

C2M Jitter Measurements

Ref: D2.0 comments 28, 29, 30, and 31

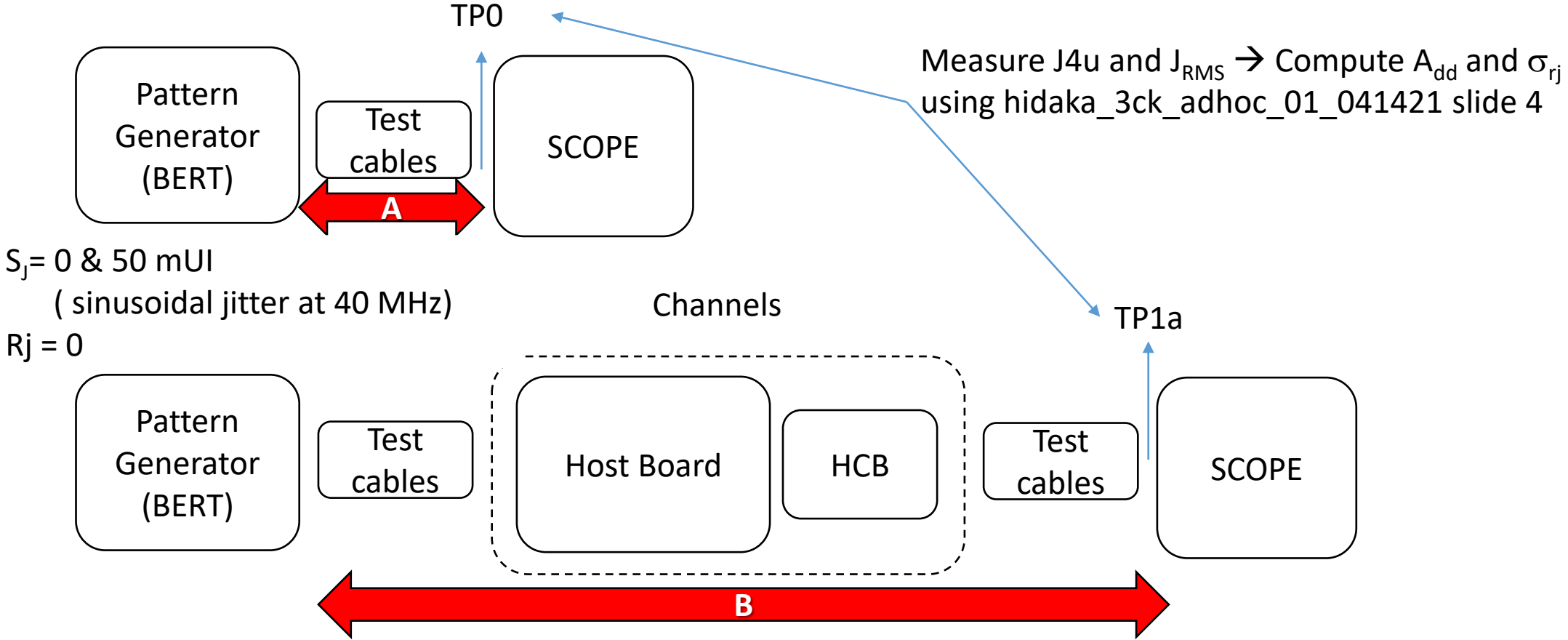
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Agenda

- ❑ Measurement setup
- ❑ Channels
- ❑ Results
- ❑ Observation and Discussion
- ❑ Backup – Matlab computation

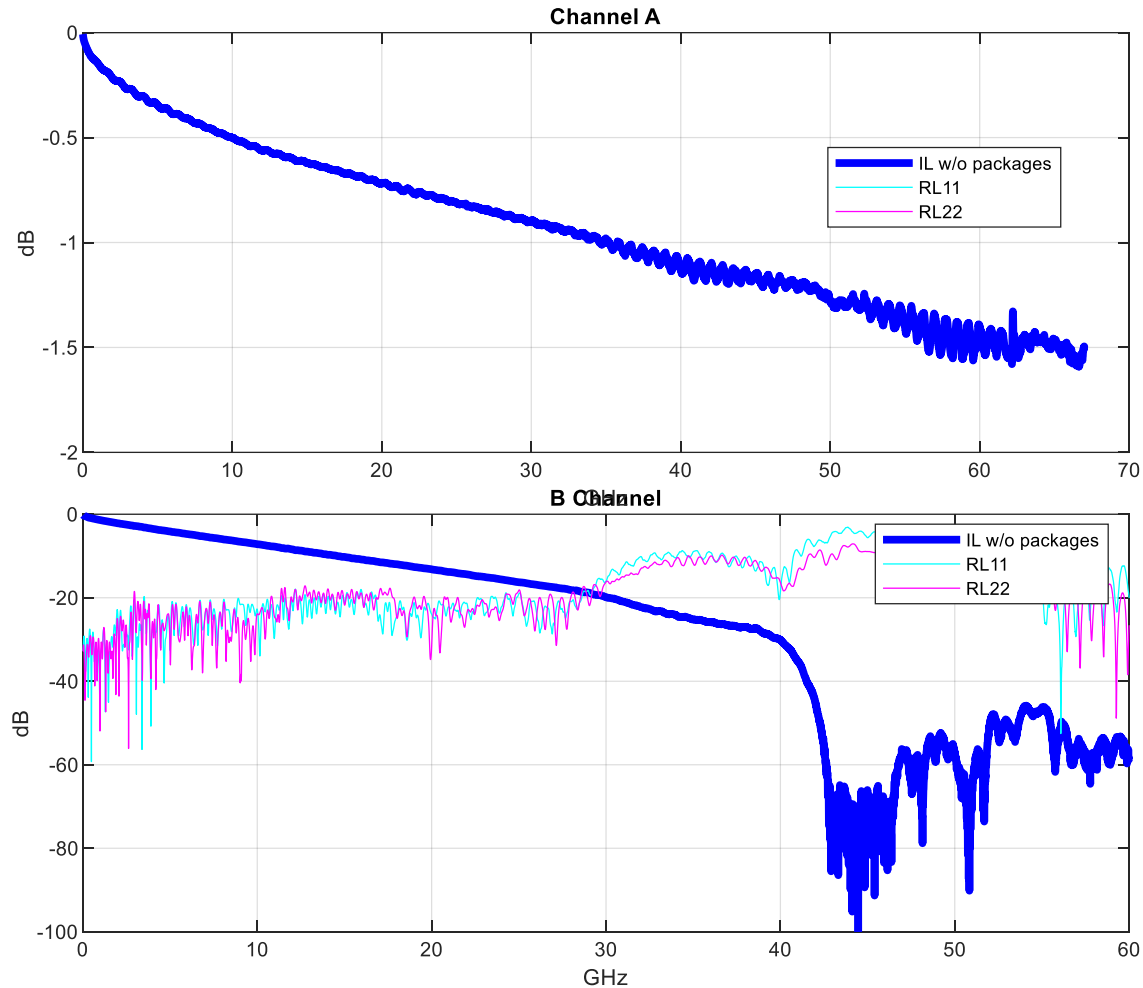
Measurements setup



Questions raised during discussion

- ❑ The type of measurement equipment used
 - Digital Communication Analyzer
- ❑ The reference receiver setting differences at TP0 and TP1a
 - Reference CRU LBW: 4MHz, doesn't track 50mUI SJ@40MHz.
 - TP0: no TxFFE/RxCTLE/RxDFFE, scope measures little under 50mUI periodic jitter.
 - TP1a: optimized with TxFFE/RxCTLE/RxDFFE for channel compensation for best VEC, scope measures little under 50mUI periodic jitter.
- ❑ Accuracy of 50mUI SJ applied from pattern generator
 - All impairment parameters are verified at TP0 and TP1a.

2 Channels (A & B) Measured



□ Channel A

- 4" test cable
- 0.8 dB loss (@26.56 GHz)

□ Channel B

- 4" test cables on each side
- 16 dB calibration channel
- 17.2 dB loss (@26.56 GHz)

Results

	J_{4u} (UI)	$J_{RMS}(UI)$	EOJ(UI)	$A_d d(UI)^*$	$\sigma_{rj}(UI^*)$
Tx (TP0) (4" blue cable) $S_j = 0mUI$	0.070	0.0085	0.009	0.002	0.008
Tx (TP0) (4" blue cable) $S_j = 50mUI$	0.122	0.022	0.009	0.019	0.011
Tx (TP1a) 4" blue cable -->16 dB channel-->(" blue cable $S_j = 0 mUI$	0.190	0.020	0.014	0.004	0.020
Tx (TP1a) 4" blue cable -->16 dB channel-->(" blue cable $S_j = 50mUI$	0.220	0.028	0.014	0.007	0.027

* Computed using equation from
hidaka_3ck_adhoc_01_041421 slide 4

Observation

- ❑ S_j of 50 mUI (+/- 25 mUI) does not seem to be reflected in A_{dd} as one might expect
- ❑ S_j of 50 mUI (+/- 25 mUI) seems to affect σ_{rj} more than one might expect
- ❑ Discussion
 - For C2M receiver stress test:
Should jitter calibration be performed at TP1a?
 - Should jitter tolerance be done with a short channel and Rx stress be just calibrated to VEC/EH spec at TP1a?

Thank You!

Backup

Matlab for hidaka_3ck_adhoc_01_041421 slide 4

```
function [A_DD,sigma_rj,Qn] = Calc_COM_Jitter(Jnu,J_RMS,j_range)
% When Jnu is j3u j_range is 4e-3
% When Jnu is j4u j_range is 4e-4
Qn=sqrt(2)*erfcinv(j_range);
if (Qn^2+1)*J_RMS^2-(Jnu/2)^2 >=0
    A_DD = ( Jnu/2 + Qn*sqrt( (Qn^2+1)*J_RMS^2-(Jnu/2)^2 ) ) / ( Qn^2+1 ) ; % eq 136-9
    sigma_rj= ( Jnu/2 -A_DD ) / Qn ; % eq 136-8
else
    Qx=sqrt( ((Jnu)/(2*J_RMS))^2-1); % hidaka_3ck_adhoc_01_041421 slide 4
    display(Qx)
    A_DD = (Jnu/2)/ ( Qx^2+1) ;% hidaka_3ck_adhoc_01_041421 slide 4
    sigma_rj= sqrt(J_RMS^2-A_DD^2);% hidaka_3ck_adhoc_01_041421 slide 4
end
end
```