



Single and Quad channel APD receiver performance at 25Gbaud

803.2 Beyond 10 km Optical PHYs Study Group
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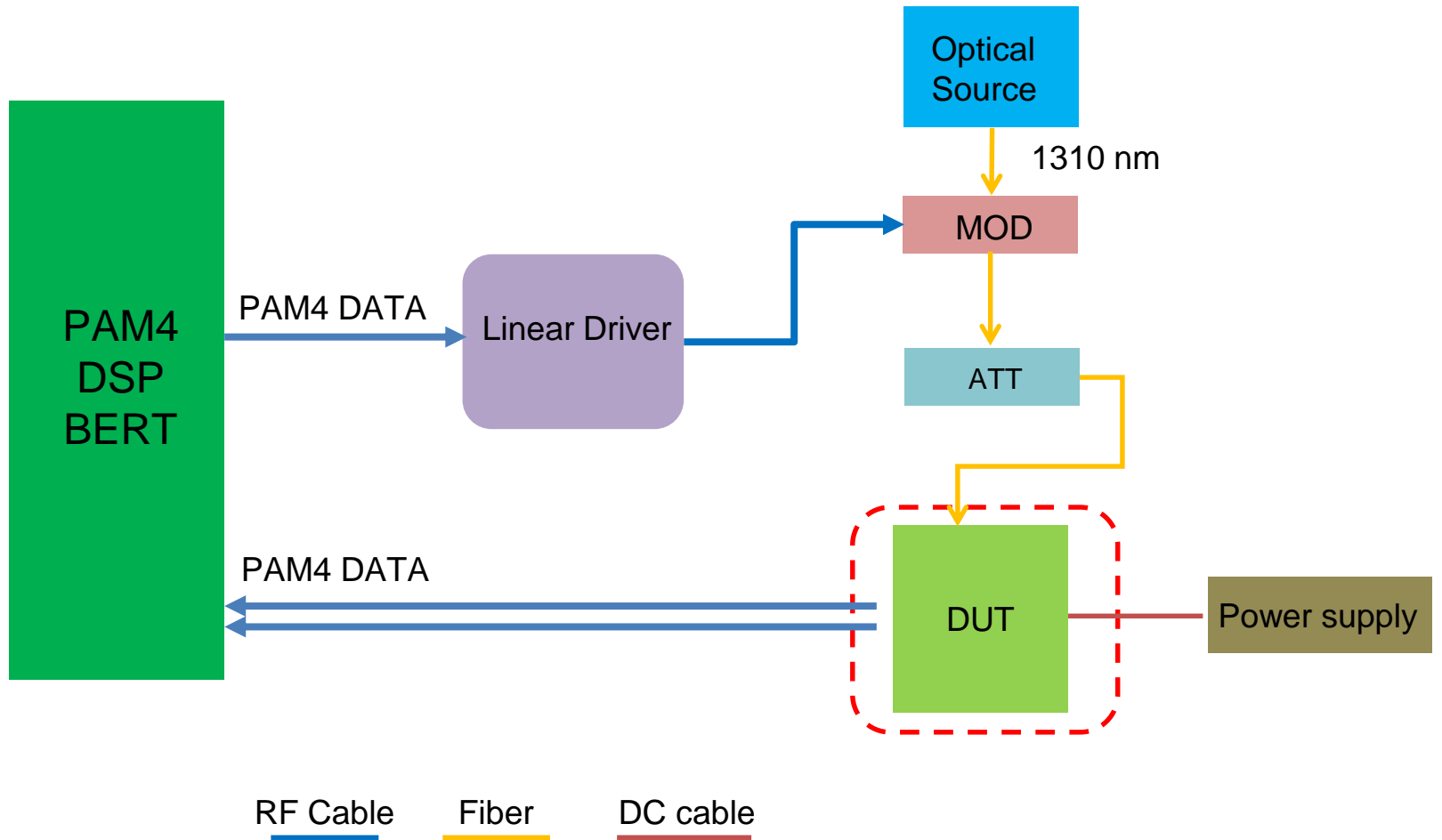
Single APD receiver

- Single channel TO-can based APD receiver
 - Linear 25Gbaud APD and TIA inside
 - Commercial TO-46 7pin header





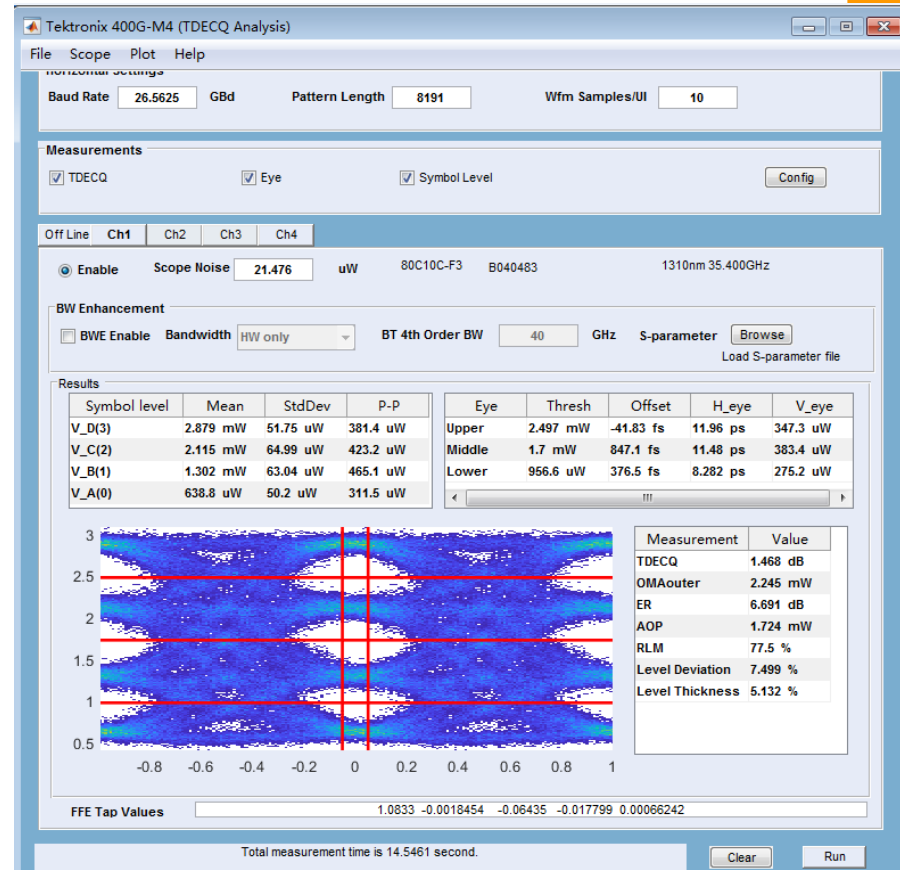
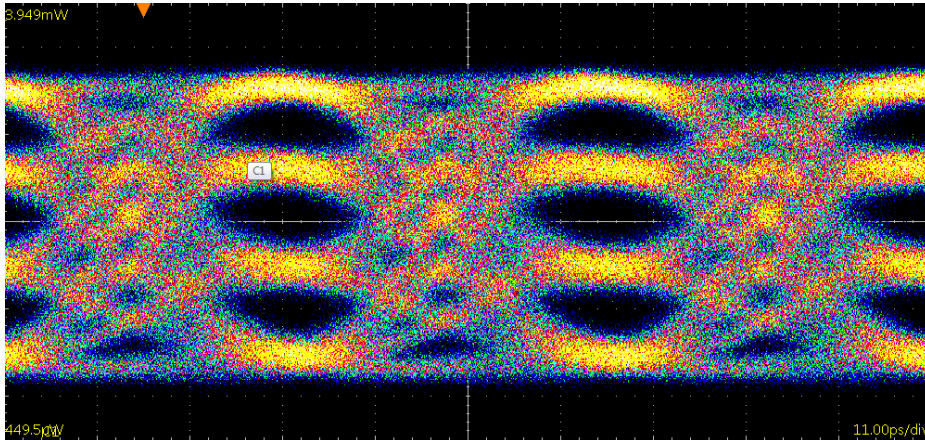
PAM4 test setup





Tx's optical eye

Data Rate: 26.5625GBaud
SECQ: 1.468dB
ER: 6.691dB





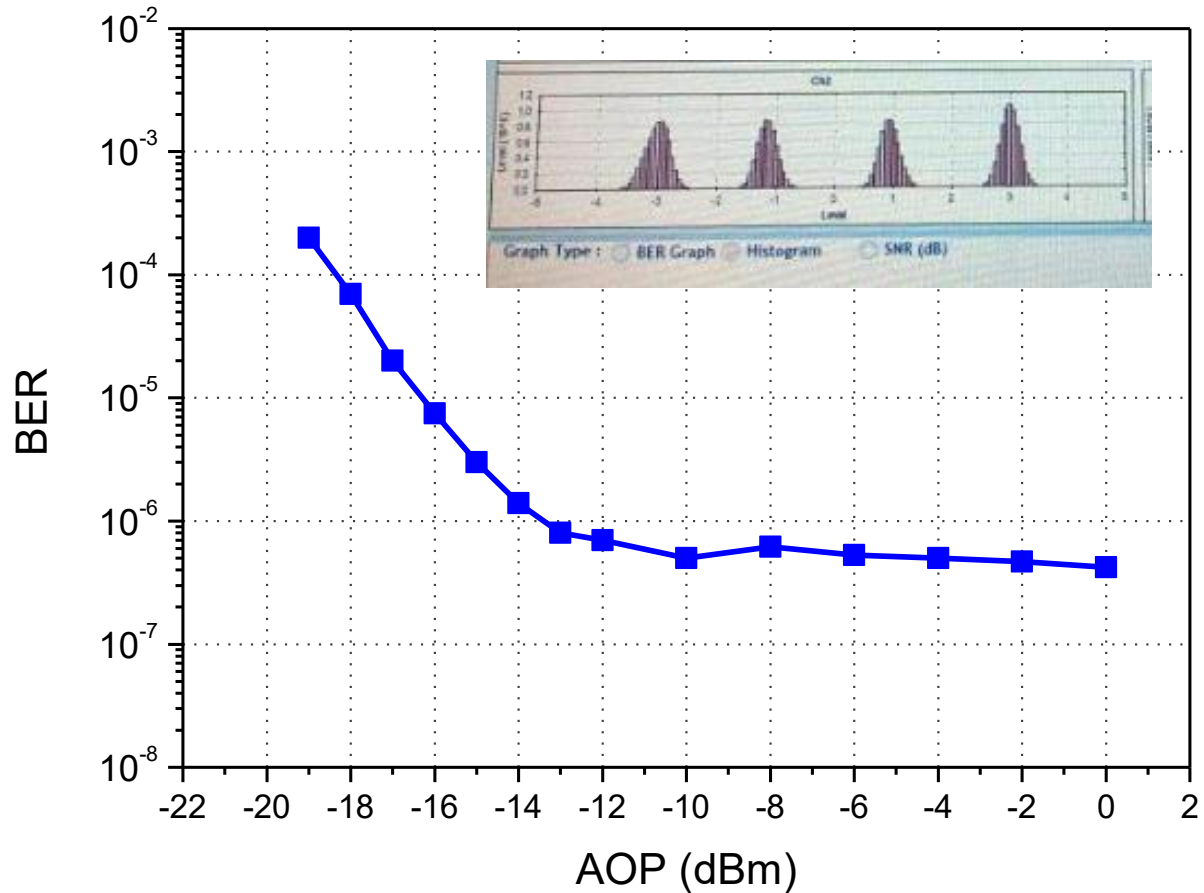
TO-can APD receiver PAM4 BER Curve and BERT/DSP PAM4 histogram

Test conditions:
26.6Gbaud PAM4,
PRBS31Q,
RT,

Sensitivity:
-19dBm at
BER=2e-4

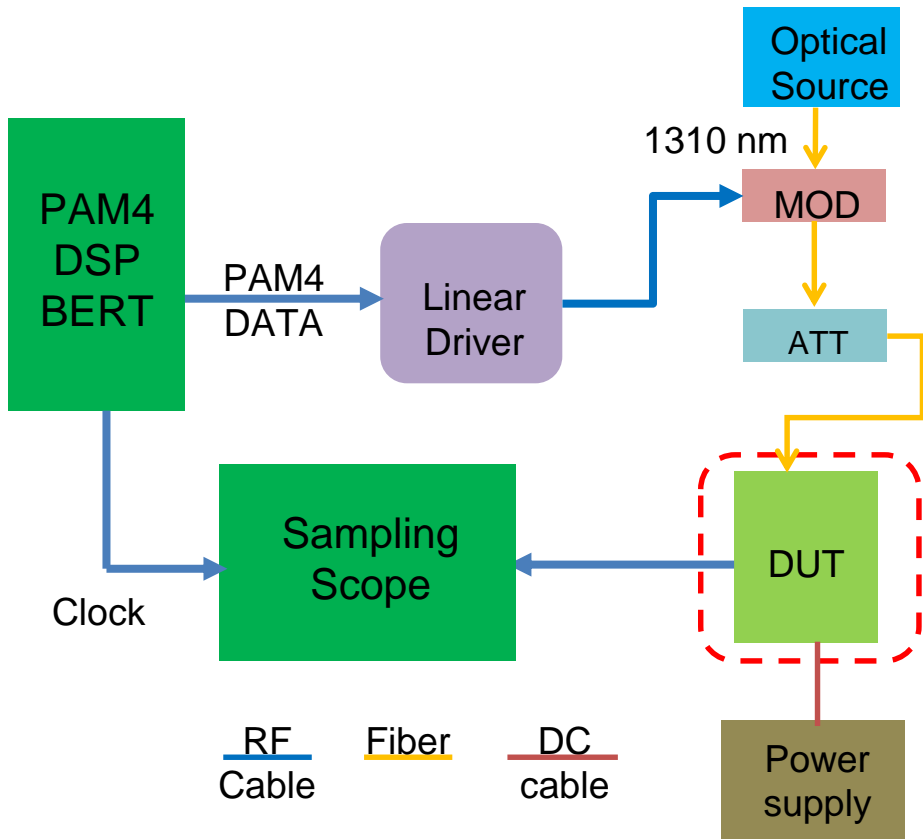
Overload: >0dBm,
limited by Tx power

Dynamic range:
>19dB

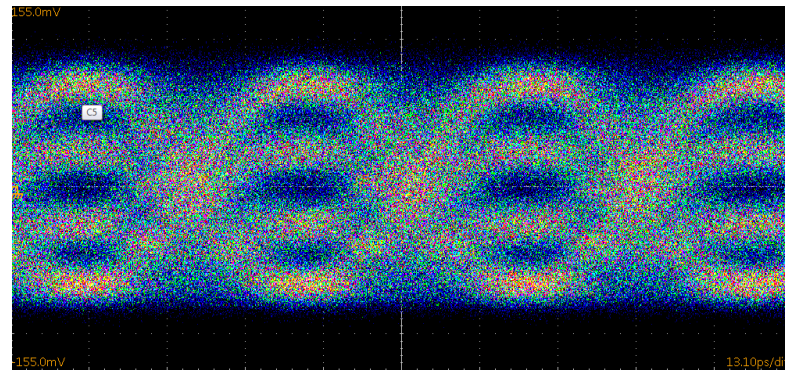




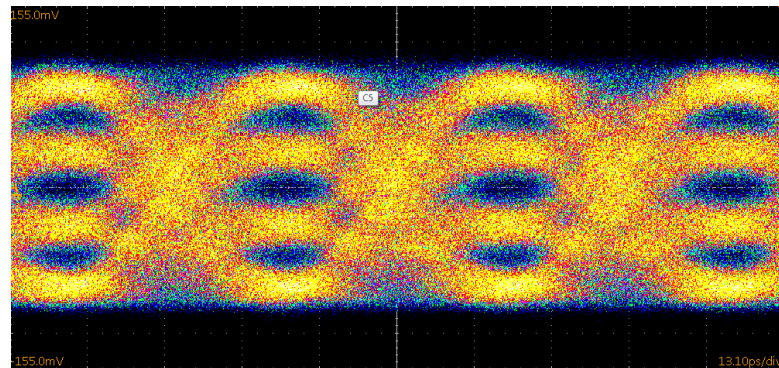
TO-can APD receiver output PAM4 electrical eye



Input optical power @ -19dBm



Input optical power @ -14dBm



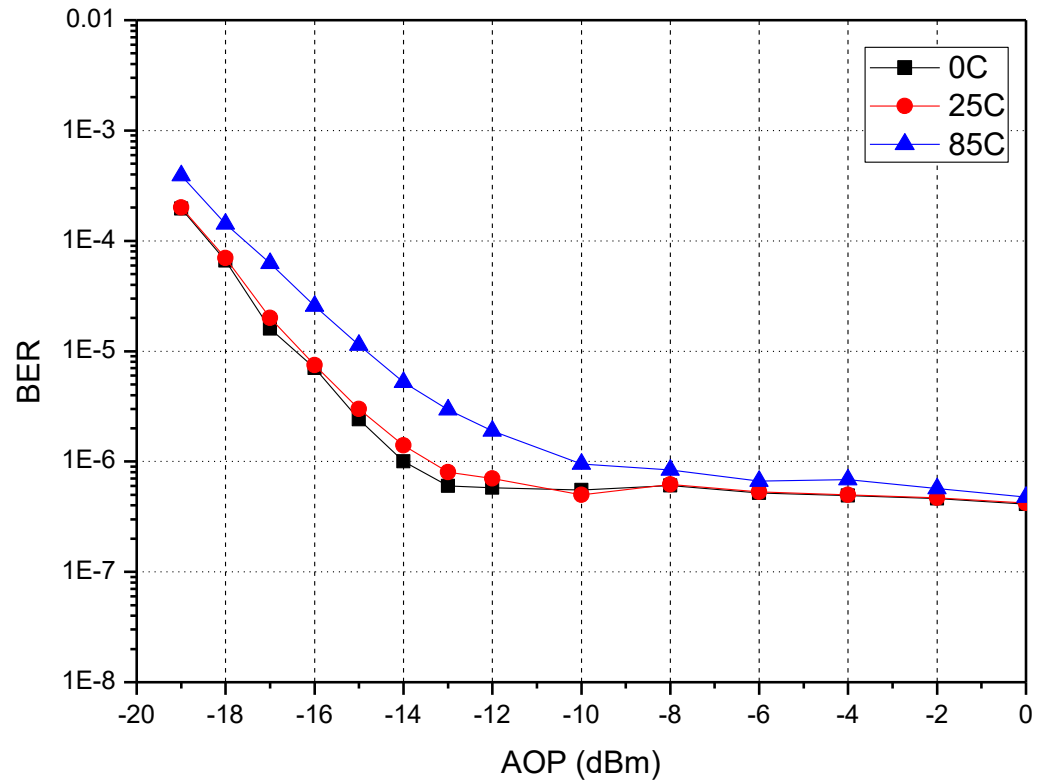


PAM4 BER at different temperature

Test conditions:
26.6Gbaud PAM4,
PRBS31Q,

Sensitivity <1dB
loss with operating
temperature
changed from 25C
to 85C.

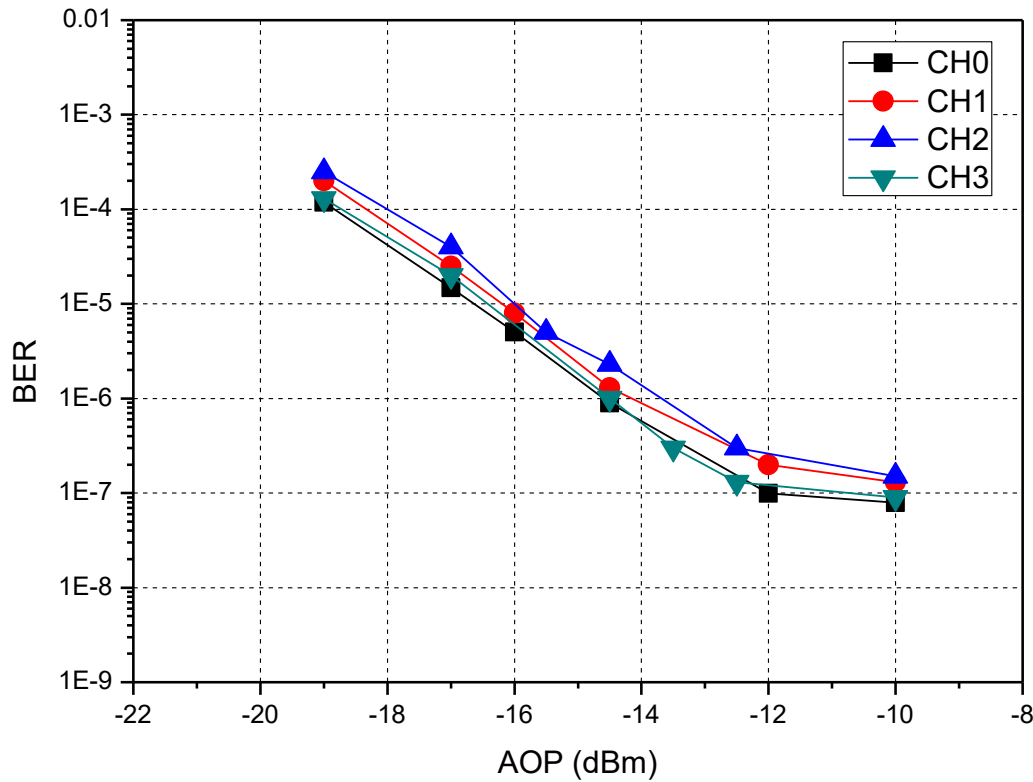
All temperature
overload >0dB,





Qual channel APD PAM4 performance

- 4 channel APD receiver sensitivity is close to single channel TO-can APD receiver



Test conditions:
26.6Gbaud PAM4,
PRBS31Q,
RT,

Tx parameters:
SECQ:1.4~1.7dB
ER: 6.4~6.9dB



Summary

- Both single channel and qual APD receiver realized a sensitivity of -19dBm and an overload >0dBm at 26.6Gbaud PAM4;
- With a proper Tx launch power, it can realize an operation distance up to 40km