

# Exploring data for modification of proposed SDD21 Channel Model

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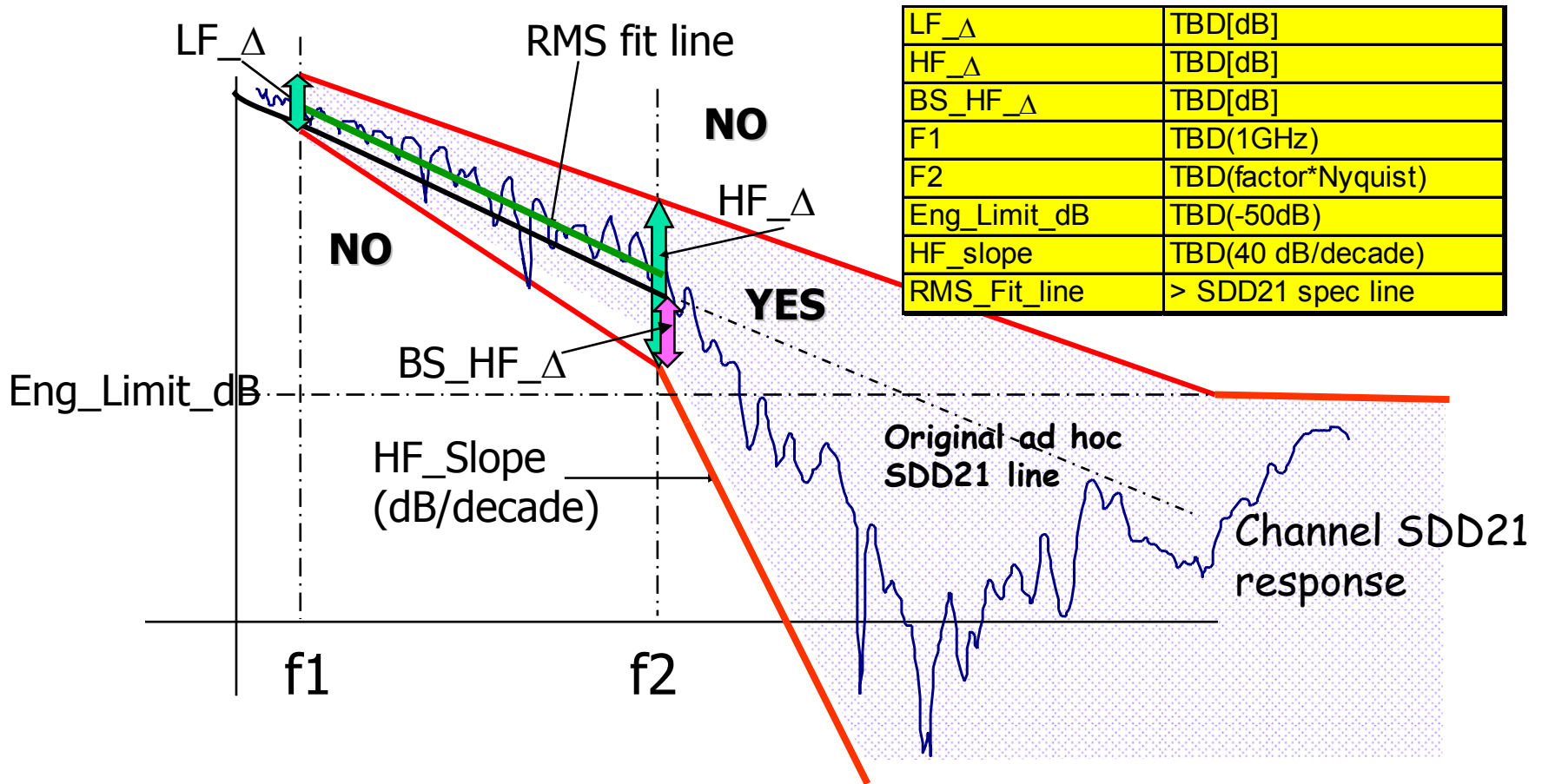


# Summary

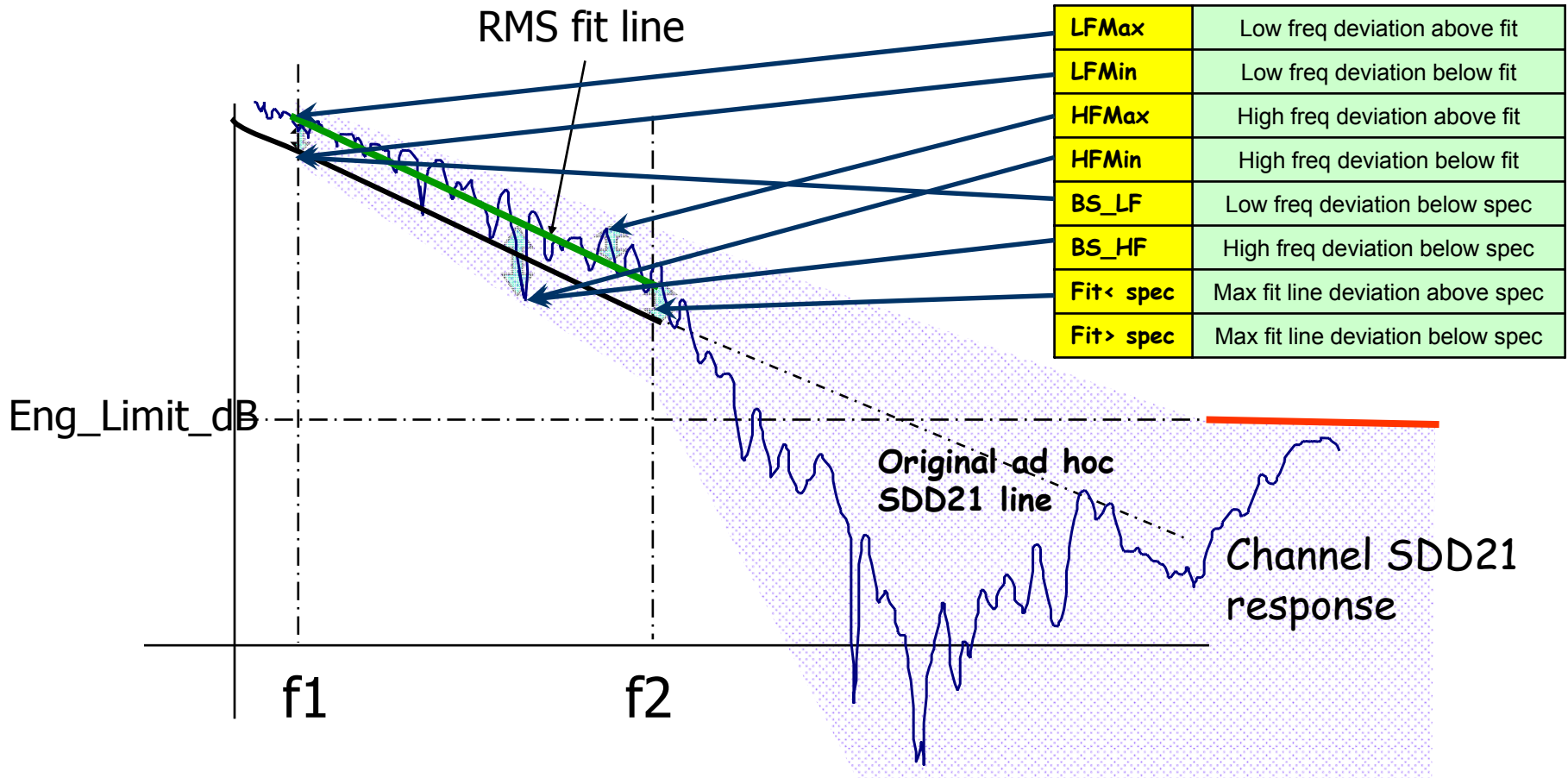
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- SDD21 appears to provide channel design guidance to used informative data
- We know what a good channel is but not necessary if a marginal channel will work from the informative SDD21 mask.
- So it not a good normative tool.
- The jury is still out on SDD22 and GDD21.
- It doesn't look good for channel RL because we can't tell where in time the reflections will hit you in the pulse response from RL.

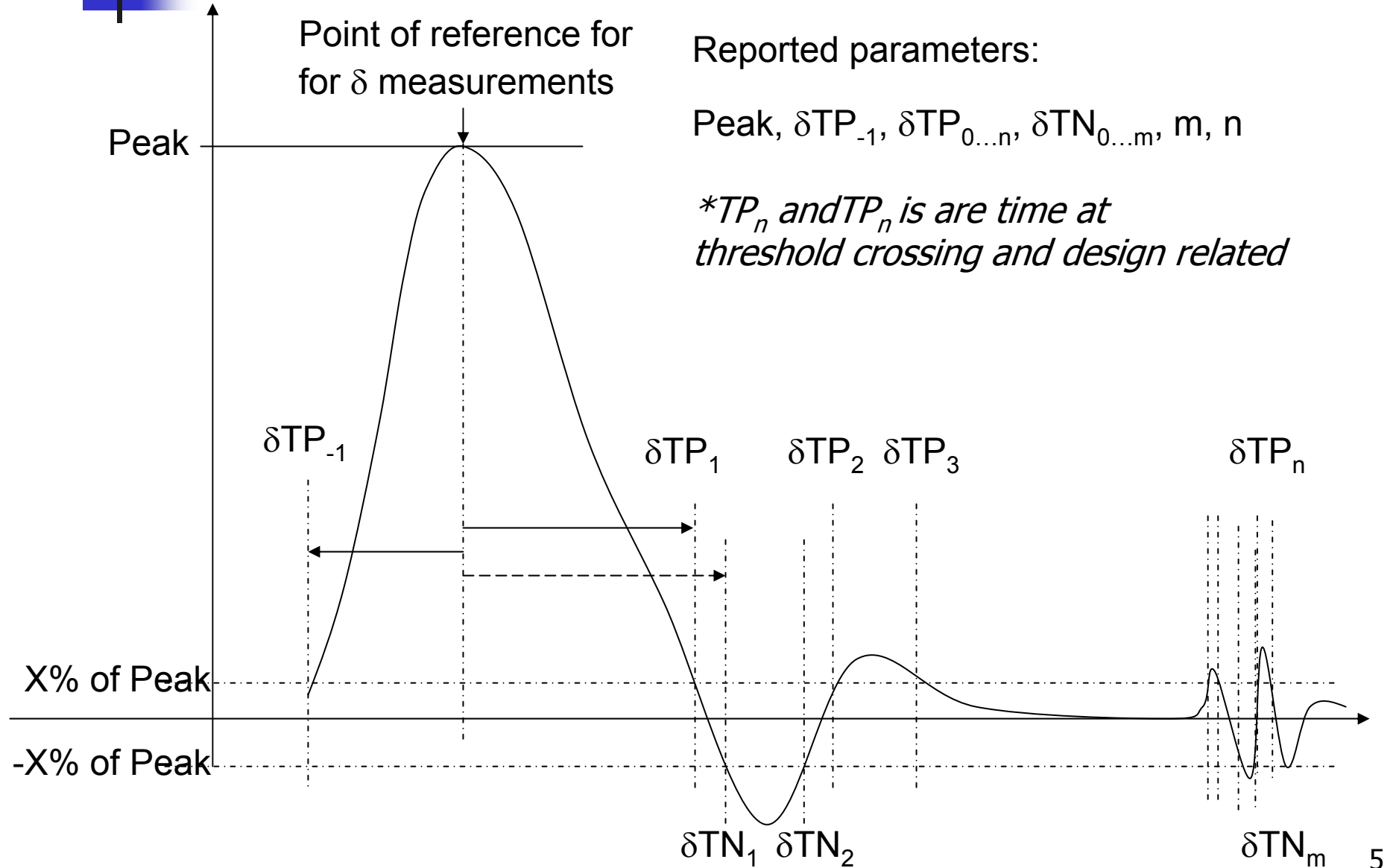
# Review: Frequency Domain: Modified SDD21



# SDD21 Results Report Example



# Pulse Response Parameters May Prove Useful





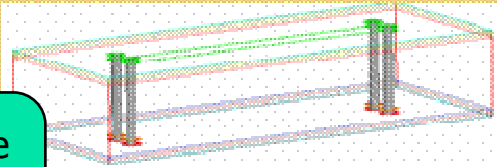
# Observations

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- Frequency parameters correlate well to channel parameters such as, lengths, mismatch, via stub length, package VSWR.
- Pulse parameters don't correlate well to SDD's "magnitude only" frequency parameters.
- For an informative model
  - RMS fit line needs to be above the
  - If HFmin (VSWR=1) is  $< 5$  db then settling is kept to 5 UI for a 5% peak threshold crossings.
    - VSWR associated with RL of 10db creates at least 25 UI of ringing
- GDD21 may be the missing link.

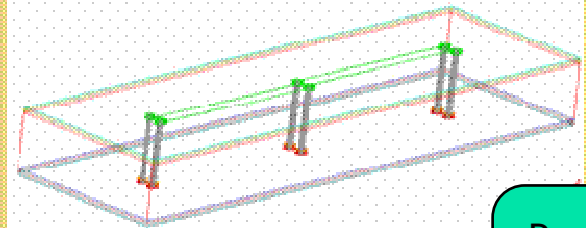
# Topology

Tx Line Card (brd1)



**\*All boards are FR4**

Rx Line Card (brd3 & 3a)

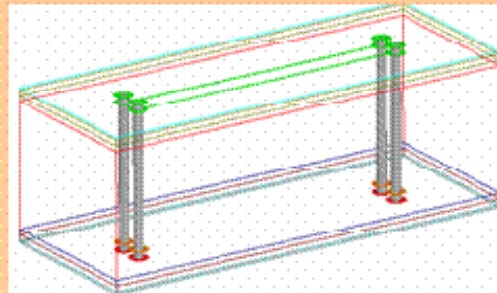


Package  
RL = 10dB  
& 0 db

Package  
RL = 10dB  
& 0 db

Via stub are 50 mils  
Length: 2 to 10 inches  
Intra pair mismatch 5-100 mil  
Z0: 85 to 115 ohm

Backplane (brd2)

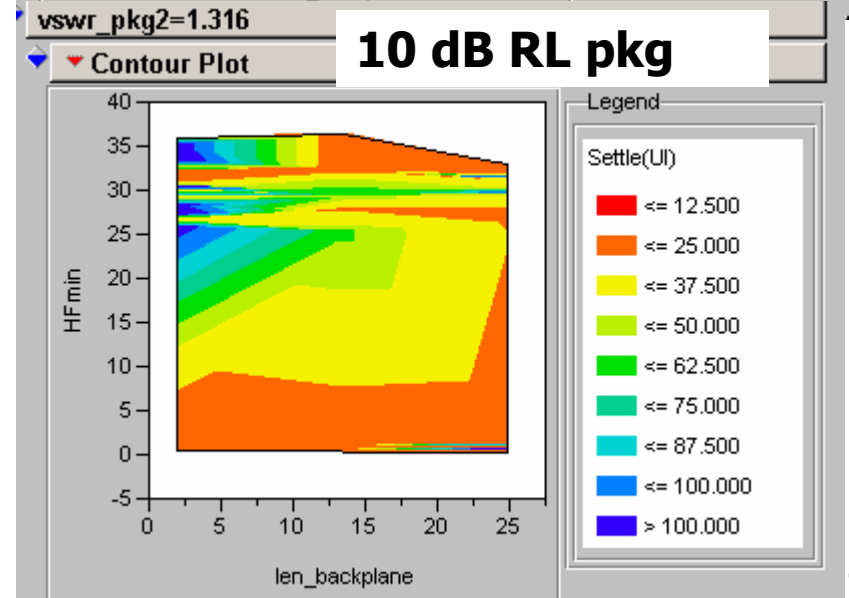
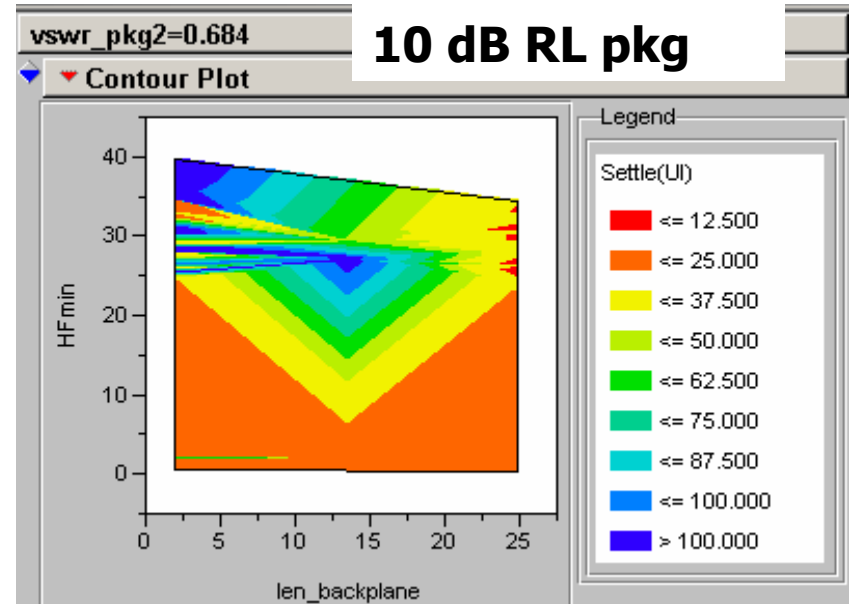
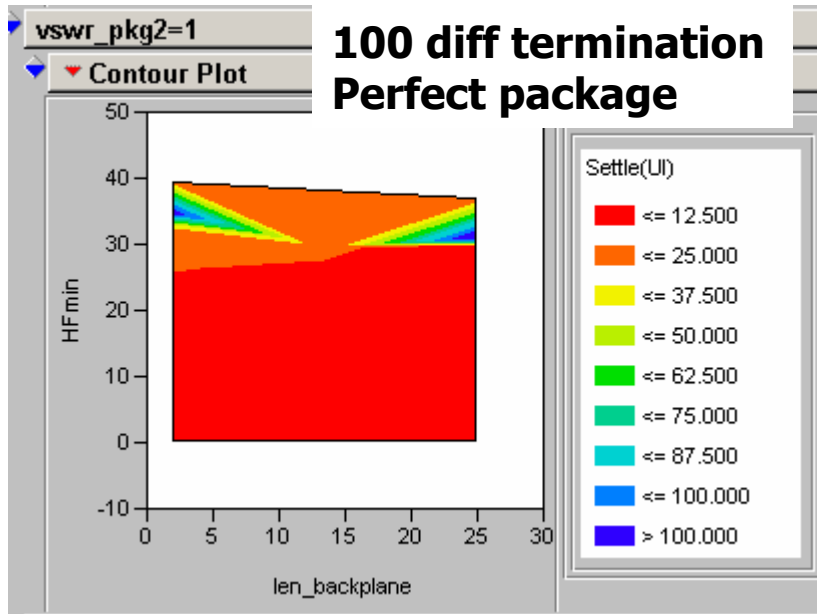


50, 160, 280 mil via stubs  
Intra pair mismatch 5-100 mil  
Z0: 90 to 110  $\Omega$   
Backplane length 2-25 in.

Generic  
connector



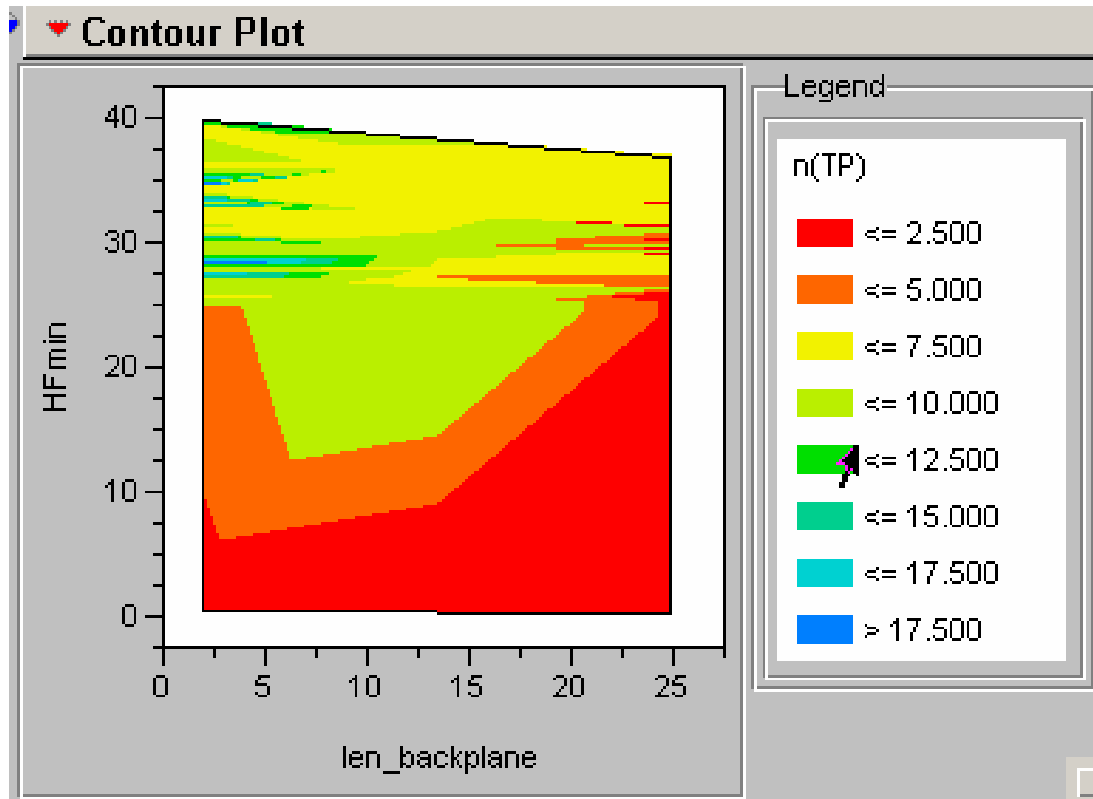
# HFmin vs length and settling UI



Package or TP4-5 designs  
disperses energy to latter  
points in time.



# Setting crossing numbers



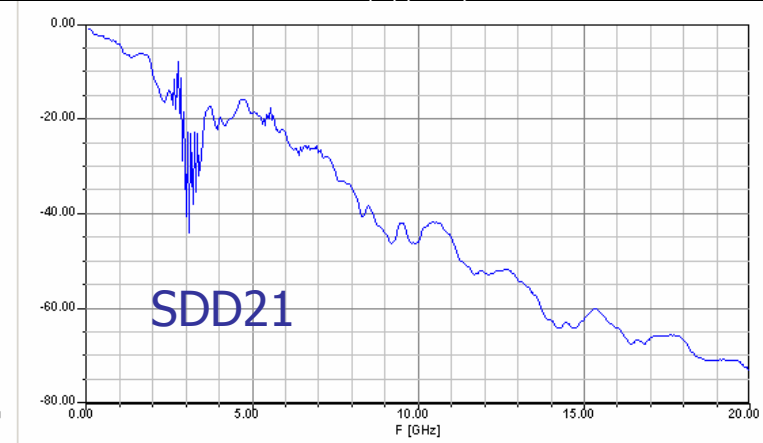
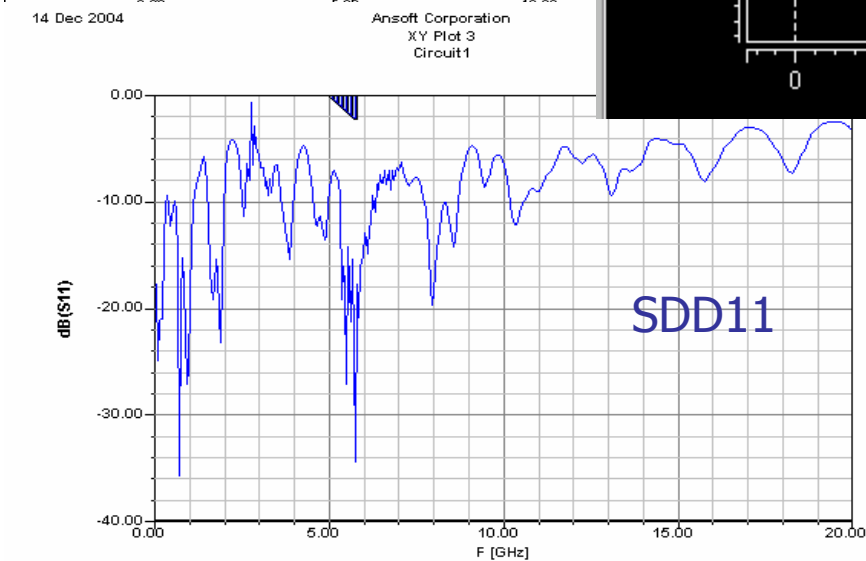
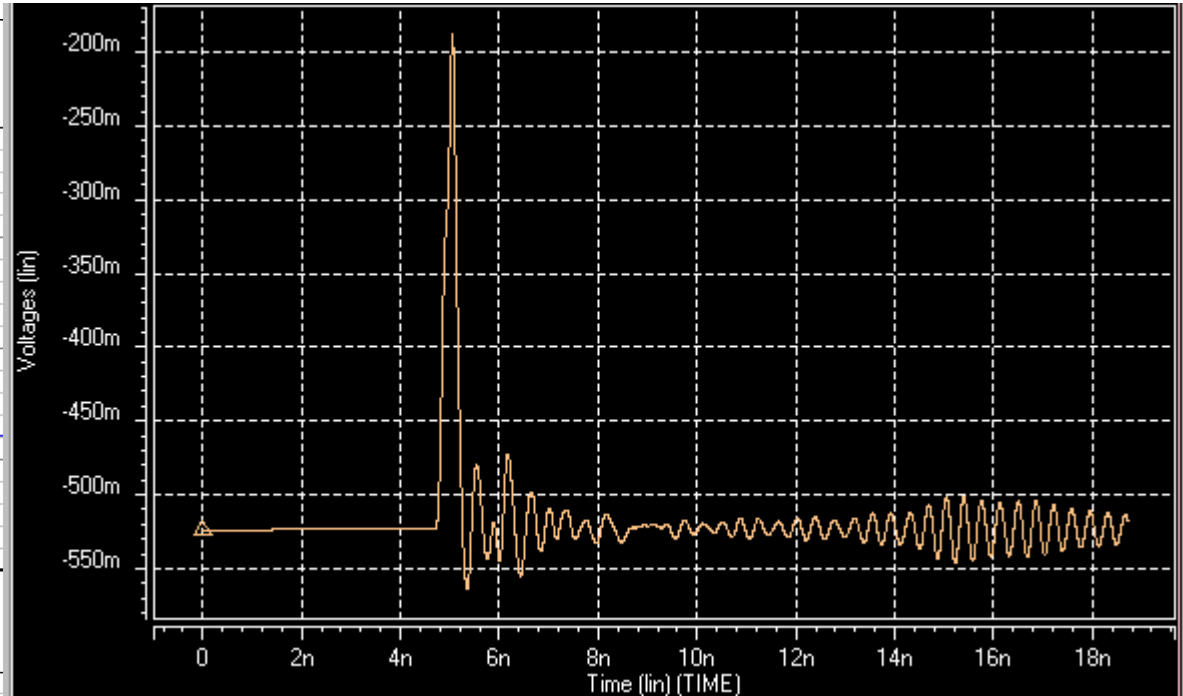
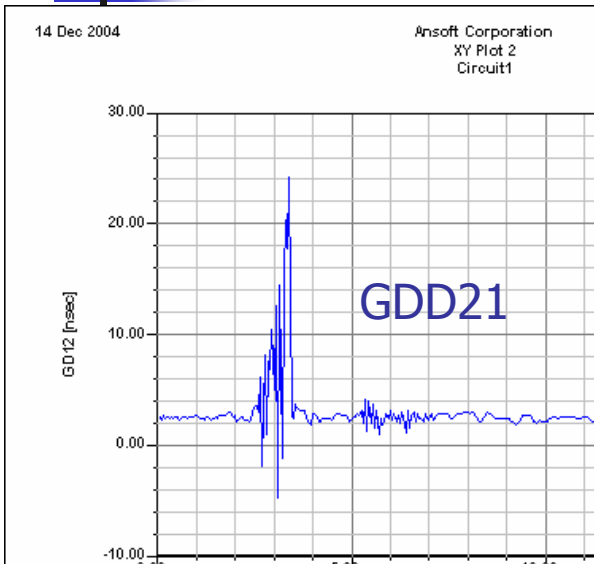


# Snapshots of data

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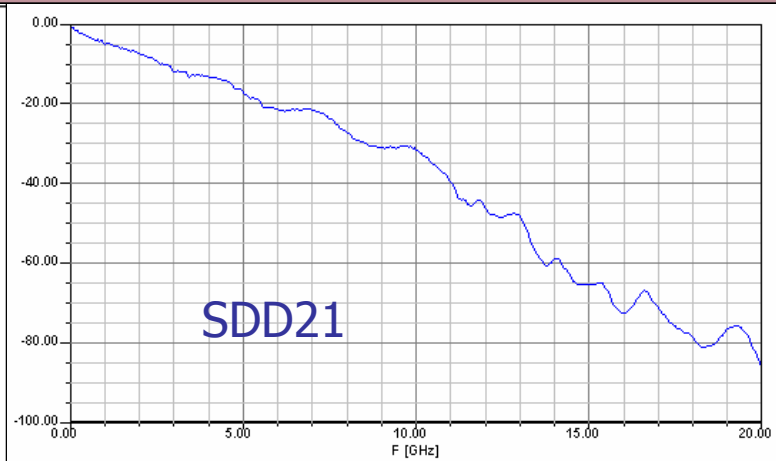
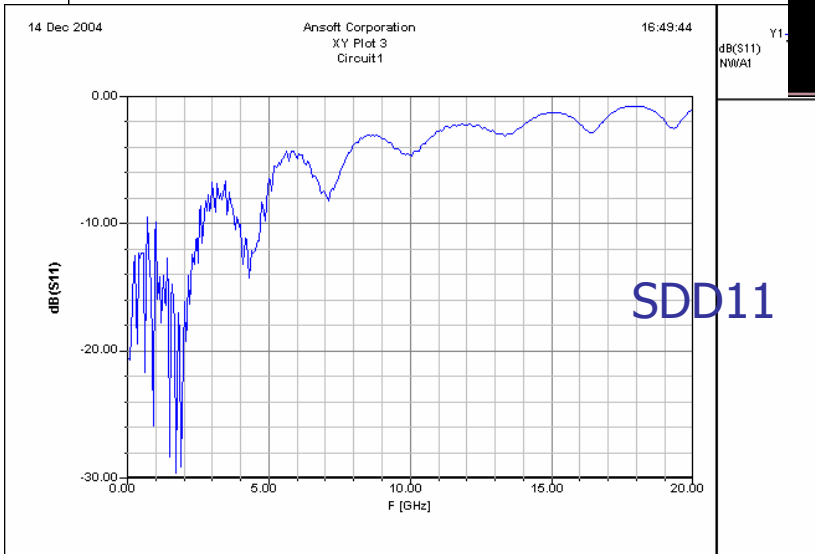
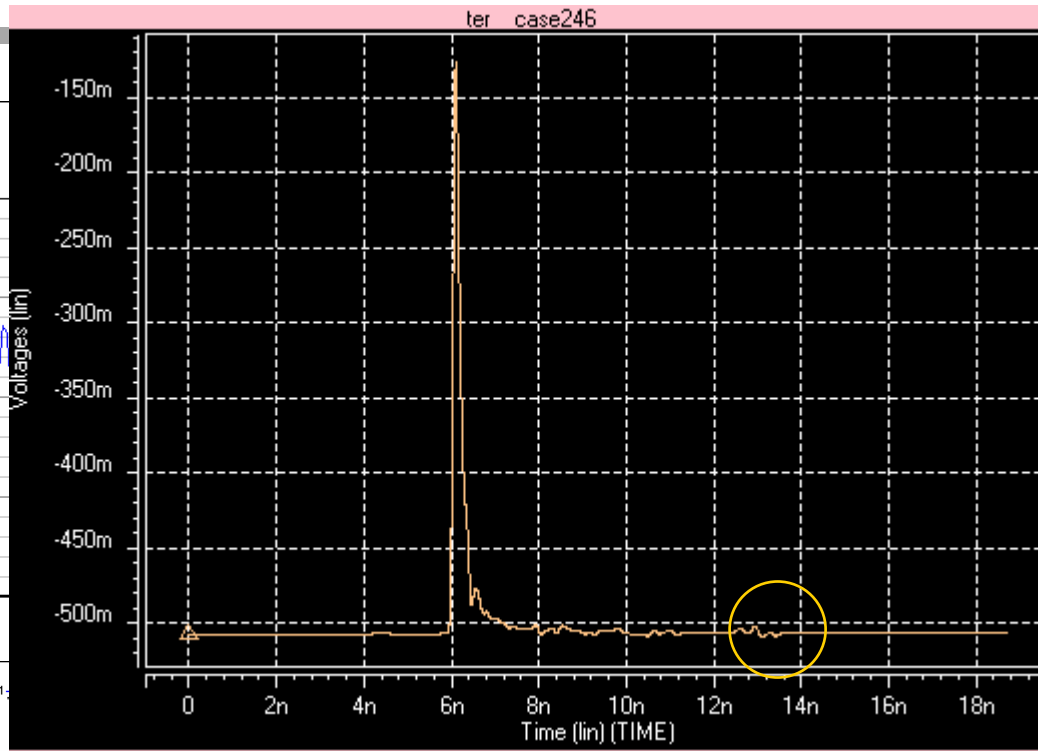
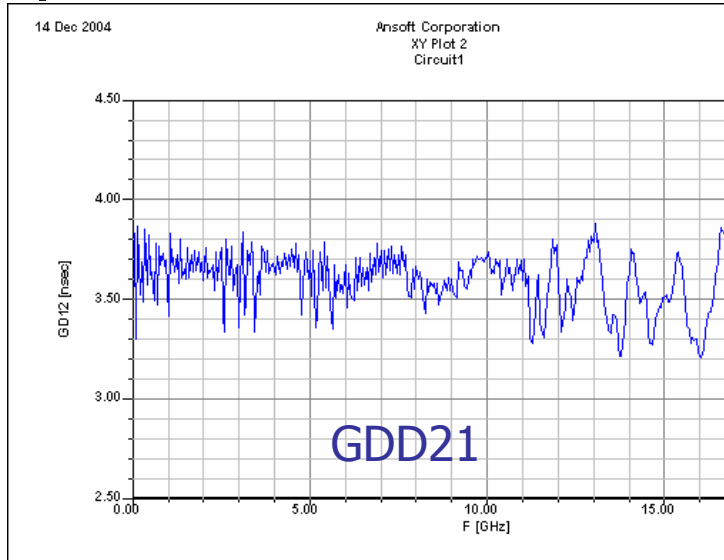
- Not complete

# Bad ringing short channel case long via stub

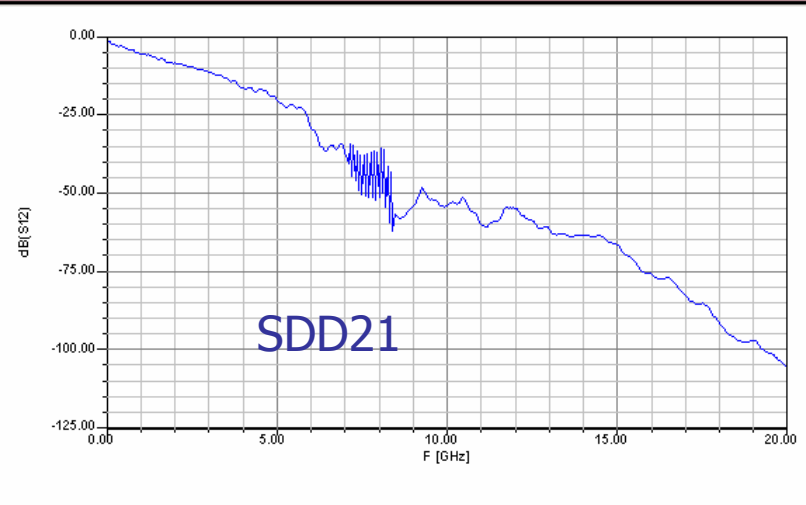
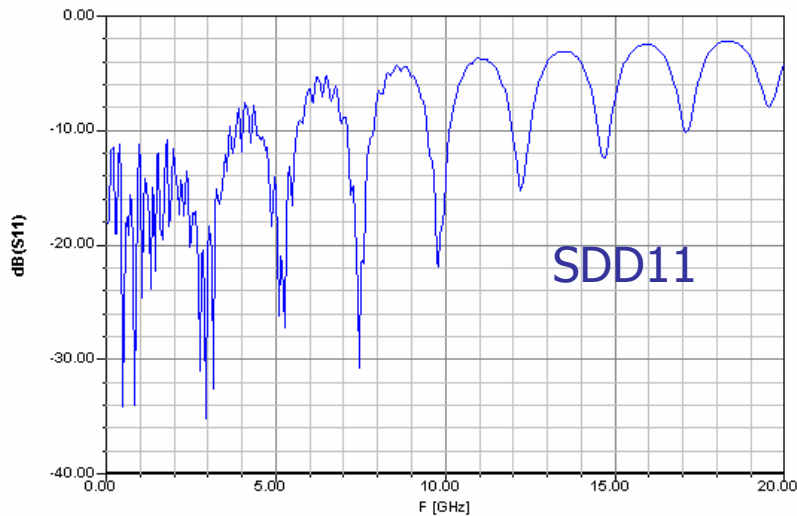
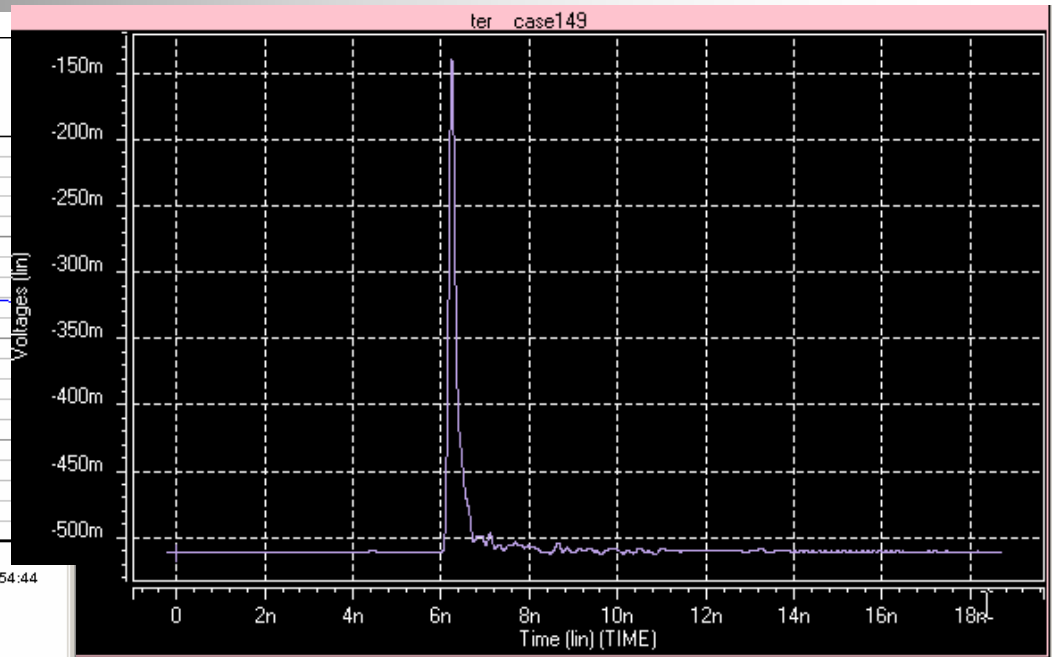
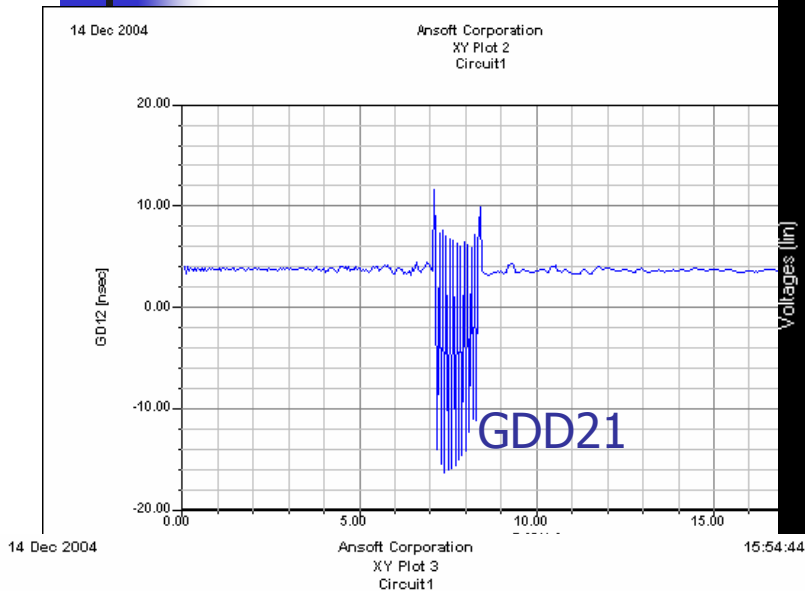


XY: 5.09GHz -0.52

# Long Settling time same blips



# Smooth responses 160 mil via stub



Y: 20.64GHz 6.38

# Stimulus Pulse

