

PIN ROSA Sensitivity

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GENNUM

Supporters

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Overview

- Continuing advancements in SiGe TIA design are allowing for improvements in receiver sensitivity
- This allows for margin in the previously proposed PIN Receiver Power Budget*:

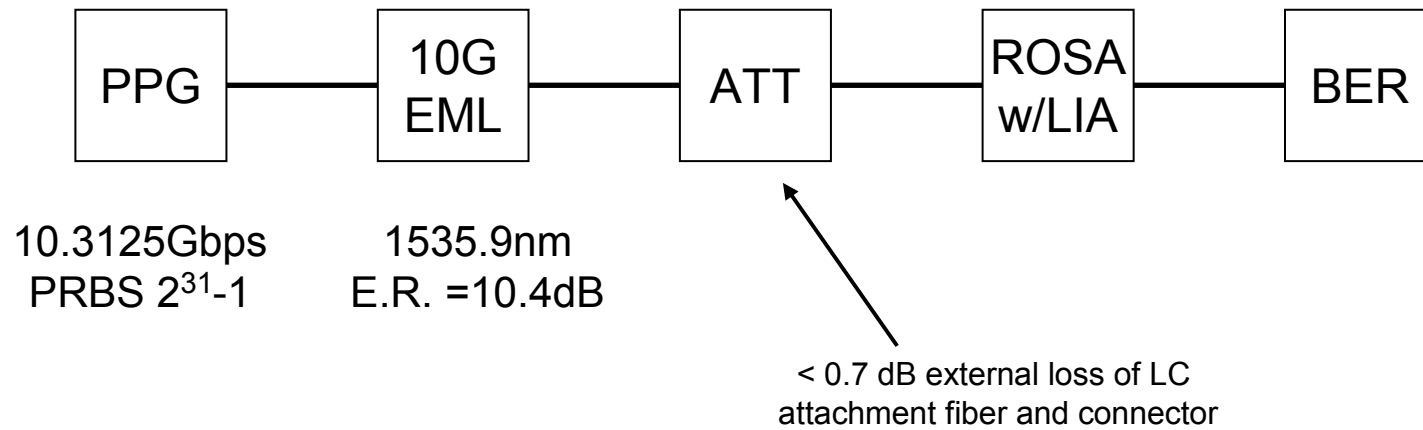
λ : 157x nm

With E-FEC/ with RS(255,239) in ()

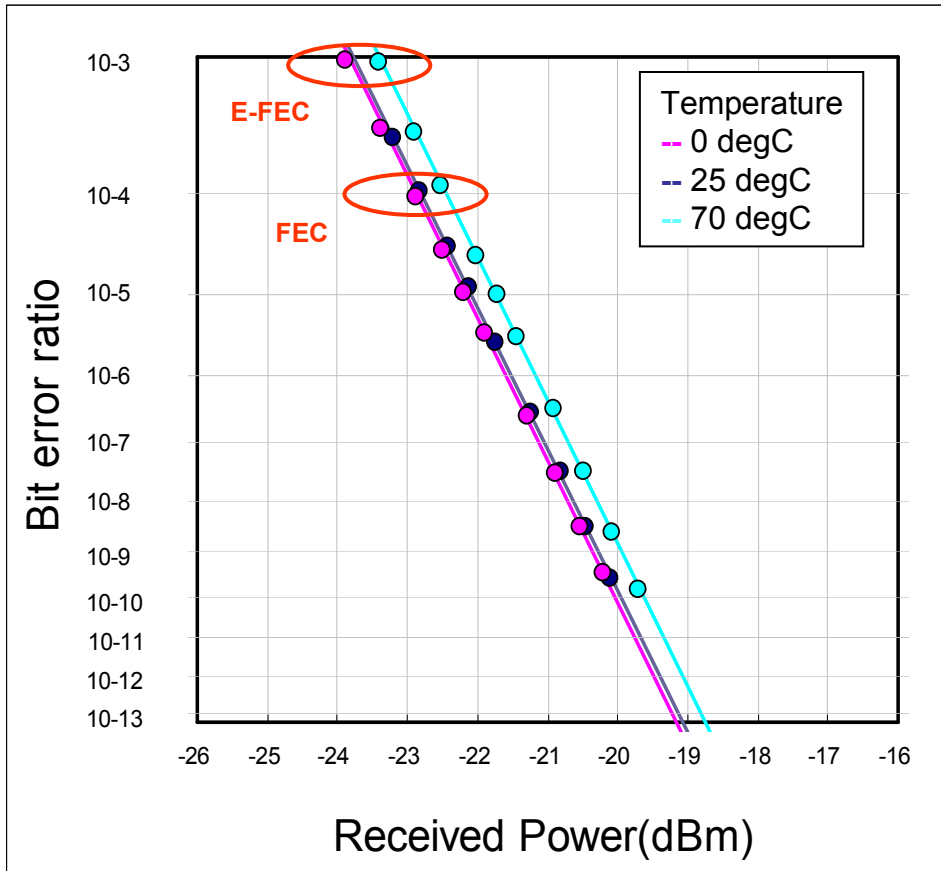
	PX10	PX20	B++	Mean Power (dBm)
CH IL (dB)	20	24	29	
Path Penalty (dB)	1	1	1	EML TX, <20km
Tx (OLT)	EML	EML + SOA	EML + SOA/EDFA	
Rx (ONU)	PIN	PIN	PIN	
ER (dB)	9	9	9	
ONU Sensitivity	-20 (-19)	-20 (-19)	-20 (-19)	BER<10 ⁻² or 10 ⁻³ (BER<10 ⁻⁴)
OLT Launch (min)	+1 (+2)	+5 (+6)	+10 (+11)	
OLT Launch (Max)	+4 (+5)	+8 (+9)	+13 (+14)	
Overload	-1 (0)	-2 (-1)	-2 (-1)	

*See 3av_0707_takizawa_1.pdf

Test Setup



Test Results

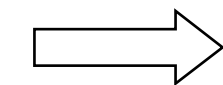


Note: Includes Att loss

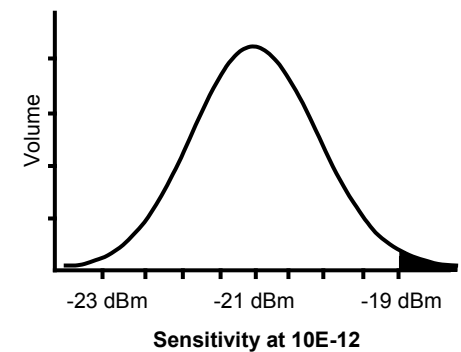
PIN ROSA Specifications

	10 ⁻¹² BER	10 ⁻⁴ BER	10 ⁻³ BER
Typical	-21 dBm	23.5 dBm	24.5 dBm
Worst Case*	-19 dBm	-22 dBm	-23 dBm

- * Worst Case Power
- * Worst Case Temperature
- * Worst Case Process
- * Guardbanding (4 Sigma from peak)



Illustrates worst case performance (~ 4 sigma)



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Link Budget

PIN ROSA Sensitivity (worst case)	-23dBm (BER < 10 ⁻³)
WDM filter and Crosstalk	+1dB
Resulting PIN ONU Sensitivity	-22 dBm

- 22dBm allows for 2dB margin on the proposed ONU sensitivity of -20dBm (BER<10⁻³)

	PX10	PX20	B++	Mean Power (dBm)
ONU Sensitivity	-20 (-19)	-20 (-19)	-20 (-19)	BER<10 ⁻² or 10 ⁻³ (BER<10 ⁻⁴)

*See Geneva: 3av_0707_takizawa_1.pdf

Conclusions

- Worst Case Sensitivity of PIN at ONU:
-23dBm_(BER<10⁻³)
- This enables margin necessary to support high volume ONU production

End