

SNDR REF Evaluation and Data

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Supporters

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Purpose

- ❑ Provided and evaluate $\text{SNDR}^{(\text{ref})}$ computation results for a collection of test fixture configurations

Agenda

- ❑ Definition: dSNDR
- ❑ Simplified Interpretation of $\text{SNDR}^{(\text{ref})}$
- ❑ $\text{SNDR}_f^{(\text{ref})}$ Example Setup
- ❑ Results
- ❑ Summary

dSNDR is Specified For Transmitters

- ❑ dSNDR applies to host and device transmitter
 - $dSNDR(i) = SNDR_i^{(meas)} - SNDR^{(ref)}(c_i)$, equation (179-6)
 - For “ i ” transmitter presets (c_i)
- ❑ Both host and device measure $SNDR_i^{(meas)}$ with a test fixture
- ❑ $SNDR^{(ref)}(c_i)$ is computed for pulse responses computed from cascading the test fixture s-parameters and specified package and/or added traces

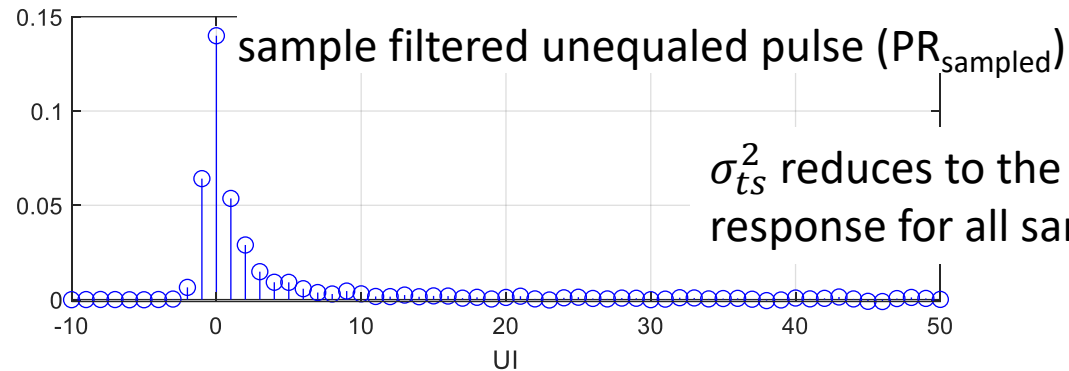
Simplified Interpretation of SNDR^(ref)

$$\square SNDR^{(ref)}(c_i) = 10 \log_{10}(\sigma_{ts}^2 / \sigma_{tn}^2)$$

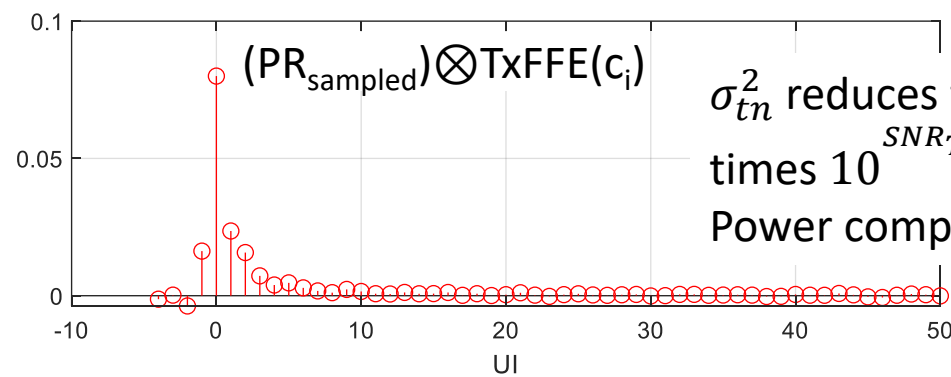
...eq.179-10

Preset (1)	[0	0	0	1	0]
Preset (2)	[0	0	0	0.5	0]
Preset (3)	[0	0	-0.075	0.75	0]
Preset (4)	[0	0.05	-0.20	0.75	0]
Preset (5)	[-0.025	0.075	-0.25	0.65	0]
Preset (6)	[0	0	0	0.75	0]

Table 179-8

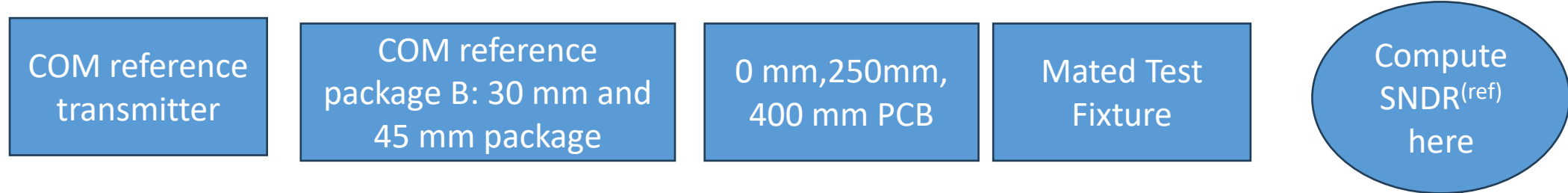


σ_{ts}^2 reduces to the power sum of sample filtered unequaled pulse response for all samples (see eq. 179-13)



σ_{tn}^2 reduces to the power sum of sample Tx FFE equalized pulse response times $10^{SNR_{TX}/10}$ for sample between $-D_p$ to $N_p - D_p - 1$
Power computed in time domain instead of theta domain (eq 179-15)

SNDR^(ref) Example Setup

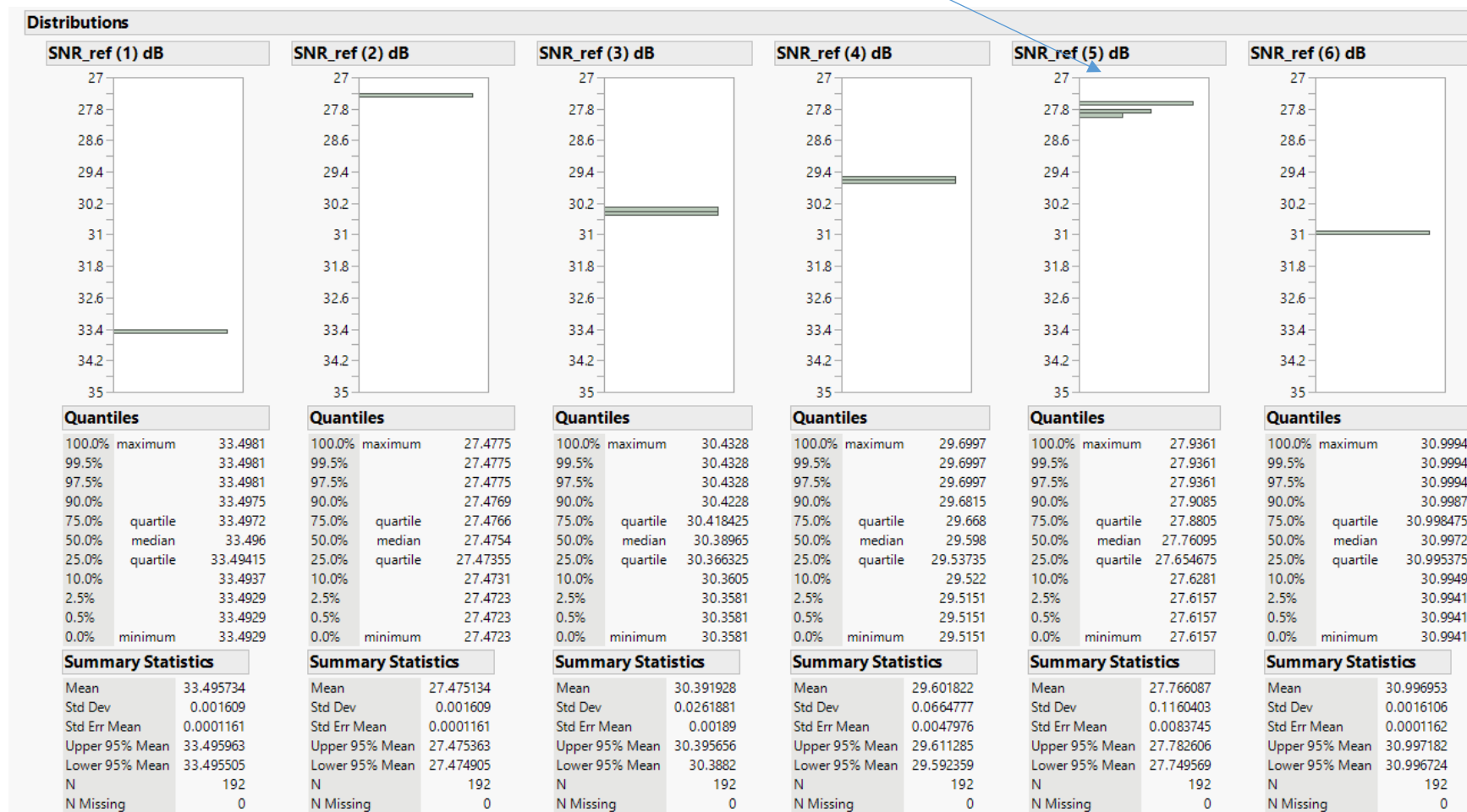


- ❑ The experiment computed SNDR^(ref) for a variety of reference hosts conditions cascaded with each of 64 posted MTF models ([sekel 3dj 02 250](#))
 - Inclusive of required package and reference hosts
- ❑ The die-to-die insertion loss ranged between 13.8 dB to 20 dB
- ❑ COM was modified to compute and report SNDR^(ref)

Results

The separation for preset(5) is correlated to package length

```
Preset (1) [0      0      0      1      0]
Preset (2) [0      0      0      0.5    0]
Preset (3) [0      0     -0.075  0.75  0]
Preset (4) [0      0.05  -0.20   0.75  0]
Preset (5) [-0.025  0.075  -0.25   0.65  0]
Preset (6) [0      0      0      0.75  0]
```



	median	max-min
SNR_ref (1) dB	33.50	0.01
SNR_ref (2) dB	27.48	0.01
SNR_ref (3) dB	30.39	0.07
SNR_ref (4) dB	29.60	0.18
SNR_ref (5) dB	27.76	0.32
SNR_ref (6) dB	31.00	0.01

Summary

- ❑ Implementation reflects what is in D1.5
- ❑ Reference SNDR^(ref) computed for a variety of setups and the specified presets
- ❑ Variability bases on channel length and package is very small

Potential options

- ❑ Option A: Can SNDR^(ref) be replaced by a table of values?
- ❑ Option B: Can we just use SNDR^(meas) with passing values for each preset?

Thank You!