

COM 4.0 Update: COM Post Processing for Receivers which Utilize a Maximum Likelihood Sequence Estimate (MLSE)

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Contents

- ❑ COM Code Operation and MLSE Invocation
- ❑ Simplified COM Algorithm Overview
- ❑ COM Algorithm with MLSE Post-processing
- ❑ COM MLSE Caveats
- ❑ Summary

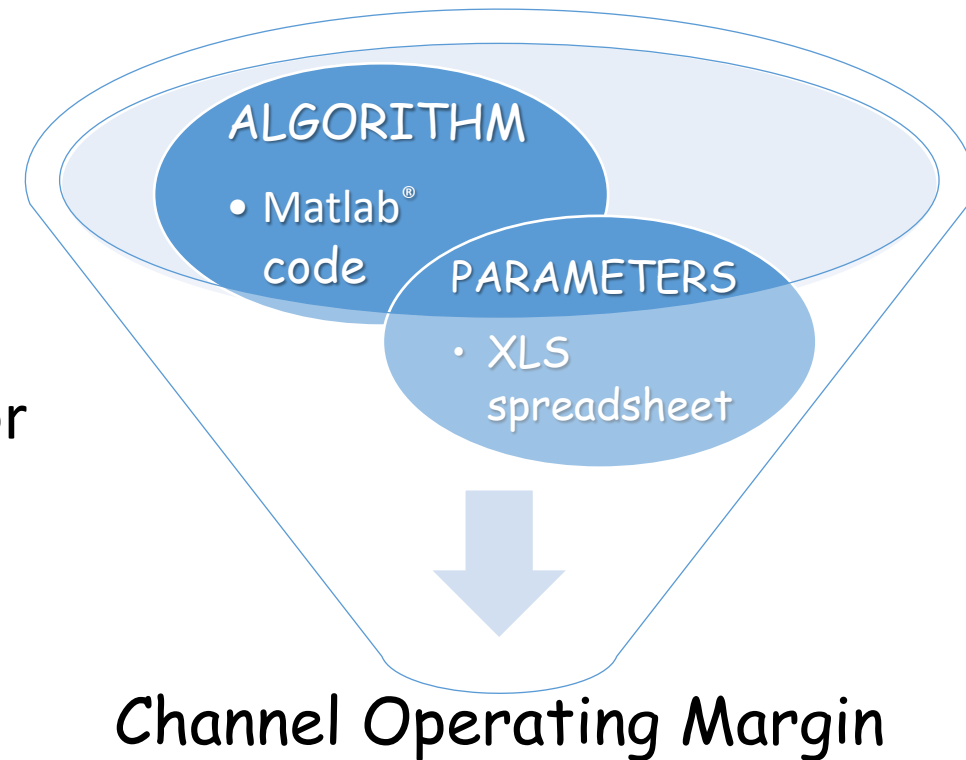
COM Code Operation and MLSE Invocation

Algorithm defined in shakiba_3dj_01_230116*

- ❑ Keywords in the COM configuration spreadsheet are used to invoke features and specify computational parameters.
- ❑ MLSE is invoked with the MSLE keyword

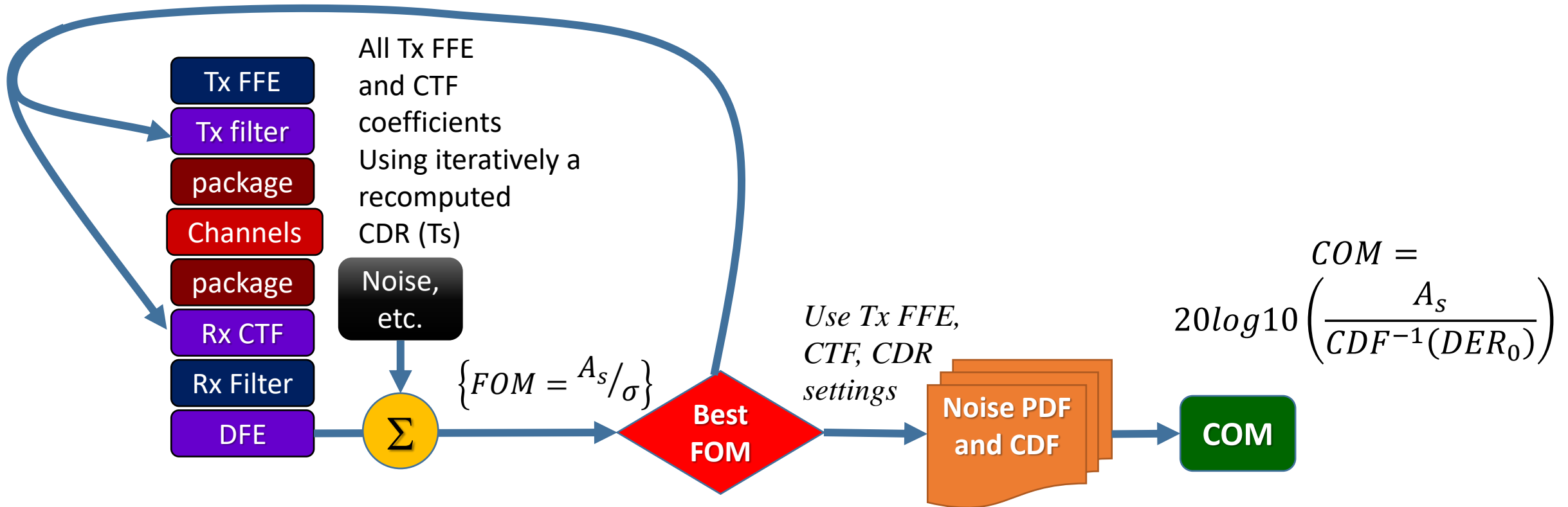
Parameter	Setting	Units
MLSE	1	logical

- ❑ MLSE is not invoked if the keyword is missing or set to 0
- ❑ Related parameters
 - DER_0 (detector error ratio)
 - b_max(1) (maximum normalize DFE1 value)
 - N_b (number of DFE taps)



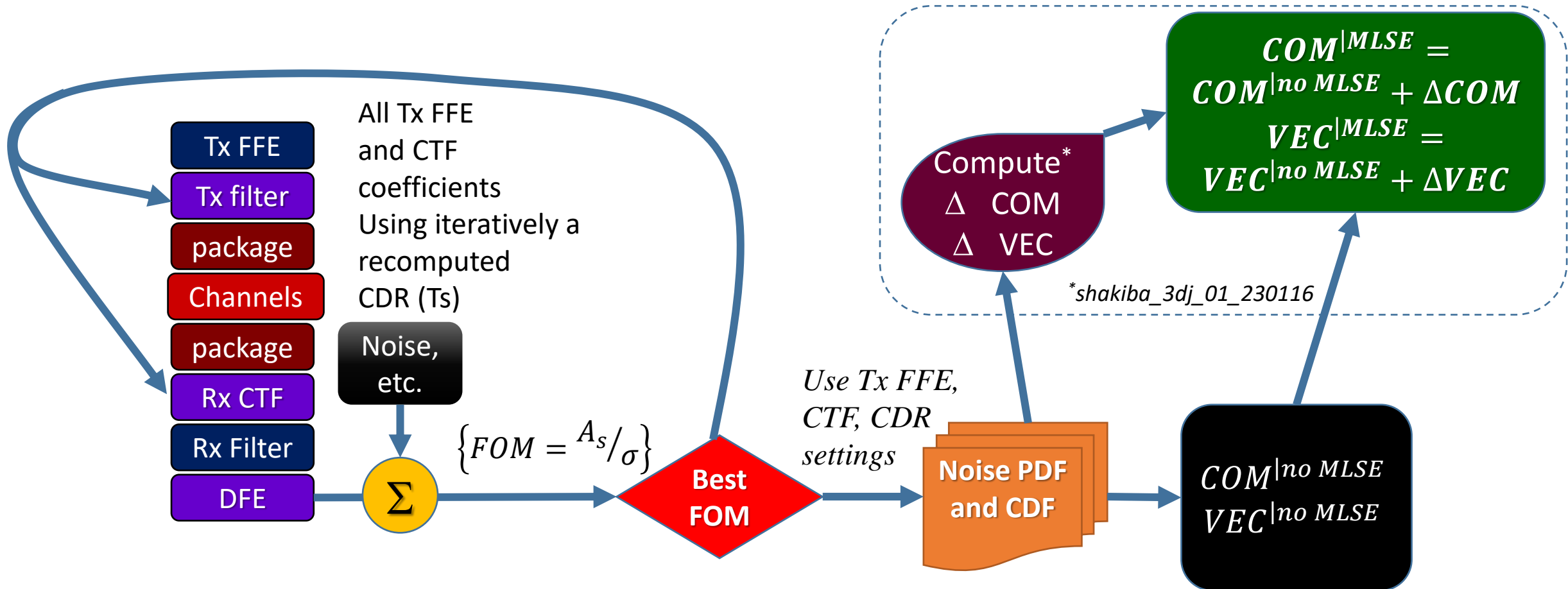
*https://www.ieee802.org/3/dj/public/23_01/23_0116/shakiba_3dj_01_230116.pdf

Simplified COM Algorithm Overview



COM Algorithm with MLSE Post-processing

Simplified COM Algorithm



COM MLSE Caveats

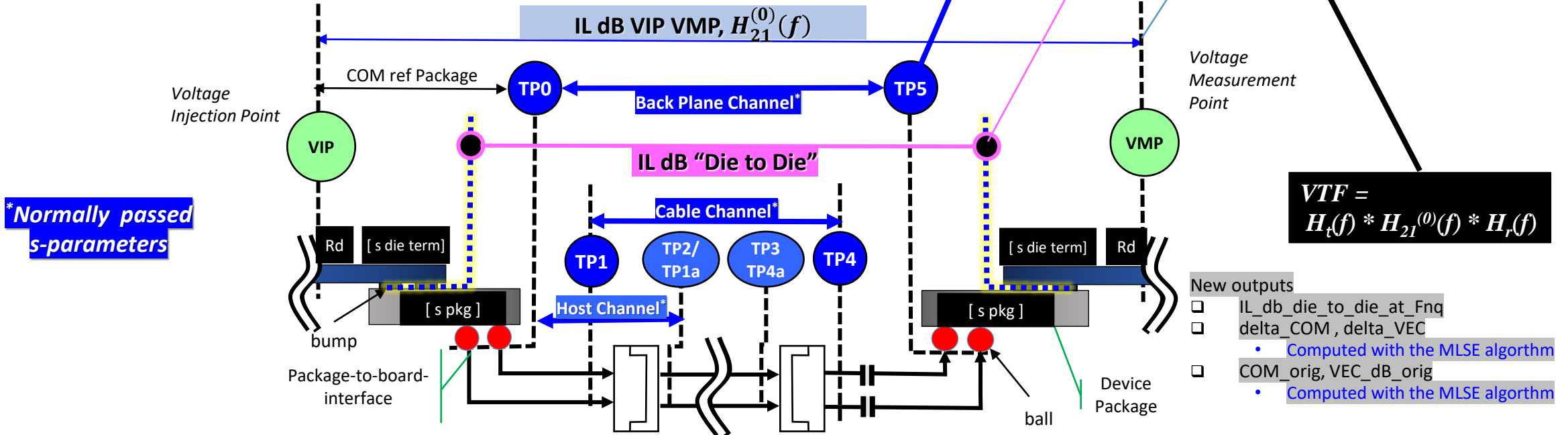
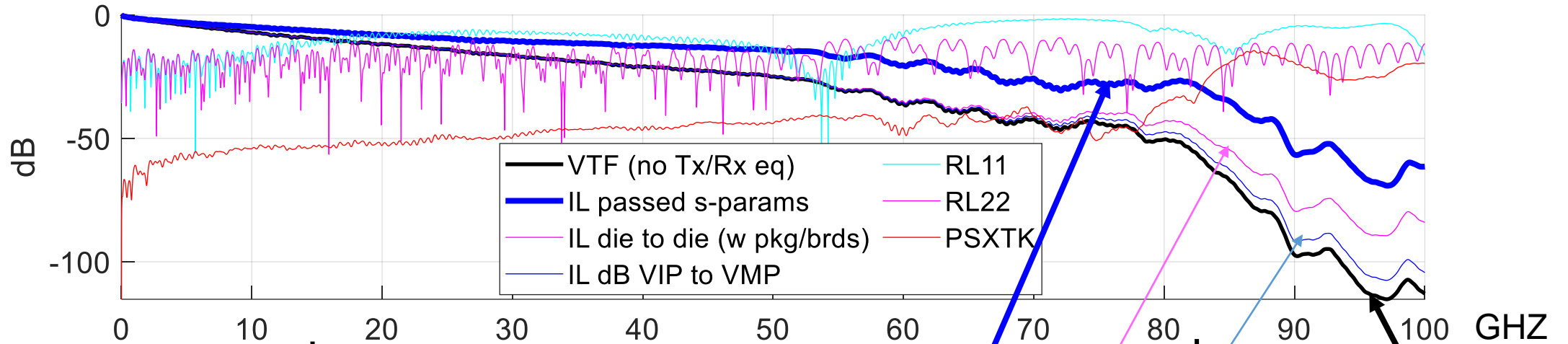
- ❑ As previously noted, MLSE is basically a post processing for COM computations
 - Equalizer and CDR optimization are performed pre-MLSE
- ❑ MLSE adjustment will not occur if there is more noise than signal
 - A warning is reported
- ❑ Displayed bathtub curves and eye diagram figures are computed without MLSE
- ❑ EH is not adjusted for MLSE
- ❑ When $b_{max}(1)$ is 1 or slightly less, best improvement from MLSE could be expected.
- ❑ The Δ SNR computation is independent of whether Rx FFE, Rx DFE, or RX DFE floating taps are specified. At least one tap of DFE is required.
- ❑ Spreadsheets are not part of the COM 4.0 zip file

Summary of D4.0 Update

- ❑ New capability: MLSE processing capability added to COM computation
- ❑ Better linkage in between reports figures and circuit diagram
- ❑ “Die to die” loss explicitly reported

Backup

Reference Nomenclature and Associated Figure



Thank You!