

25G EPON PR30 downstream power budget

Update of “25G EPON downstream power budget- 3rd iteration” (harstead_3ca_5a_0117)

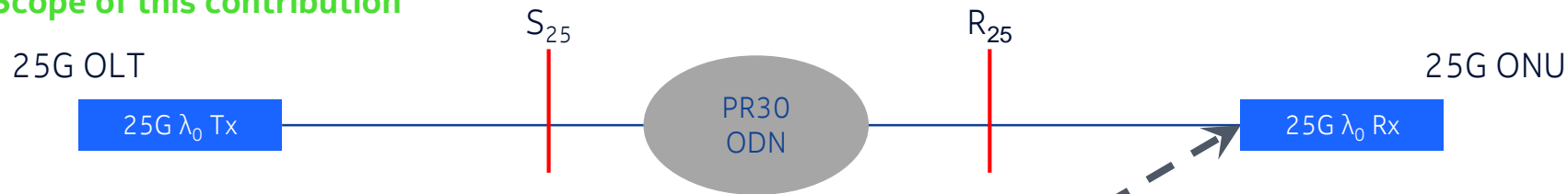
Ed Harstead, Nokia

Supporter: John Johnson, Broadcom

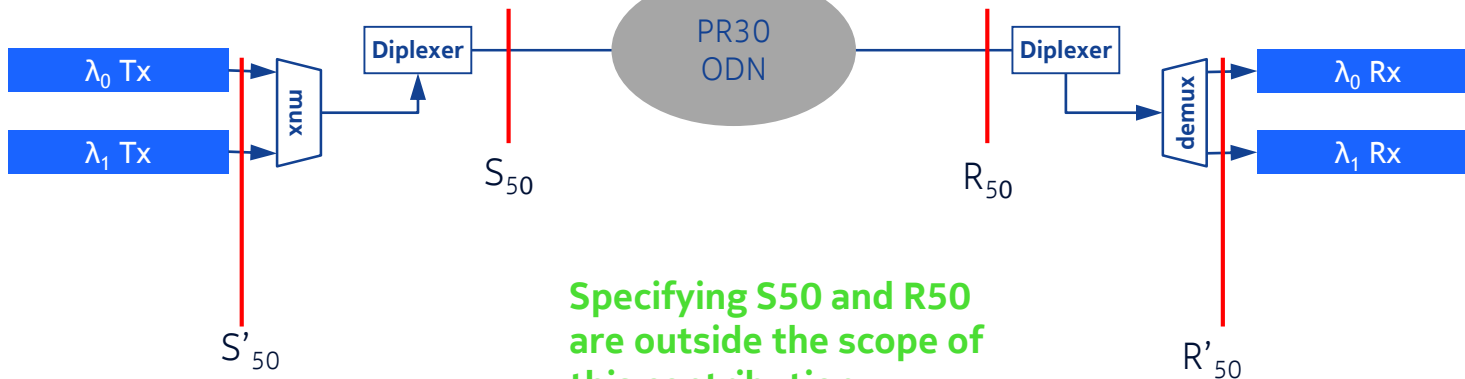
January 2018

Scope: 25G EPON, downstream direction

Scope of this contribution



50G OLT



Specifying S_{50} and R_{50} are outside the scope of this contribution

Parameters

- 25G ONU receiver sensitivity = -24.2 dBm @ ER=8 dB , BER = 1e-3 per Motion #3 minutes_approved_3ca_0117.pdf

Motion #3		
The 25G-EPON ONU receiver sensitivity specification proposed in harstead_3ca_4_0117.pdf page 14, -24.2 dBm at BER = 1E-3 and ER = 8 dB, shall be adopted as a starting point. The final specification would be adjusted, if required, for these two possible deltas with respect to 10G-EPON: 1) improved FEC, 2) higher diplexer loss due to smaller DS/US gap.		
Moved: Ed Harstead	Second: Frank Effenberger	
For: 26	Against: 0	Abstain: 3
Technical ($\geq 75\%$)		
Motion Passed		

- TDP = 1.5 dB per tanaka_3ca_1_1116
 - Based on time resolved chirp method in tanaka_3ca_1_0516, plus margin, and not to be less than 10G EPON downstream TDP
- LDPC FEC improvement 1.5 dB_o per powell_3ca_1a_0118 (via laubach_3ca_1b_0118: GE model, with interleaver, precoder on, minimum value).

25G EPON PR30 ONU receiver sensitivity and OLT launch power specs.

Specification: OLT AVP_{min} = 5 dBm
(ER min = 8 dB)

ONU Rx Sens_{max} -24.2 dBm
@ ER=8 dB, BER = 1e-3

PR30 loss
budget = 29 dB

TDP = 1.5 dB

Specification:
ONU Rx Sens_{max} = -25.5 dBm*
@ ER = 8 dB
(rounded to nearest 0.5 dB)

FEC improvement 1.5 dB

ONU Rx Sens_{max} = -25.7 dBm*
@ ER = 8 dB

*BER = 1e-2 nominally

Check proposed specification for OLT EML

- Per vendor survey harstead_3ca_3_0917

EML	number	mean	σ
AVPmin (dBm)	7	4.6	0.6
ER (dB)	7	7.6	0.8

EML

- Note: 4 vendors support 5 dBm AVP_{min} / 8 dB ER.

Notes:

- "number" = number of responses
 - "mean" = the average value of the responses. When a vendor gave a range for a value, the midpoint of that range was used.
 - " σ " = the standard deviation of the responses.
- An OLT specification of AVP_{min} = 5 dBm and ER min = 8 dB is confirmed to be feasible.

Motion

The 25G EPON PR30 specifications proposed in harstead_3ca_1_0118

- 25G ONU receiver sensitivity: -25.5 dBm at BER= 1e-2 and ER=8 dB
- 25G OLT transmitter: AVPmin = 5 dBm and ER min = 8 dB

shall be adopted. If/when the Task Force decides on an alternate method for specifying transmitter launch power and TDP, these specifications can be converted accordingly.

Moved: Ed Harstead

Seconded:

For:

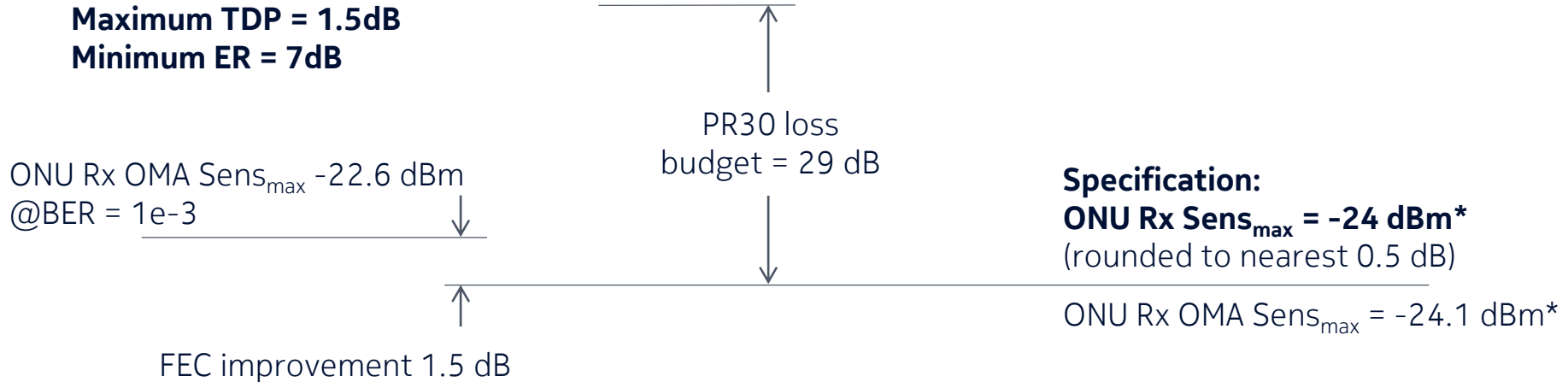
Against:

Abstain:

Example: Converting to OMA and OMA minus TDP (John Johnson)

Assuming Tx will be specified as OMA minus TDP (per johnson_3ca_1_0118)

Specification: min OLT OMA-TDP = 5 dBm
Minimum OMA = 5dBm (even if TDP<0dB)
Maximum TDP = 1.5dB
Minimum ER = 7dB



Specification:
ONU Rx Sens_{max} = -24 dBm*
(rounded to nearest 0.5 dB)
ONU Rx OMA Sens_{max} = -24.1 dBm*

*BER = 1e-2 nominally

NOKIA