

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

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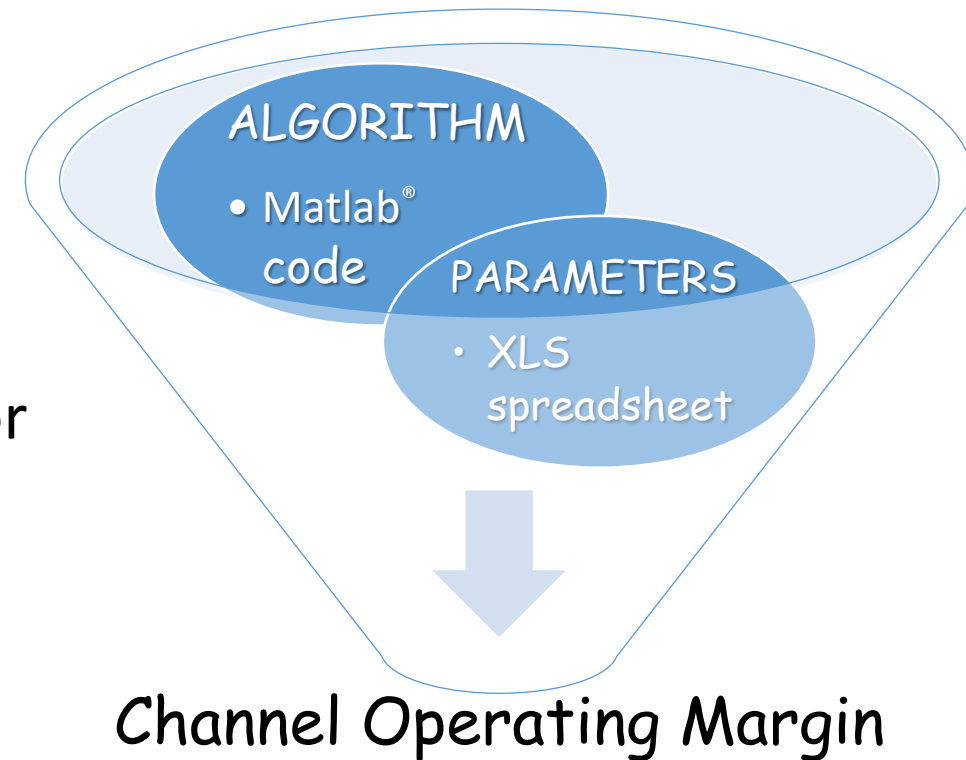
# COM Code Operation and MLSE Invocation

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

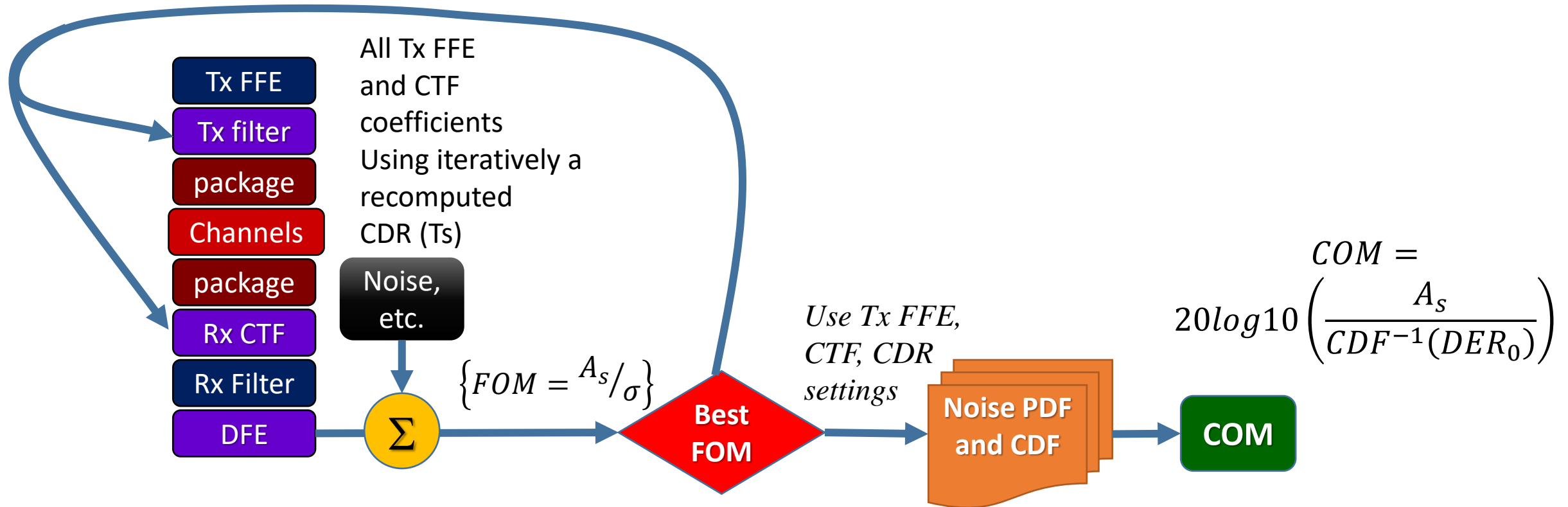
Parameter	Setting	Units
MLSE	1	logical

- ❑ 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)



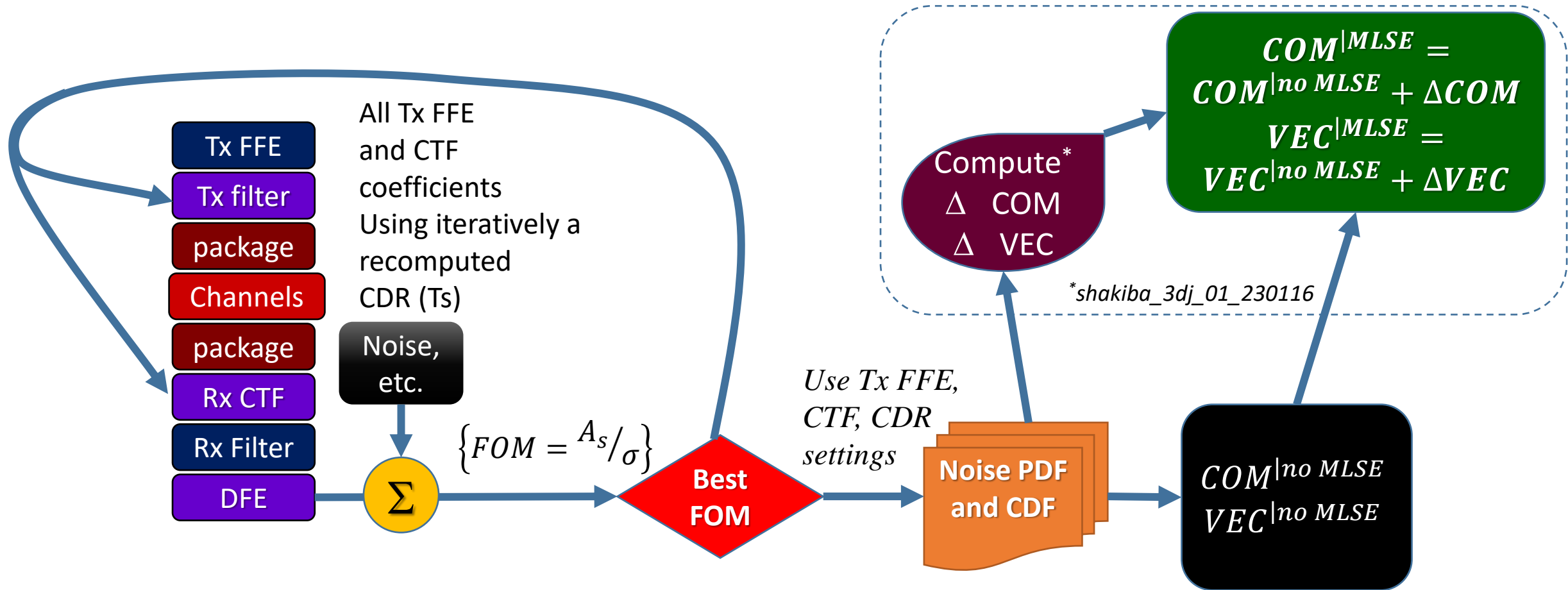
\*[https://www.ieee802.org/3/dj/public/23\\_01/23\\_0116/shakiba\\_3dj\\_01\\_230116.pdf](https://www.ieee802.org/3/dj/public/23_01/23_0116/shakiba_3dj_01_230116.pdf)

# 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  $\Delta$ 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

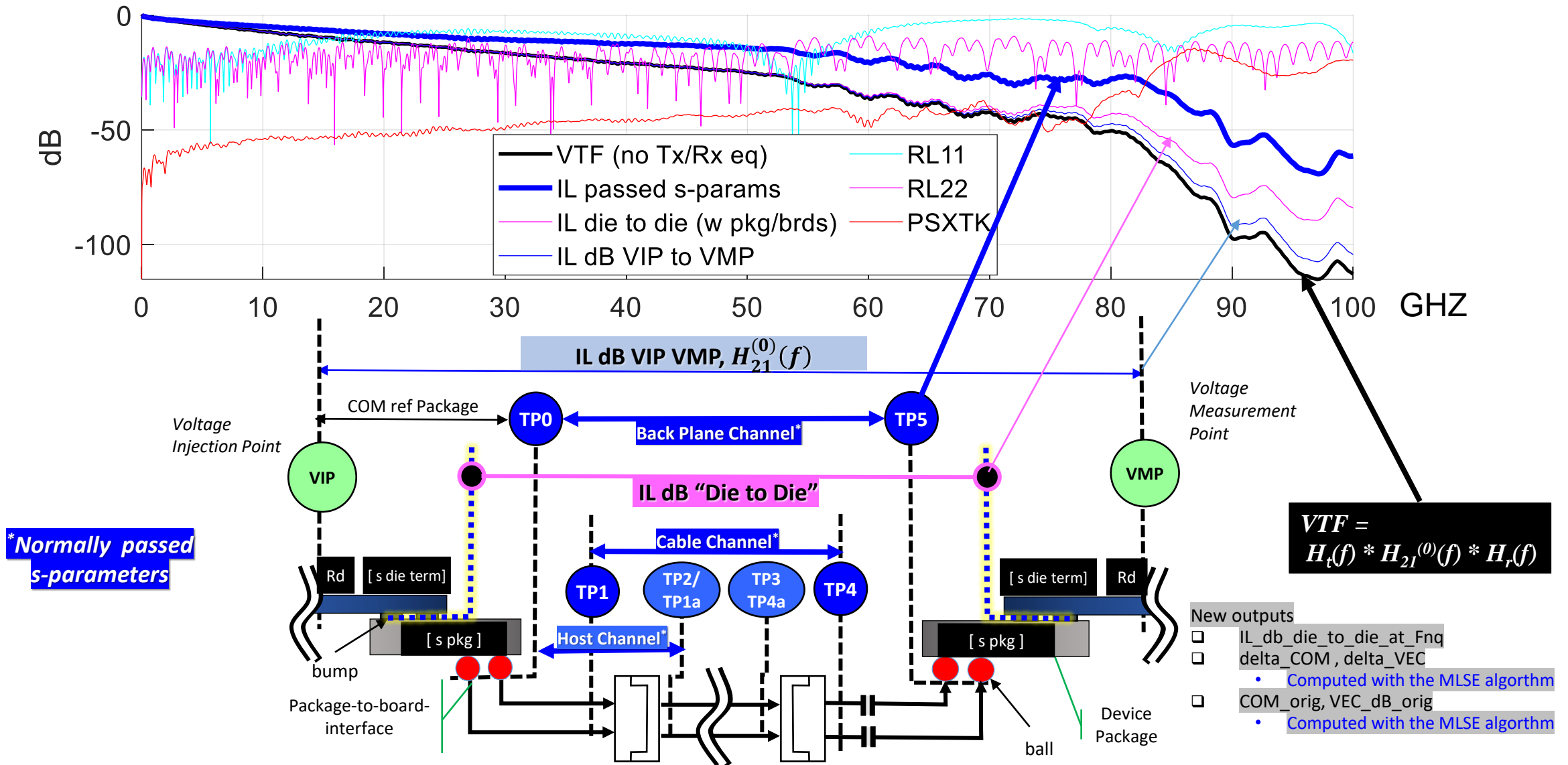
# Summary of D4.0 Update

- ❑ 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!**