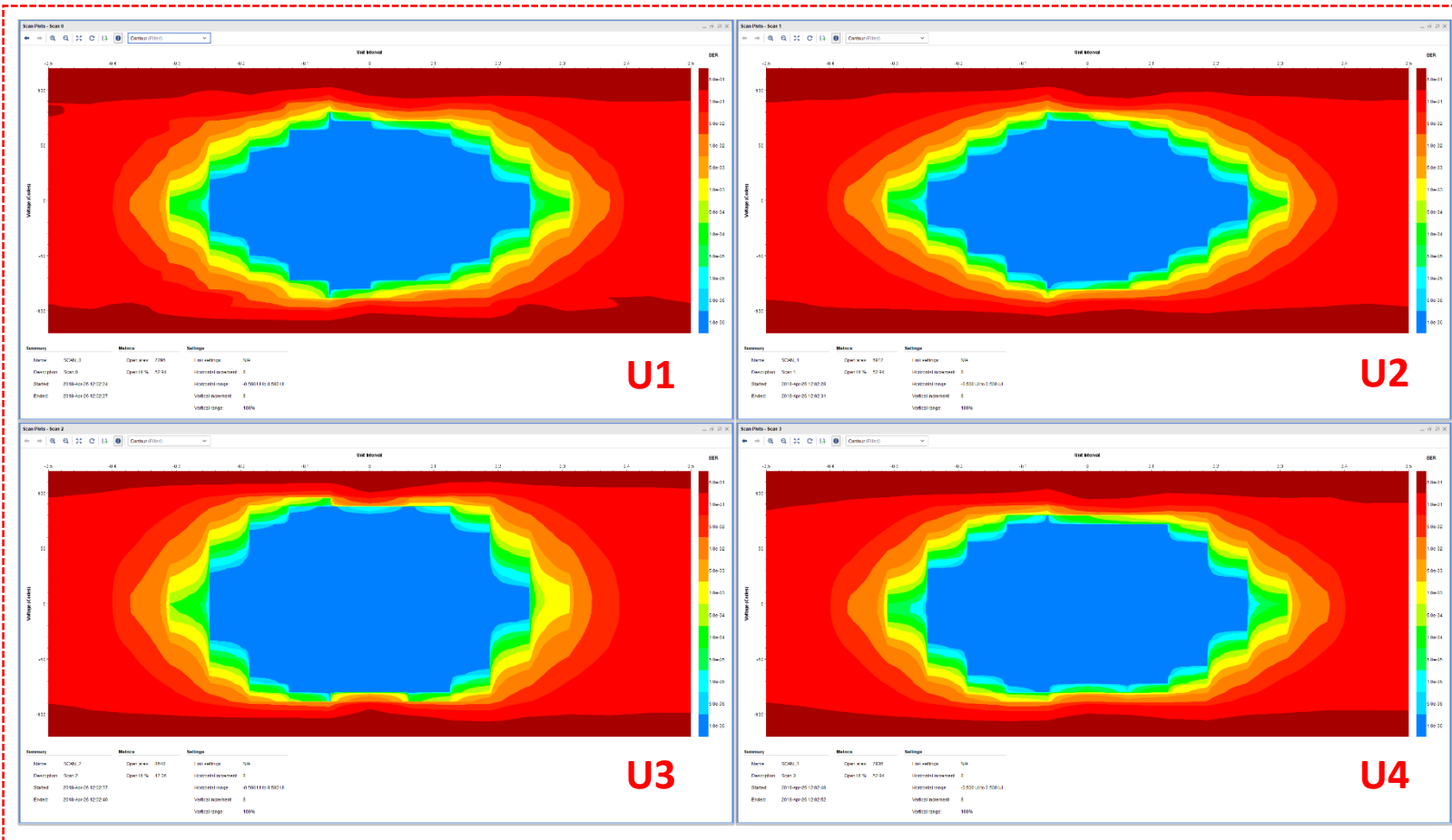
TTC data



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HUB 2/jFEX 10

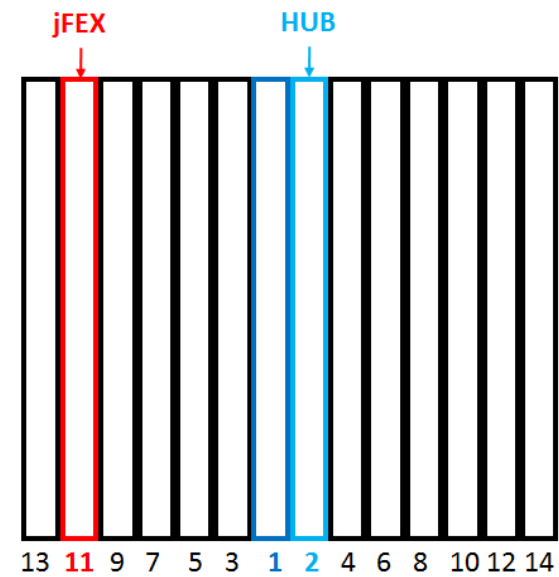
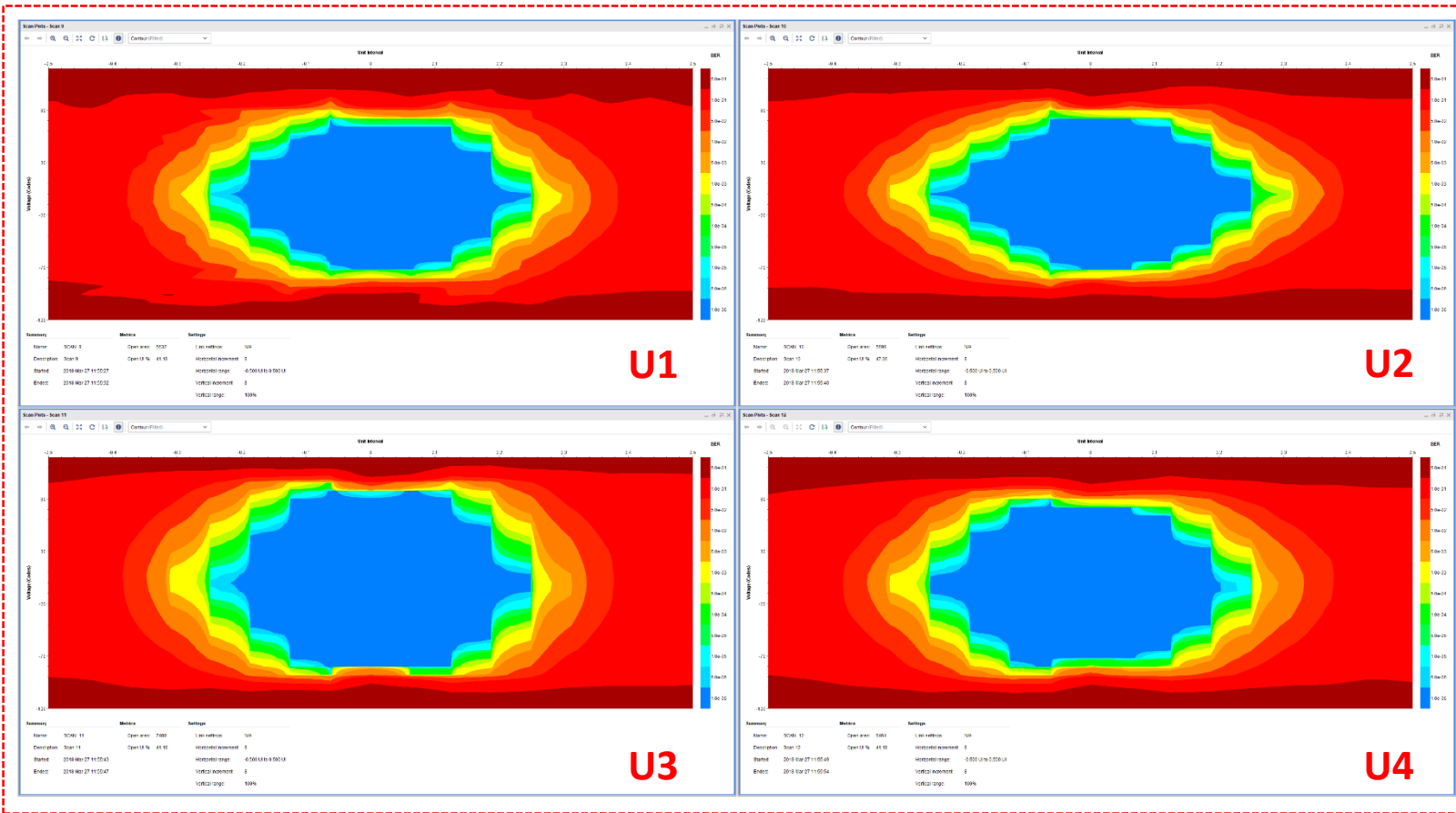
TTC data



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HUB 2/jFEX 11

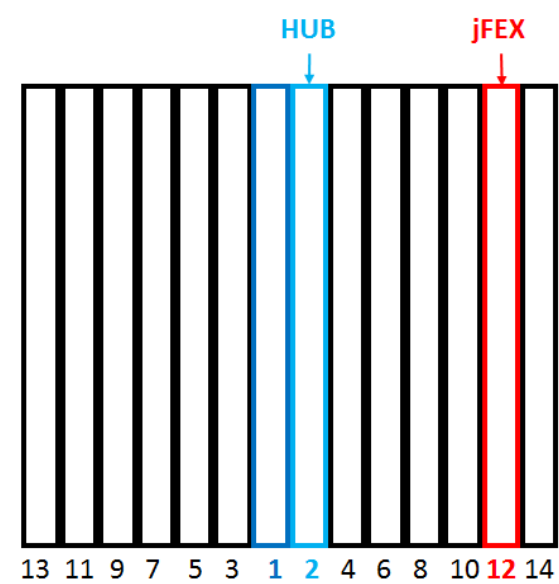
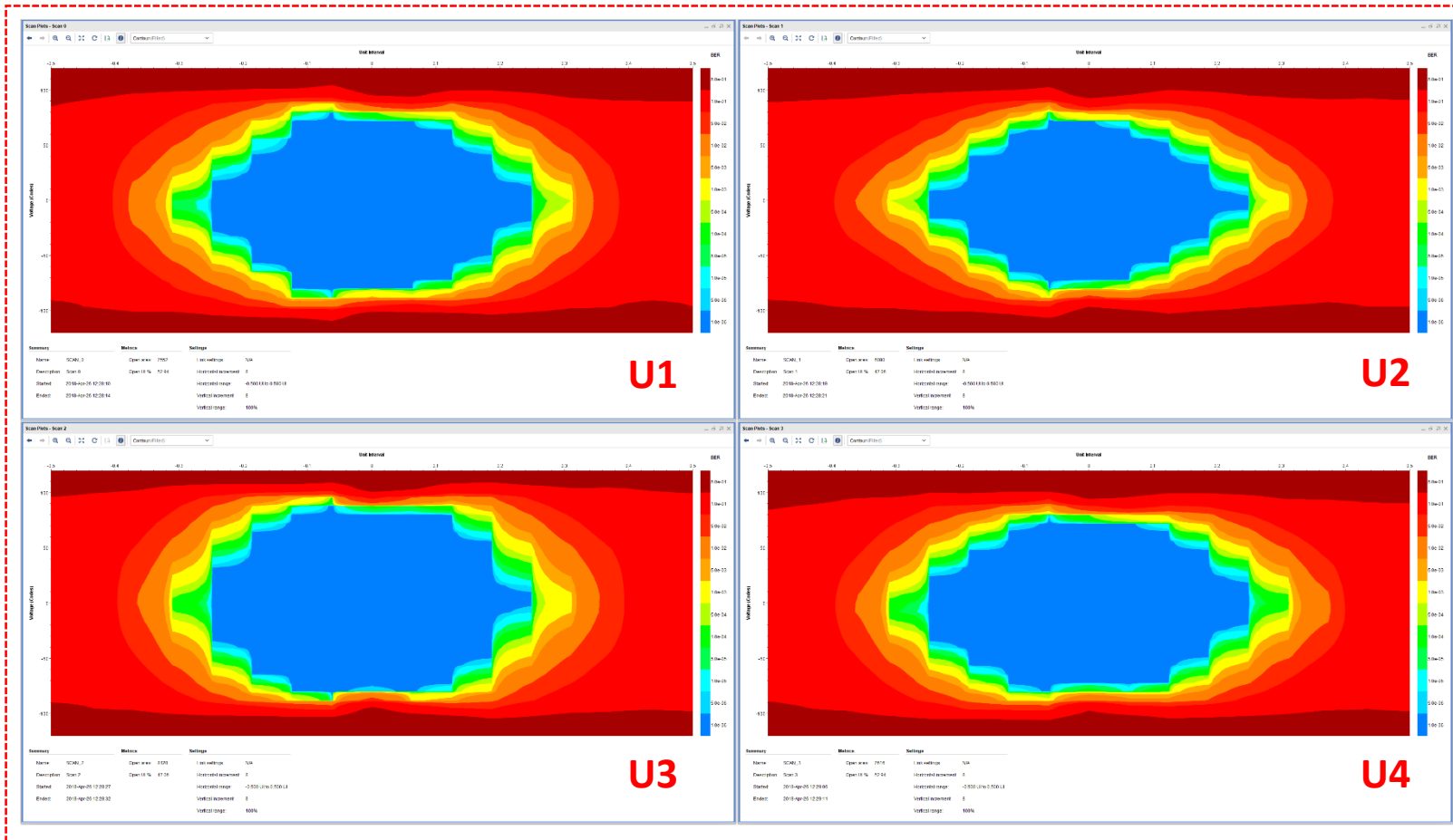
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HUB 2/jFEX 12

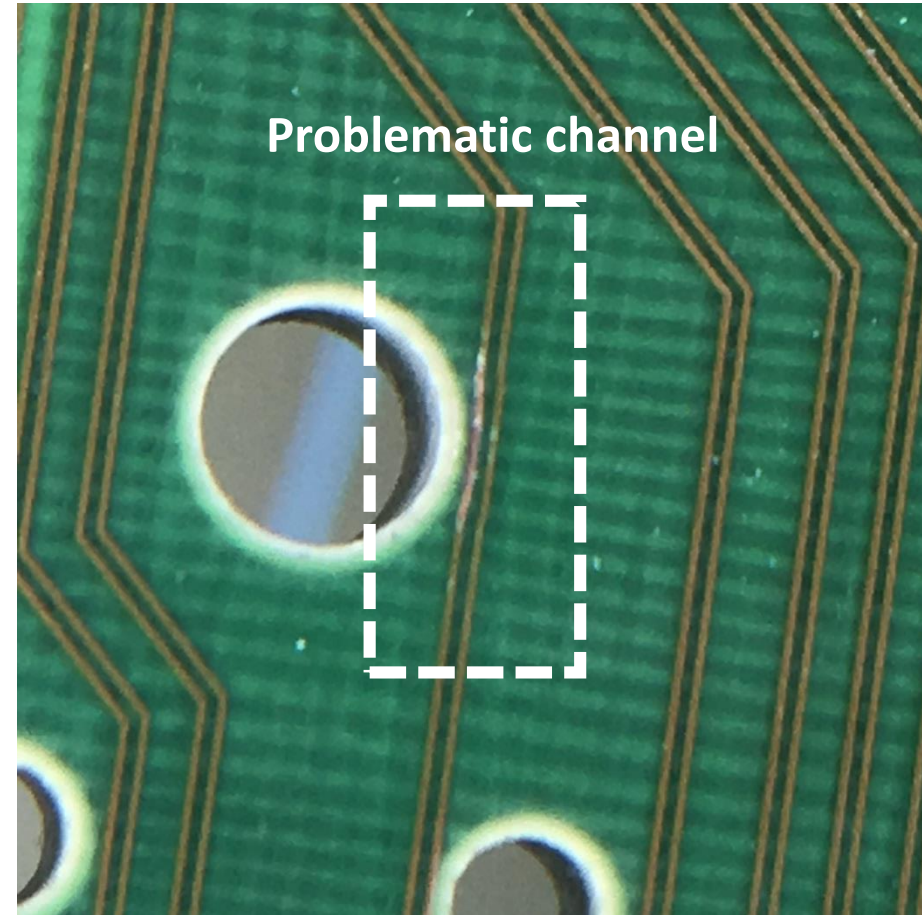
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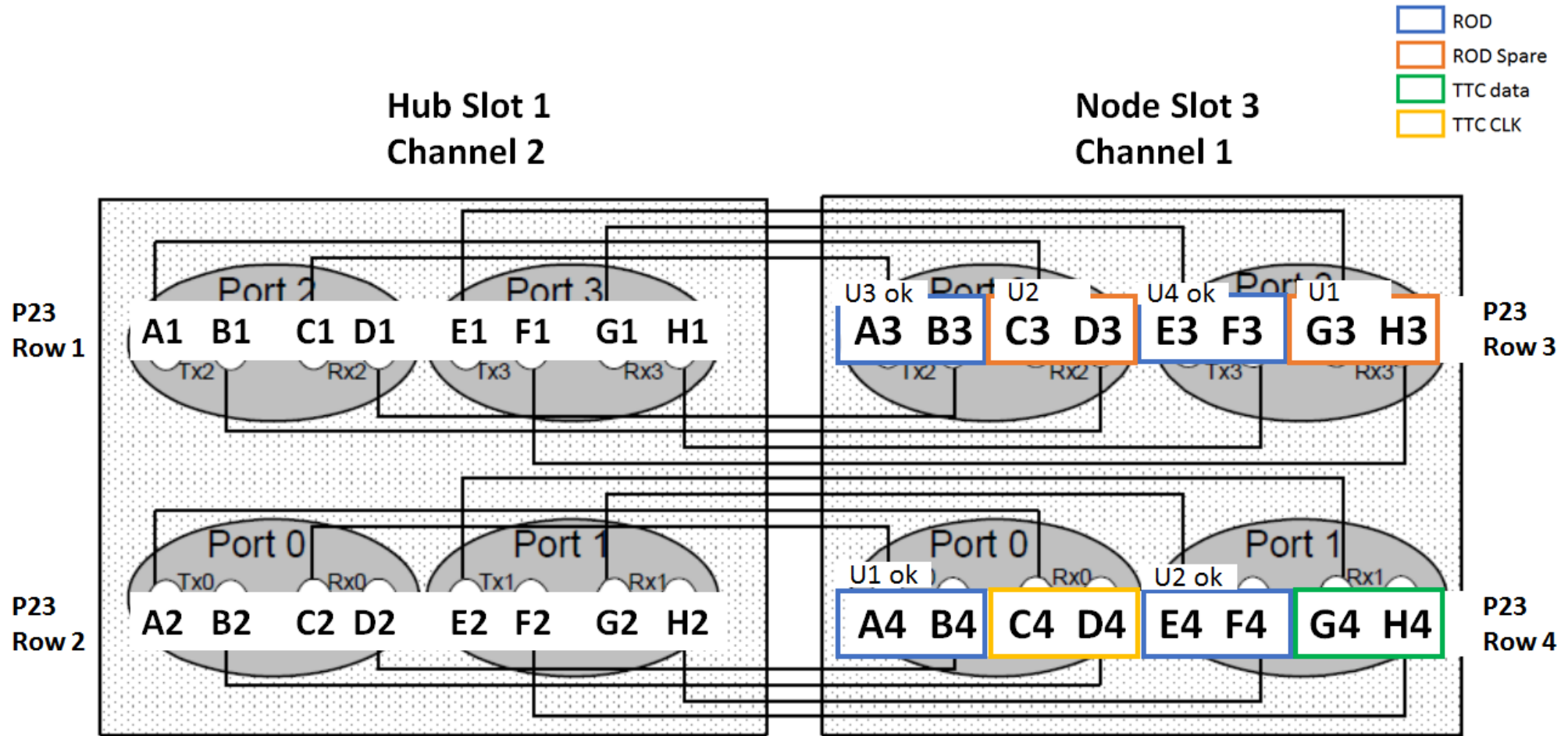
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Problematic R/O Channel

- Impedance between diff lines 38 ohms
 - Other channels (good) : 150 ohms.
- Same problem was observed on tests with FTM and HUB



jFEX Backplane Connections (1)



jFEX Backplane Connections (2)

