

Towards Package Baseline proposal for 100GEL

Liav Ben Artsi, Marvell Israel Ltd.

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Executive Summary

- An initial PKG model was supplied during the September interim
- A mathematical model was matched vs. the extracted model (thanks Rich!)
- The PKG parameters were updated according to inputs received during the interim
- **A new approach to PKG cases coverage will be suggested to be used as a PKG base line**

PKG Suggested Parameters

- Following September interim nominal PKG impedance was voted to be 92.5Ω
- Ball and PTH discontinuities were optimized and rated @ 75-90fF
→ recommend using 80fF @ the COM excel
- COM mathematical model was matched to the extracted package
– The mathematical representation gives slightly better results compared to actual concatenated PKG extraction
- Former projects have used 14Taps of DFE @ half rate → doubling the rate requires extending compensation depth above 16Taps → recommend 20-24 taps depth (but not a part of this baseline)

Which Cases Should We Examine in COM?

- 30mm 87.5ohm PKG trace + 92.5mm PTH [Trace includes -5ohm manufacturing tolerance] – **Recommend including**
- 12mm 87.5ohm PKG trace + 92.5mm PTH [only trace includes some manufacturing tolerance] – Runs resulted in ~2dB COM difference **Recommend Excluding**
- 30mm 97.5ohm PKG trace + 92.5mm PTH [Trace includes +5ohm manufacturing tolerance] – **Recommend including**

The intention is to avoid misleading the COM users to mistakenly consider the manufacturing tolerance as the nominal case...

How Many Trace Segments Do We Need?

- It was shown that one segment that will represent the trace and a short one at the ball location (to represent the PTH) comes “close enough” to represent the PKG trace, therefore....
- **Recommend using only two of the flexible PKG model segments**

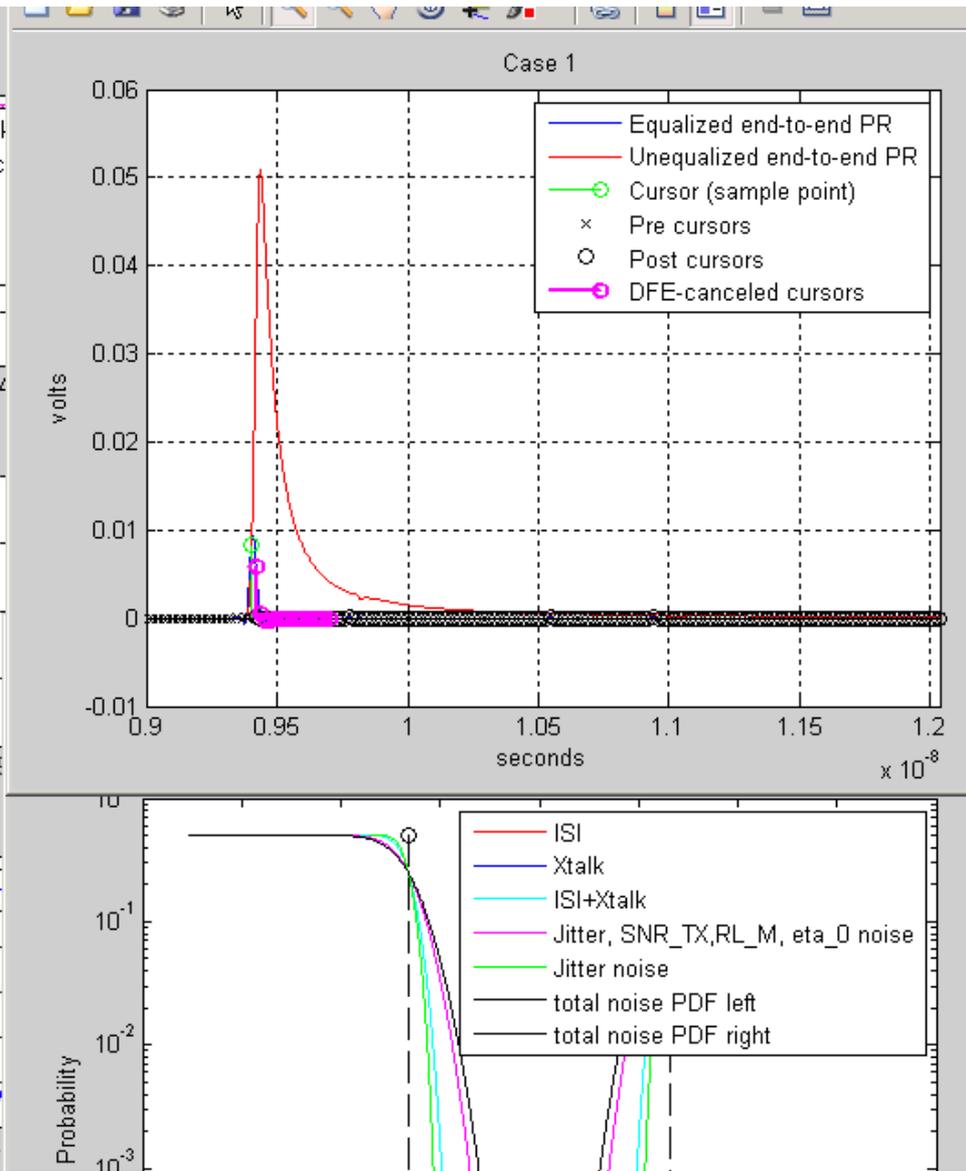
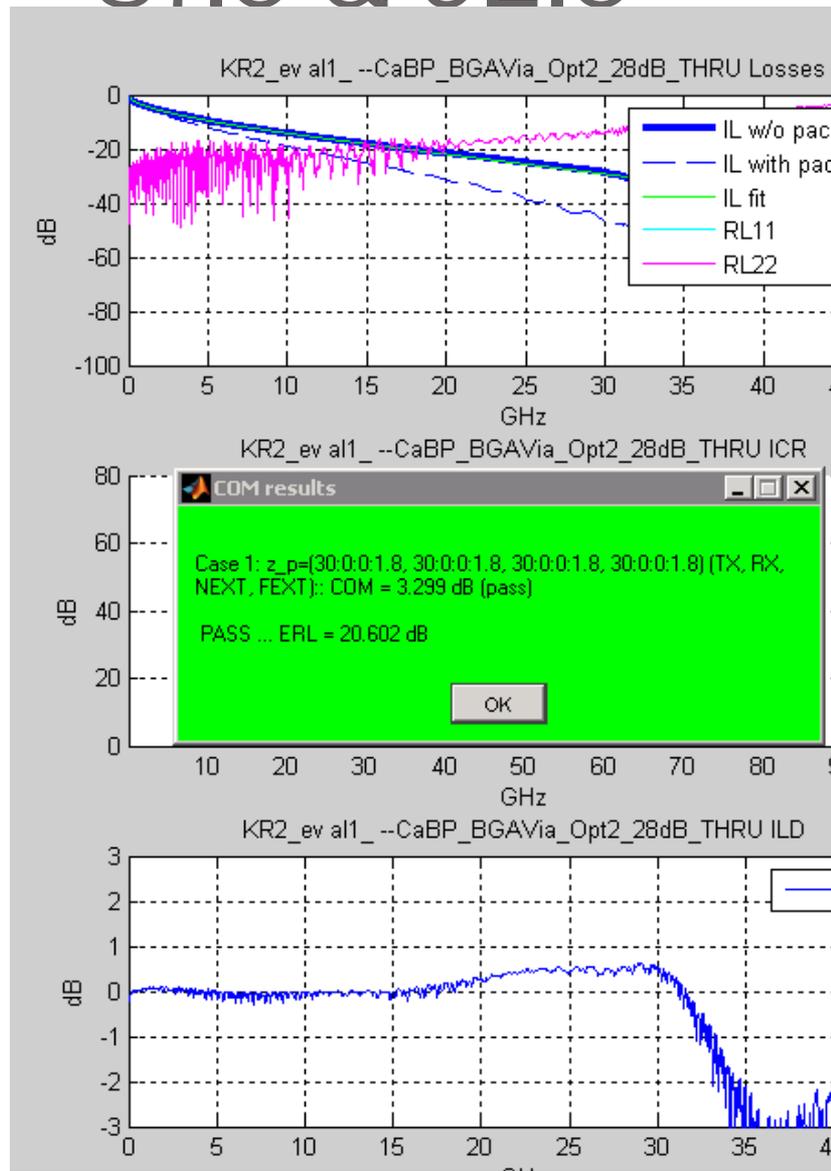


Summary

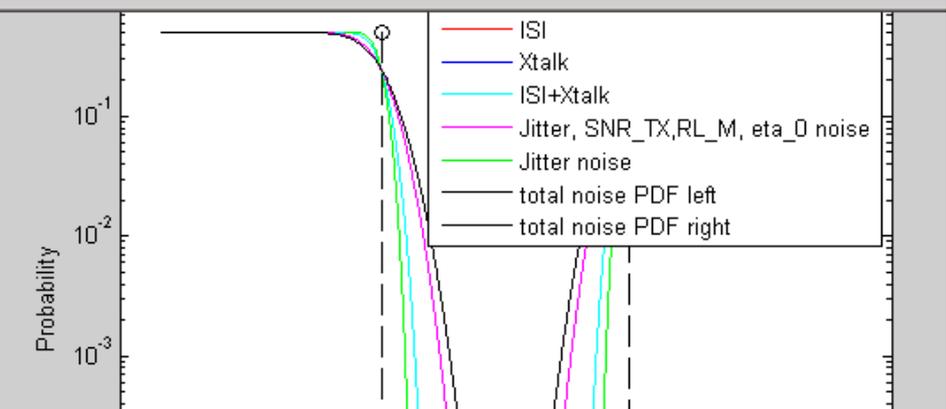
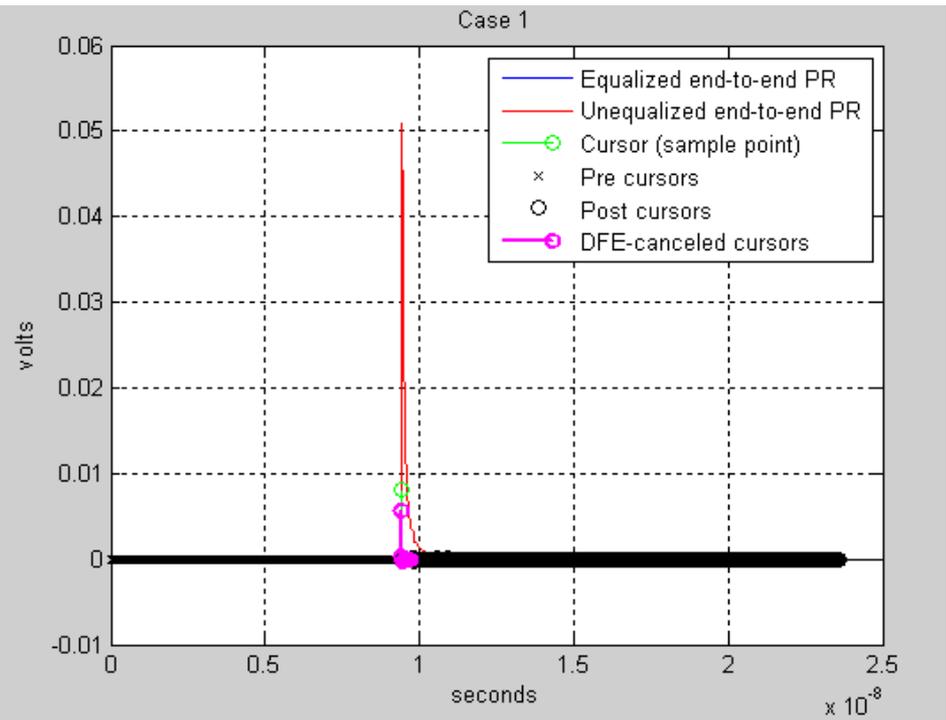
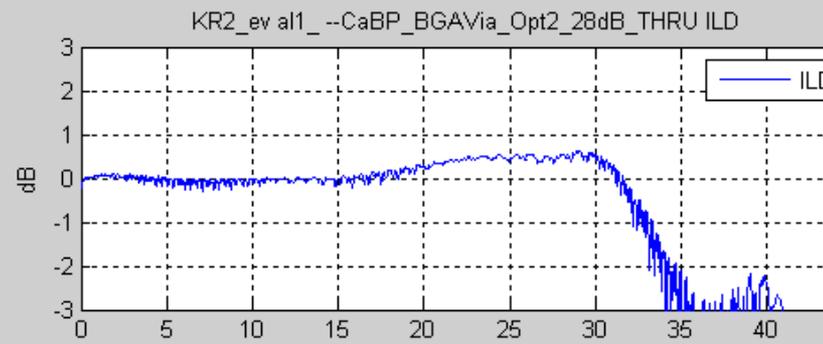
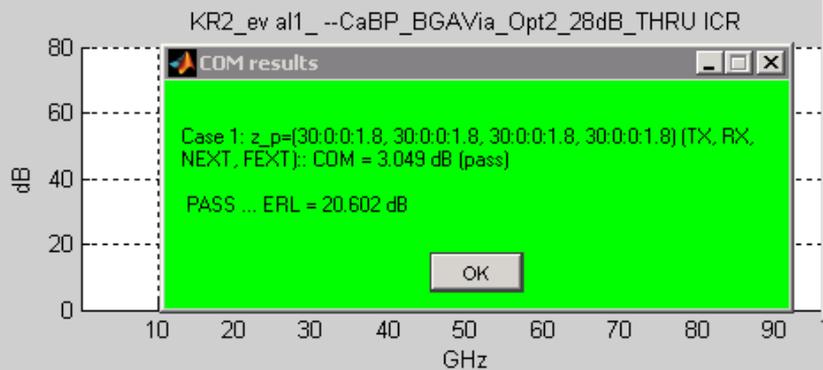
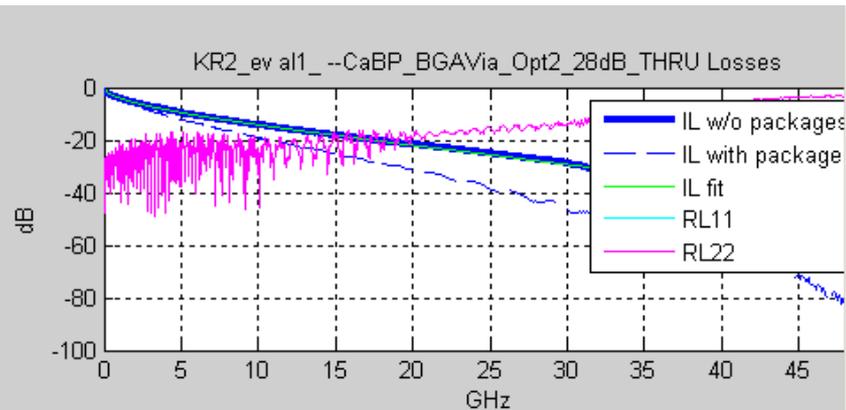
- Two sections of the “flexible package model” are enough to fit the extracted model
- Actual parameters will be submitted according to Rich’s matching work
- Recommend having only the longer trace length with two cases of “manufacturing tolerance” trace impedance (actual values of tolerance are higher)
- If the shorter traces are of need (result in worse COM) please provide inputs accordingly

Thank you

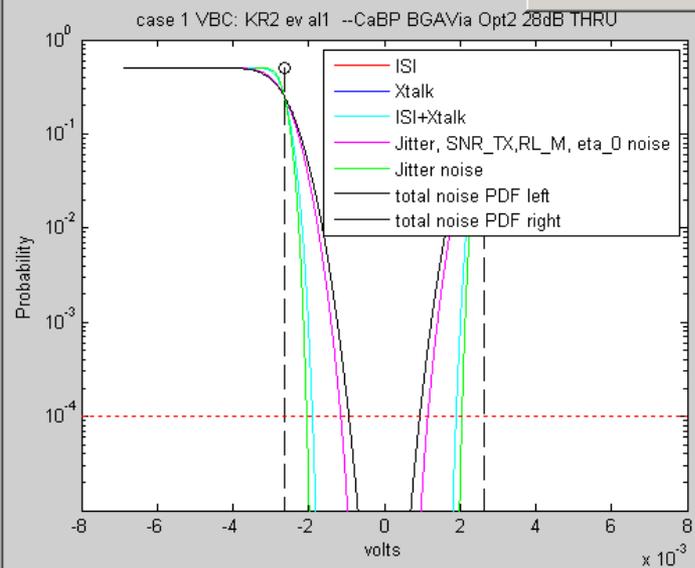
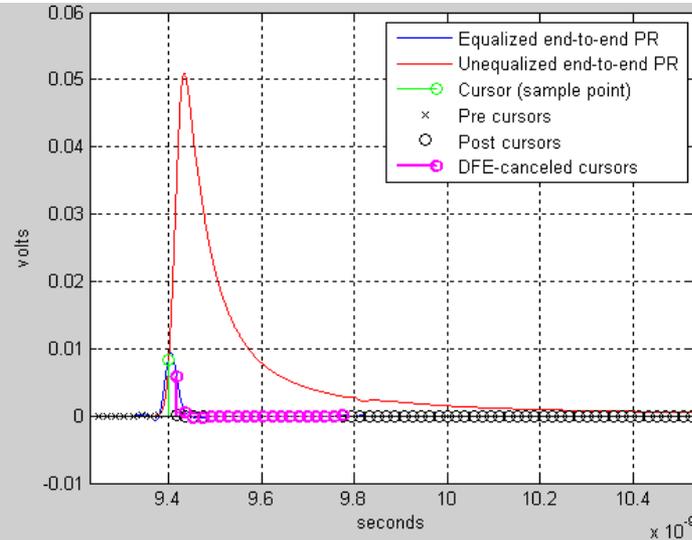
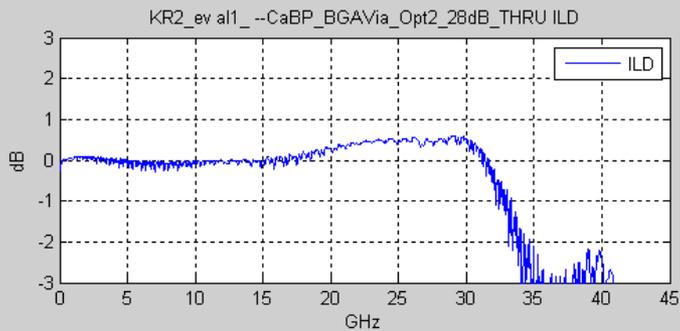
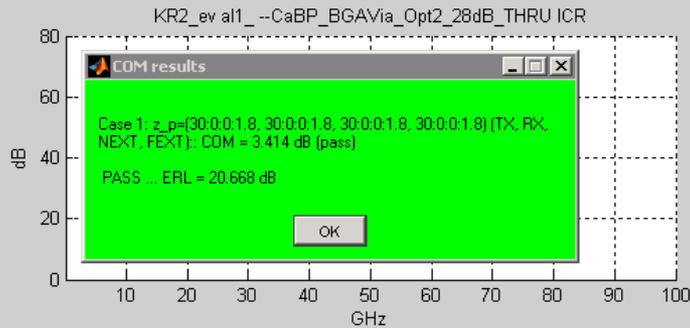
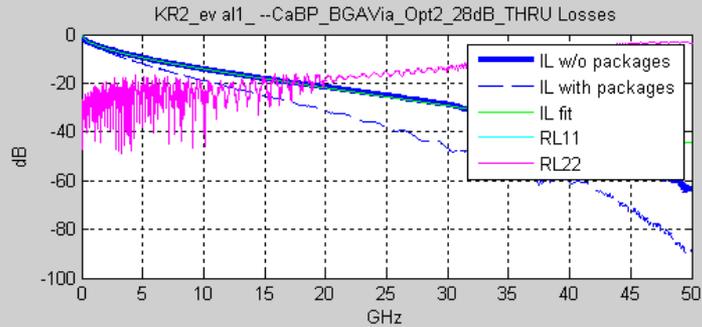
87.5 & 92.5



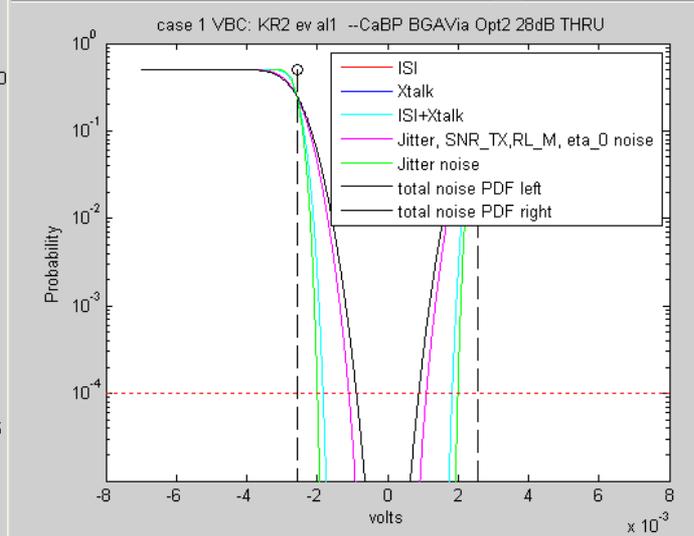
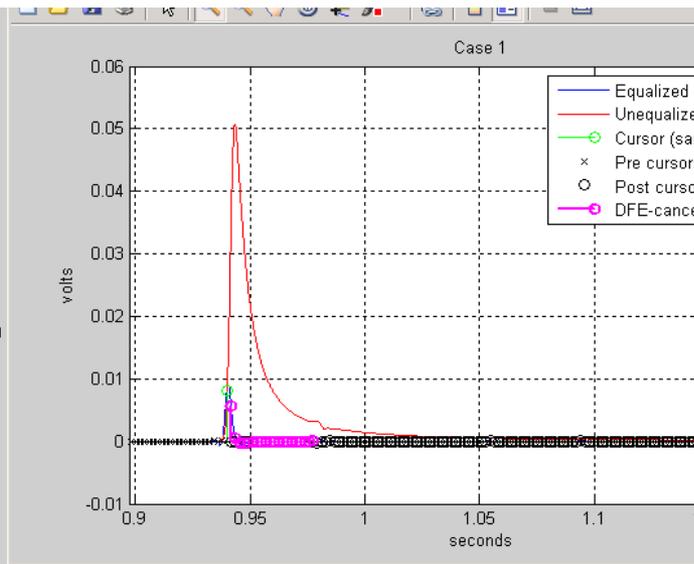
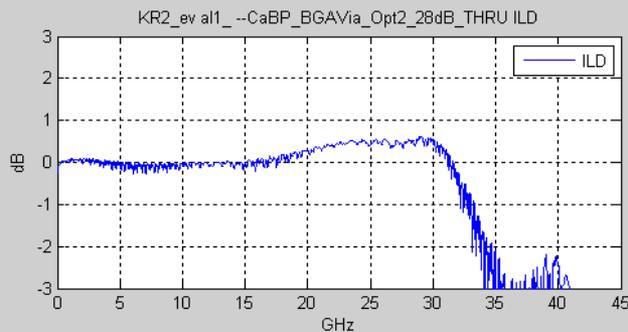
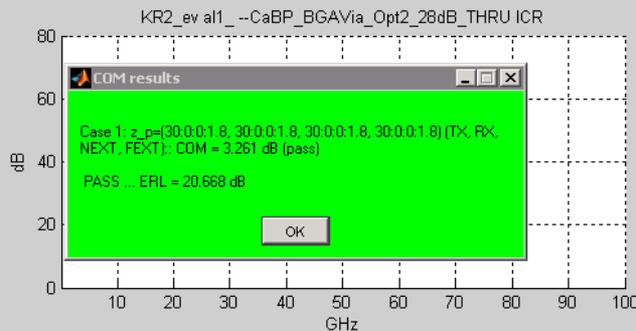
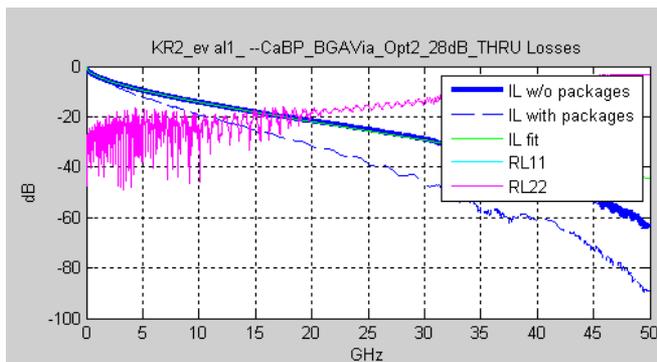
97.5 & 92.5



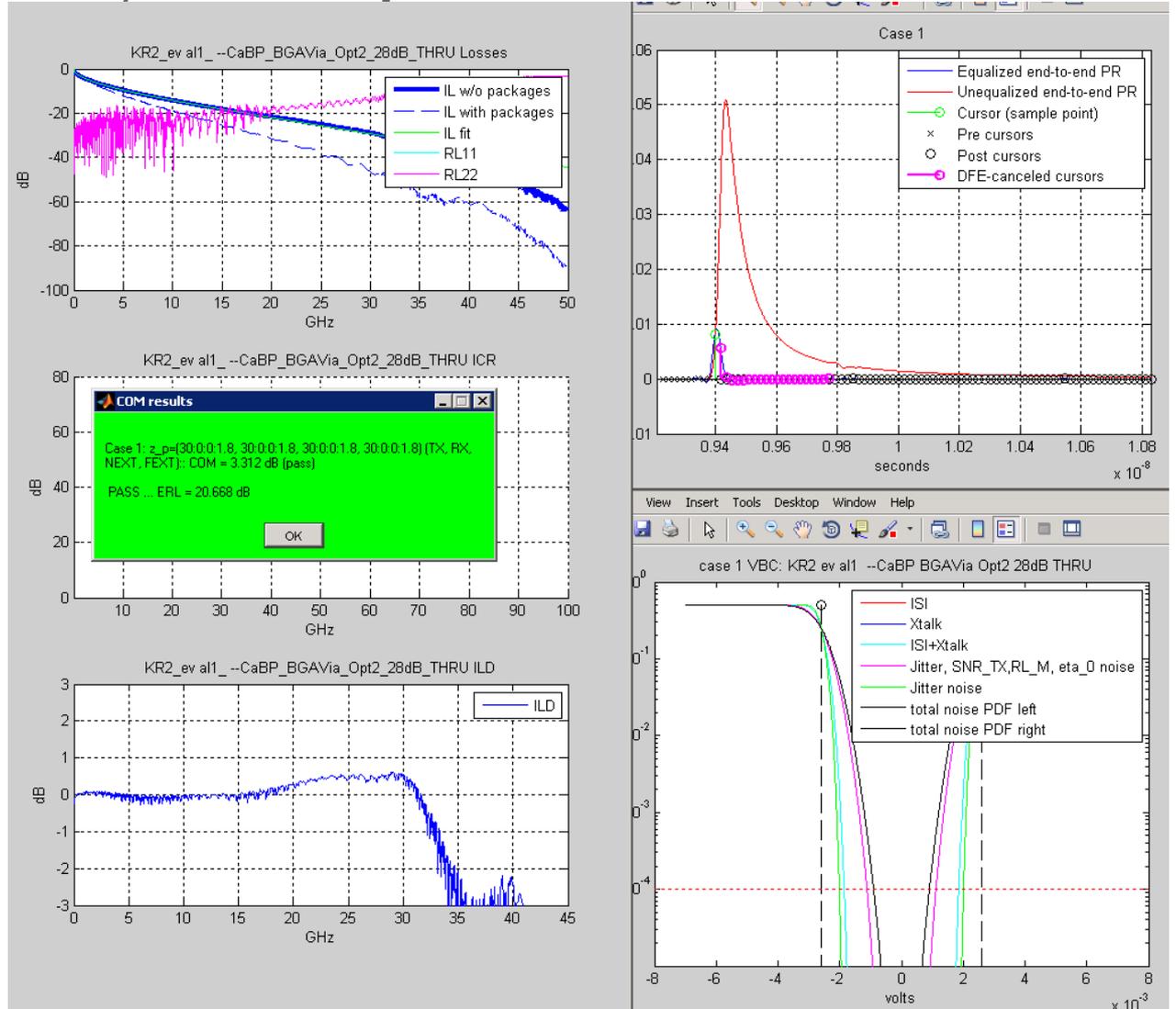
87.5; 92.5 20tap DFE



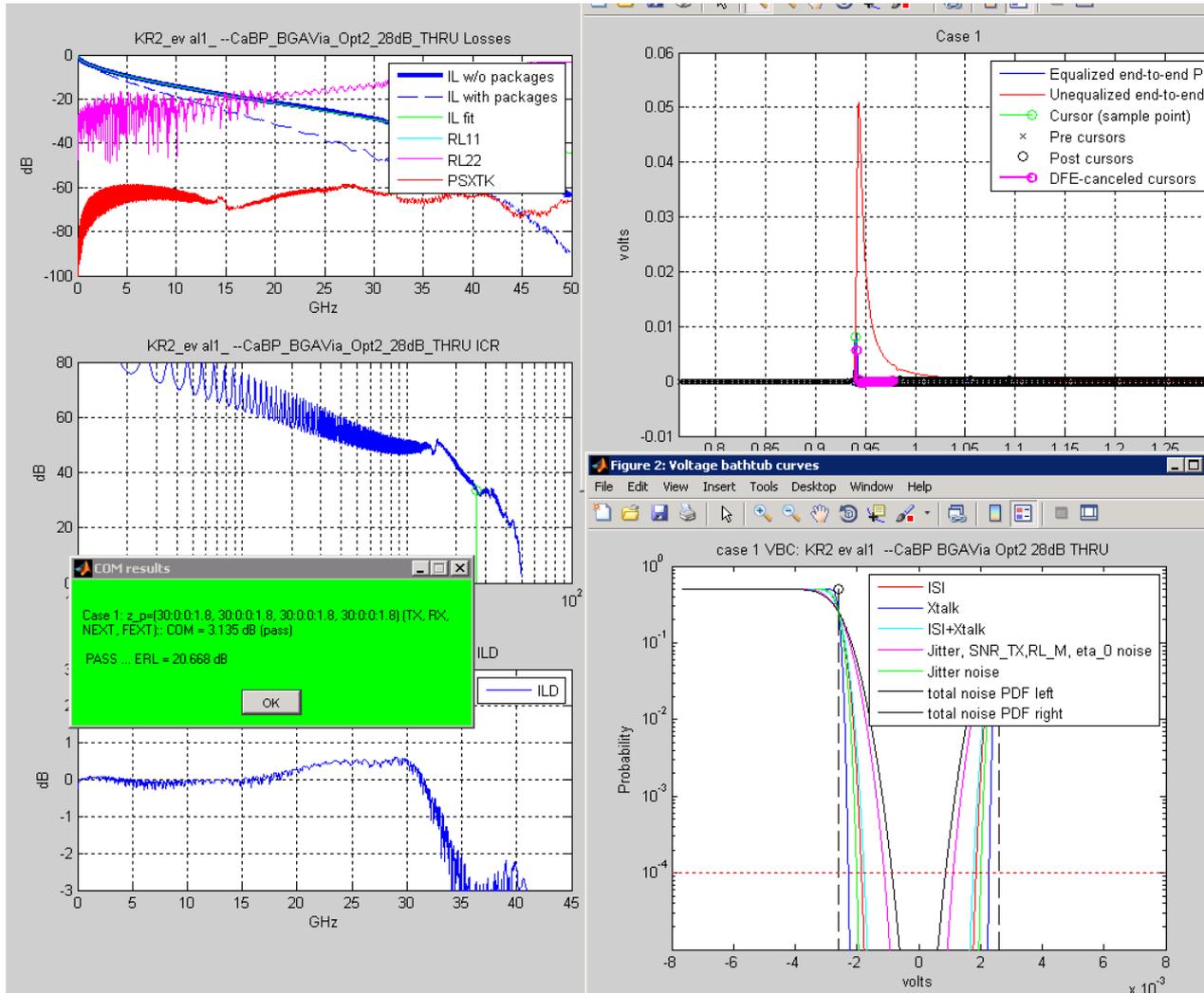
97.5; 92.5; 20Tap DFE



92.5; 92.5; 20Tap DFE



92.5; 92.5; 20Tap DFE including XTalk



97.5; 92.5; 20Tap DFE including XTalk

