

ePIC SVT INNER BARREL (IB) WIP

SIGNAL FLEXIBLE PRINTED CIRCUITS (FPCs)

Kshitij Agarwal, Paolo Camerini, Giacomo Contin, Piermario De Pascalis, Laura Gonella, Giovanni Vecil

/ 'kʃɪ.tɪdʒ ə.grə.'ʊd:l /

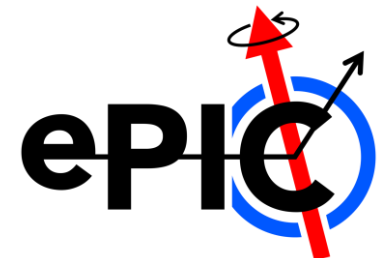
University and INFN Trieste (IT)

ePIC-SVT WP3 Meeting

01.10.2026



**UNIVERSITÀ
DEGLI STUDI
DI TRIESTE**



ePIC SVT INNER BARREL (IB)

SIGNAL FLEXIBLE PRINTED CIRCUITS (FPCs)

WIP

Kshitij Agarwal, Paolo Camerini, Giacomo Contin, **Piermarco De Pascalis**, Laura Gonella, Giovanni Vecil

/ 'kʃɪ.tɪdʒ ə.ɡrə.'ʊd:l /

University and INFN Trieste (IT)

ePIC-SVT WP3 Meeting

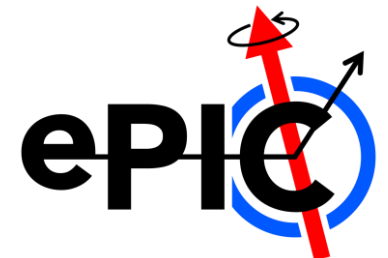
01.10.2026



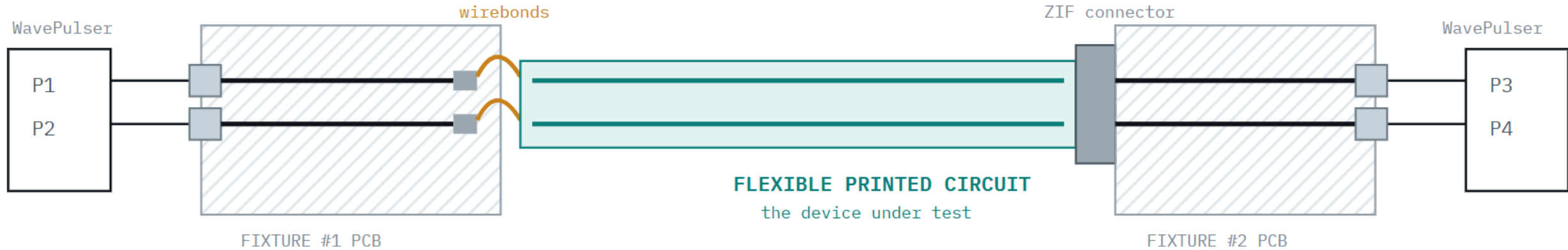
UNIVERSITÀ
DEGLI STUDI
DI TRIESTE

DF Dipartimento di
Fisica

INFN
TRIESTE
Istituto Nazionale di Fisica Nucleare
Sezione di Trieste



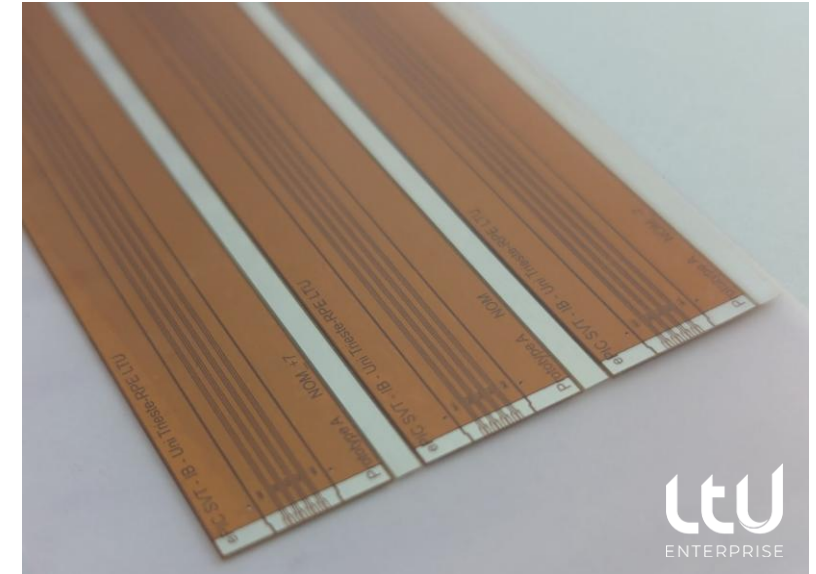
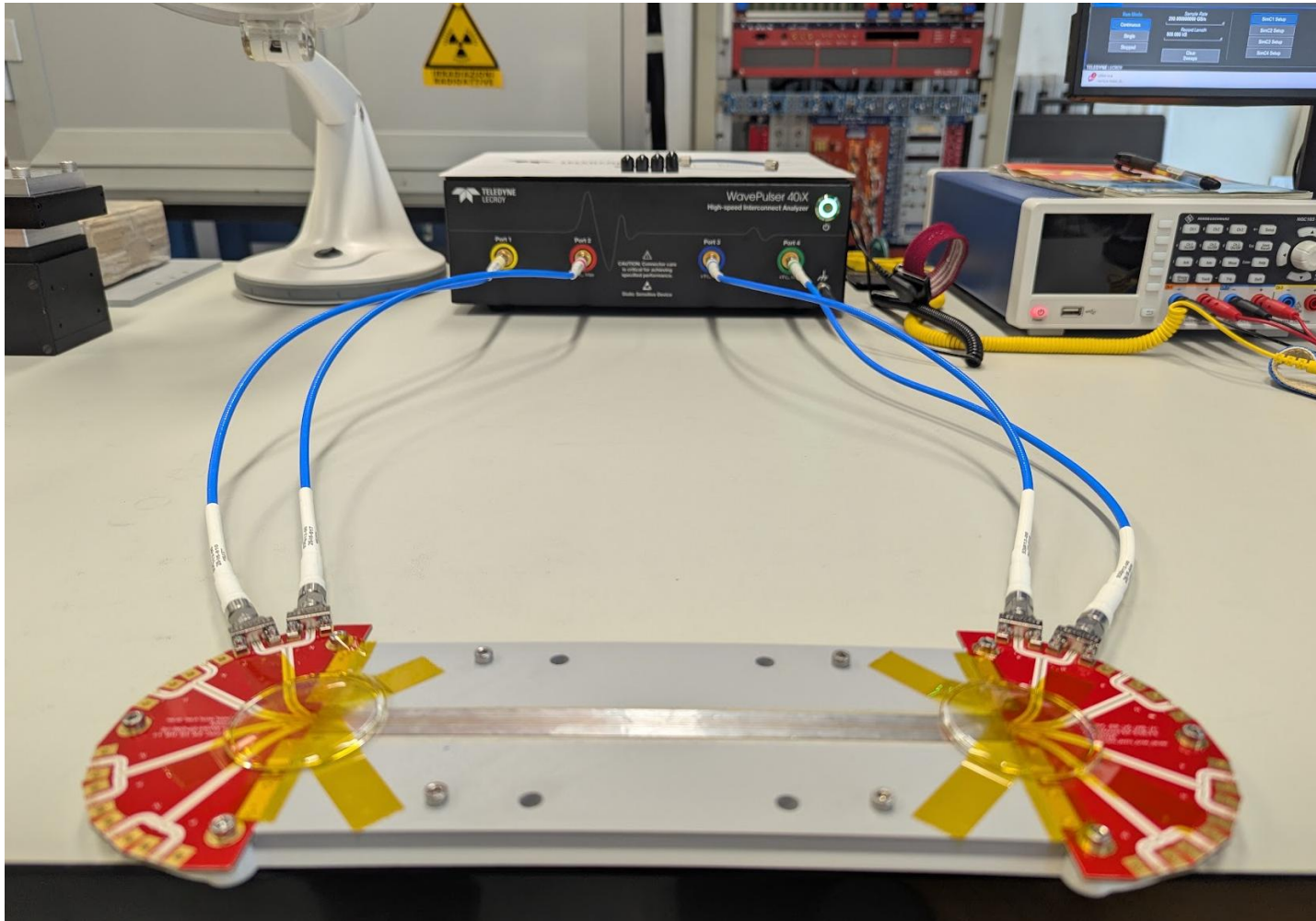
MEASUREMENT PROCEDURE



- Teledyne LeCroy WavePulser 40iX used for FPC signal integrity tests and to mask fixtures and interconnections
- Step-0: Cables b/w WavePulser and fixtures are supplied by LeCroy and are implicitly de-embedded
→ FPC + Interconnections + Fixtures
- Step-1: 2x Thru de-embedding of the fixtures
→ FPC + Interconnections
- Step-2: Time-domain gating of interconnections
→ FPC
- Step-3: Comparison with ANSYS simulations

FIRST LTU SAMPLES

First FPC prototypes from LTU are being tested with LeCroy WavePulser 40iX

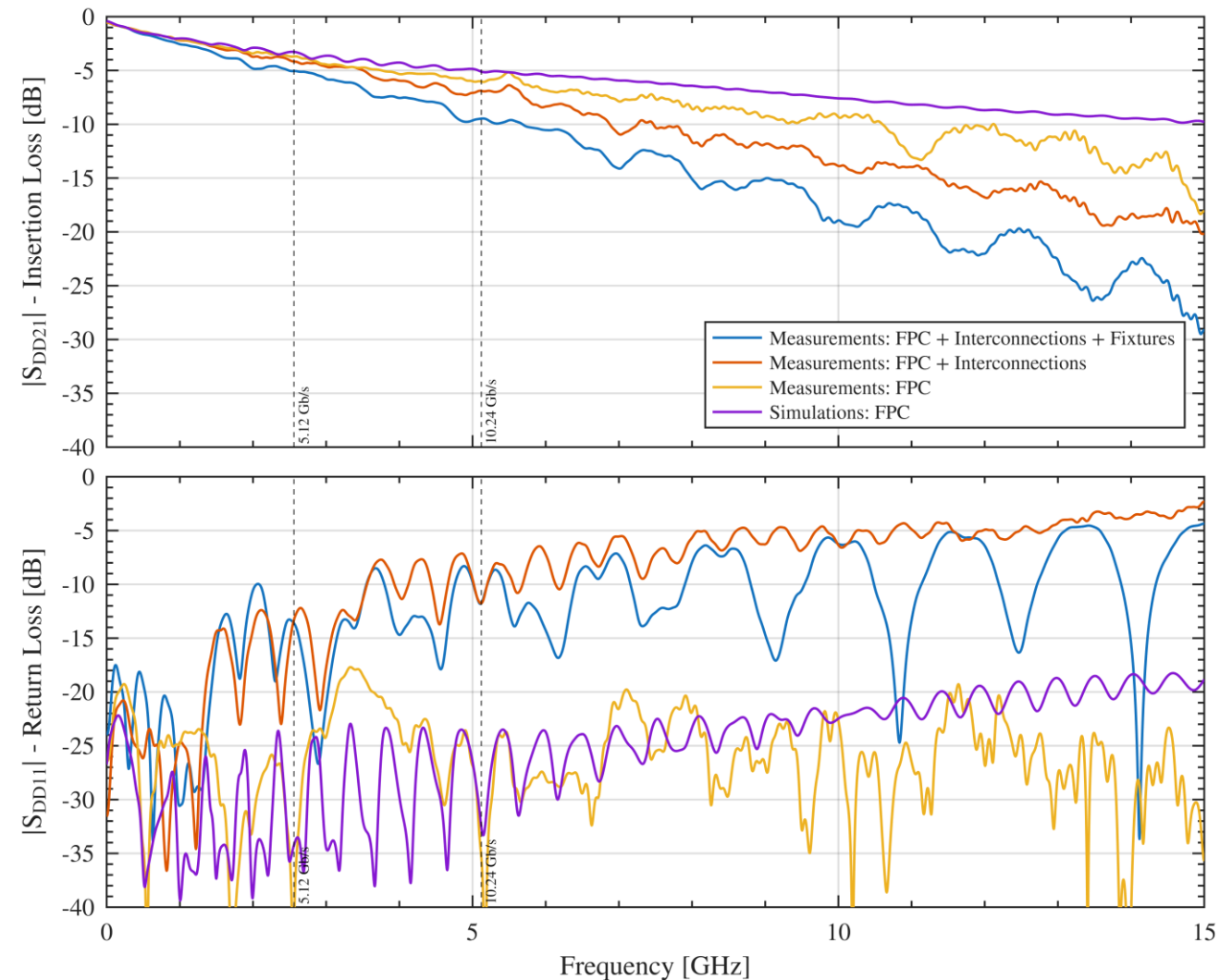


MEASUREMENT AND SIMULATION RESULTS



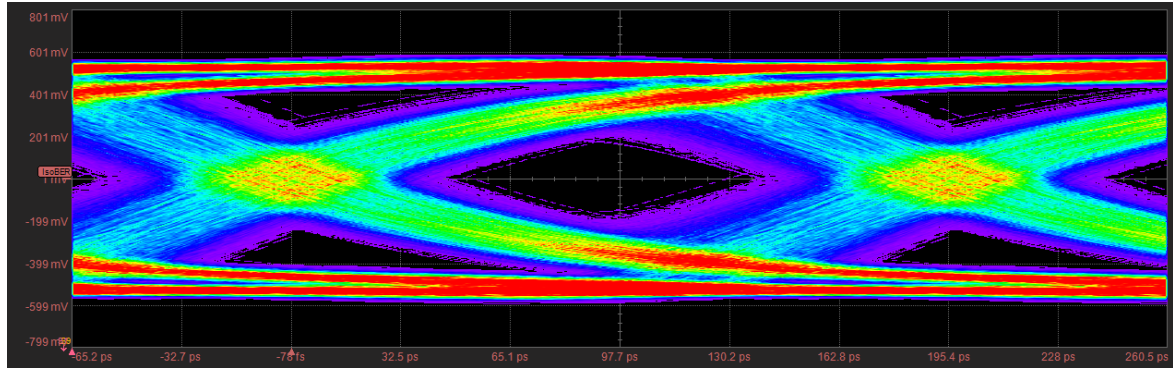
- Incremental improvement in the insertion loss upon removing peripheral contributions from fixtures and interconnections (wirebonds)
- Interconnections contribute the most to the return loss
- Reasonable agreement between measurements and ANSYS simulations at nominal frequencies

Setup	S_{DD21} [dB]	S_{DD21} [dB]
	2.56 GHz	5.12 GHz
FPC + Interconnections + Fixtures	5.05	9.48
FPC + Interconnections	4.17	6.90
FPC	3.70	6.03
FPC (Simulations)	3.27	5.11

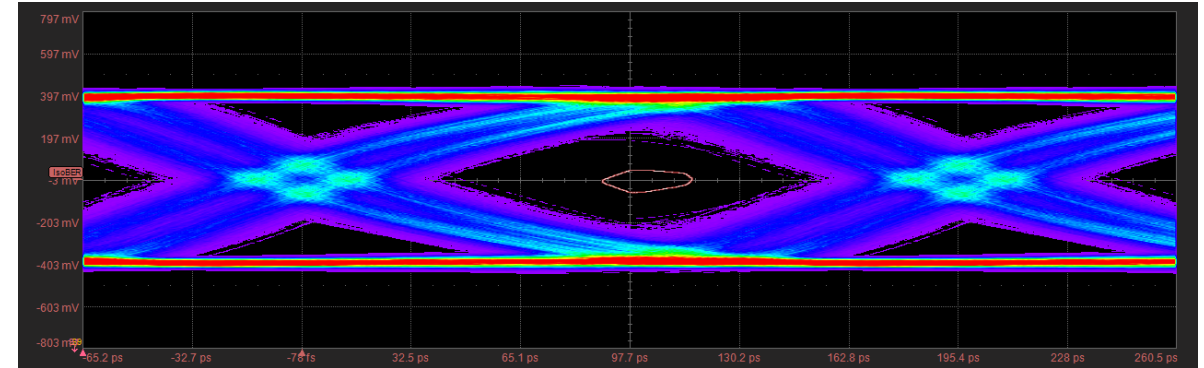


EYE DIAGRAMS AT 5.12 GBPS WITH JITTER

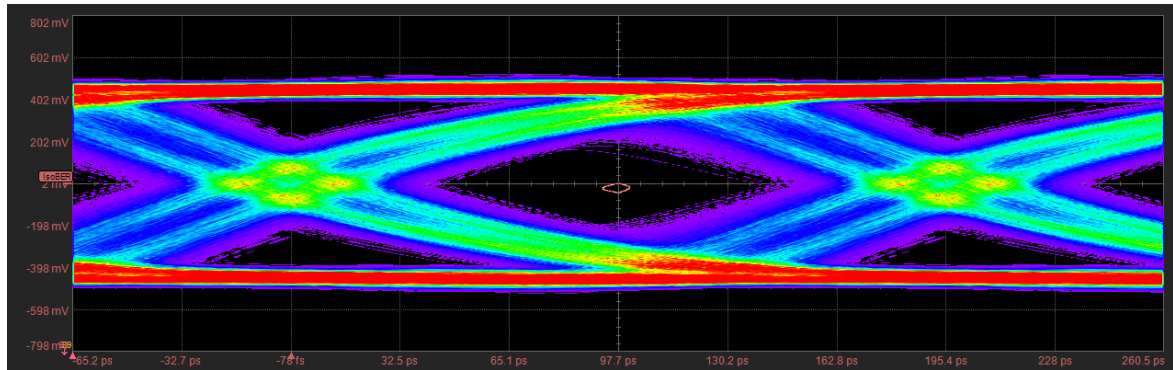
No Preemphasis



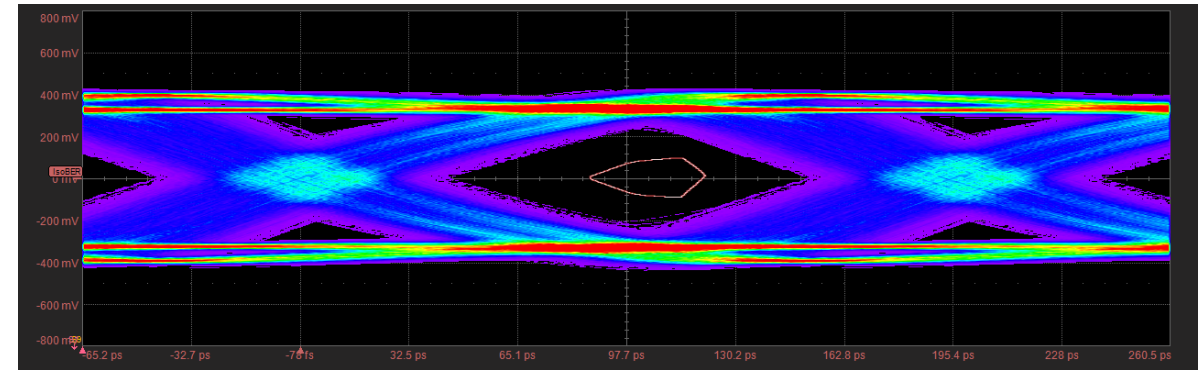
Moderate Preemphasis



Mild Preemphasis

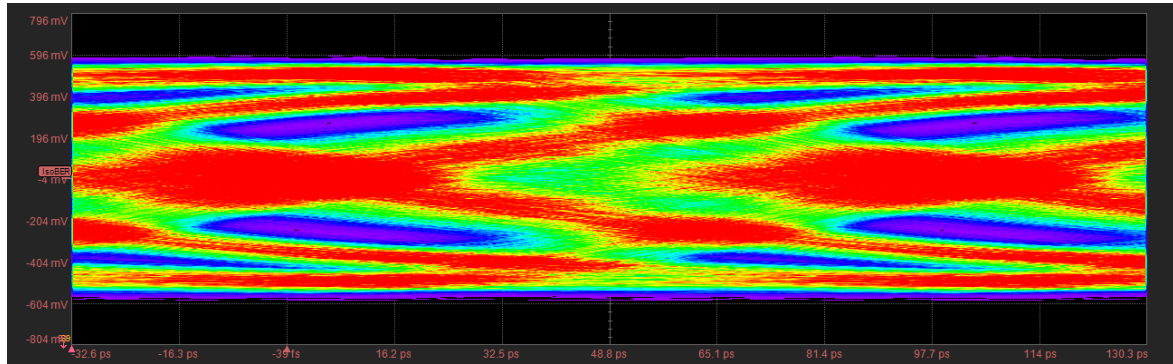


Max Preemphasis

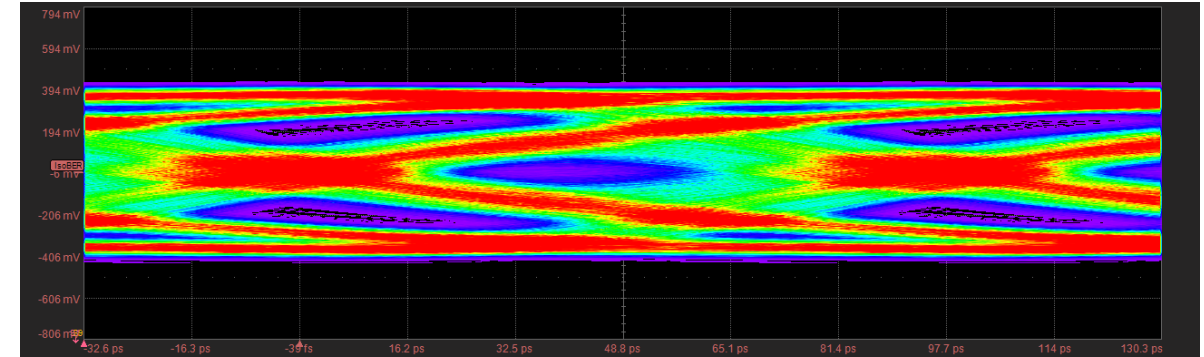


EYE DIAGRAMS AT 10.24 GBPS WITH JITTER

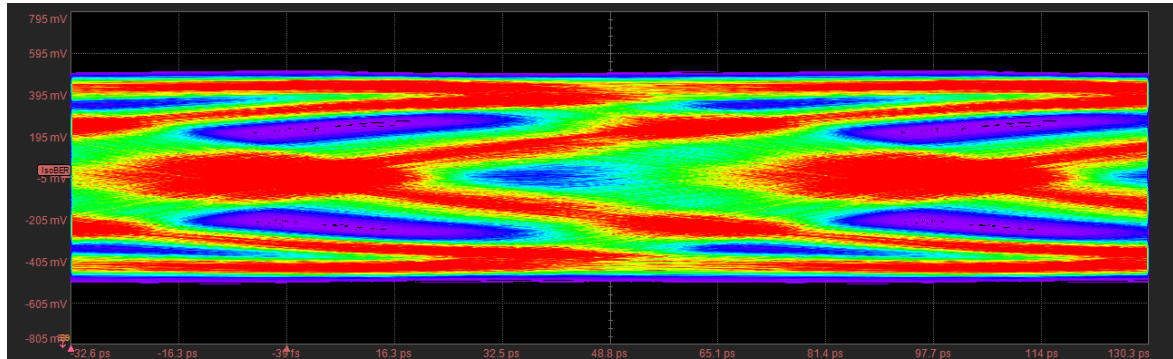
No Preemphasis



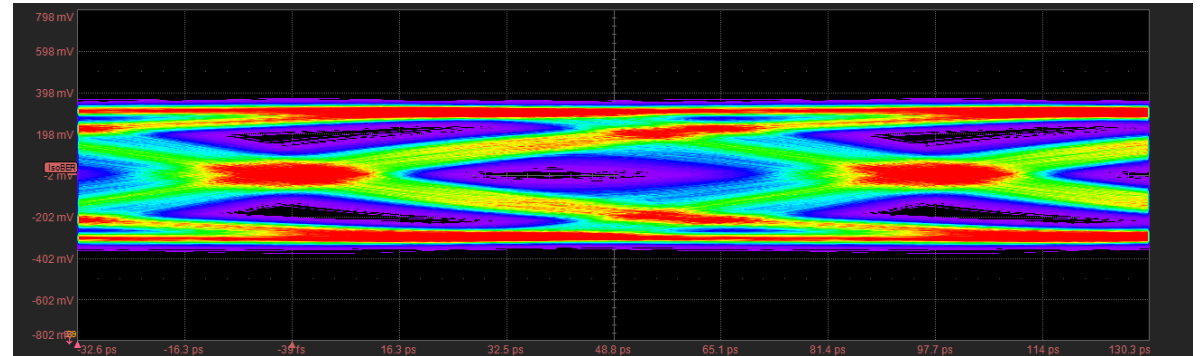
Moderate Preemphasis



Mild Preemphasis

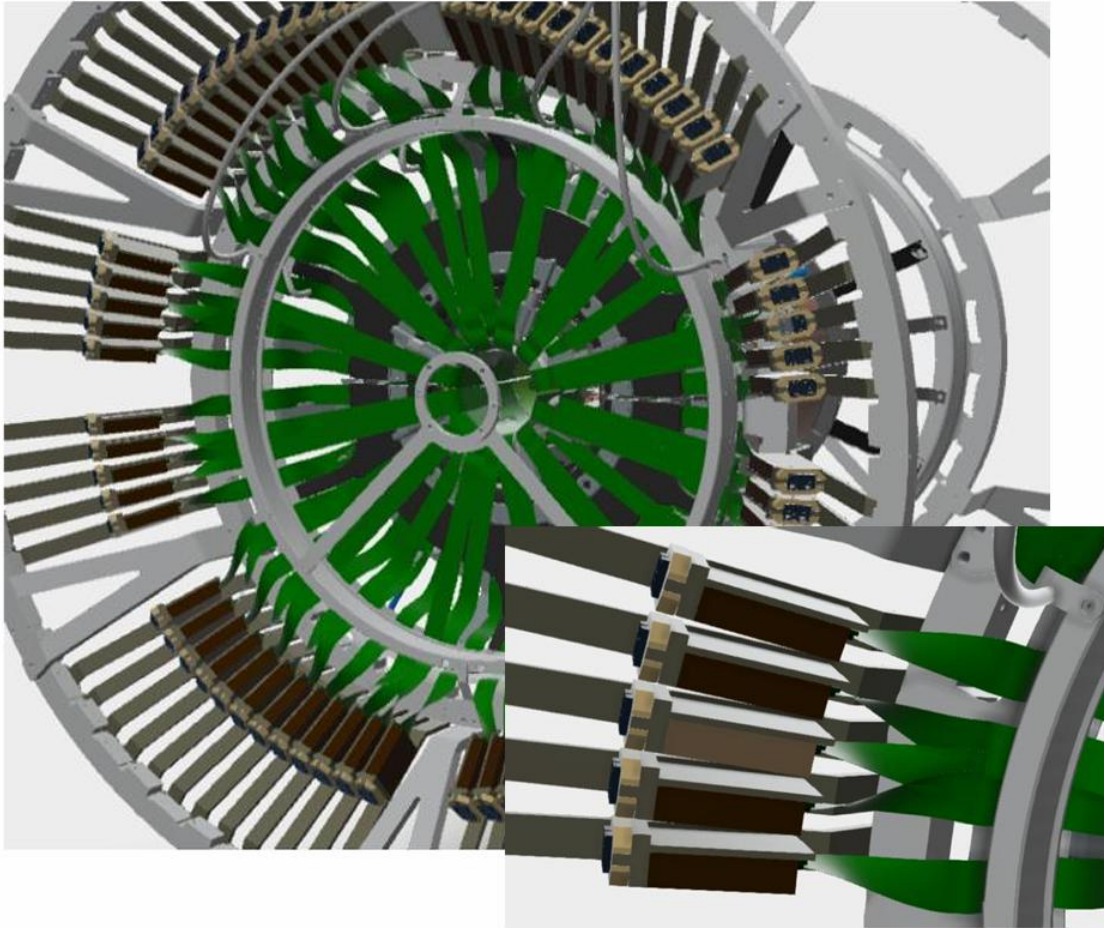


Max Preemphasis



IN OTHER NEWS...

Option “A”



Option “B”



Preferred

THANK YOU

EXTRA SLIDES