Crosstalk & Frankenstein Channels
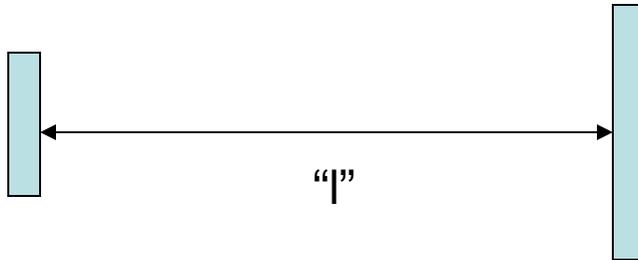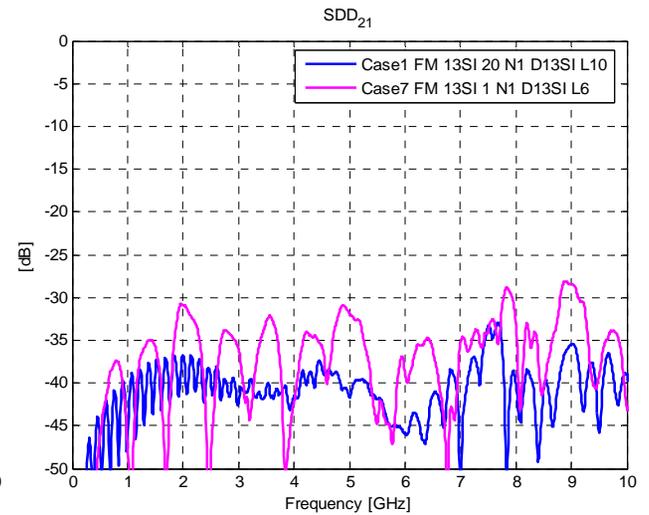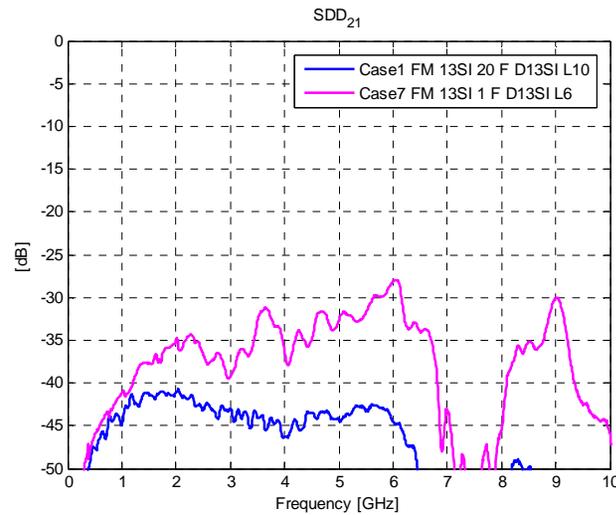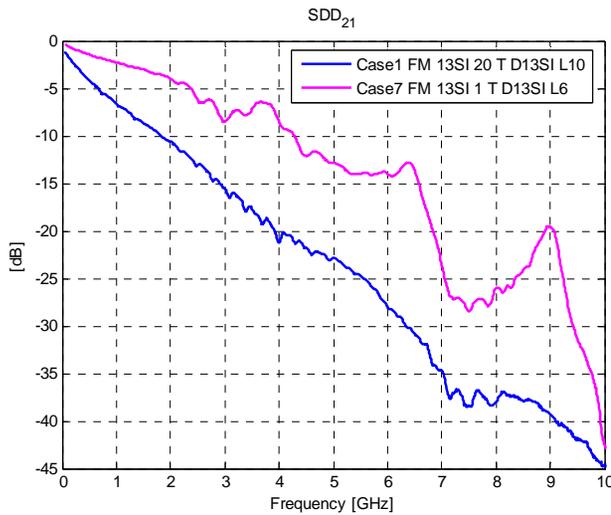
John D'Ambrosia

Rich Mellitz

Tyco Electronics

Intel

Comparison of Performance

- Shared path between aggressors and victims
- 2 connectors
- "l" represents total length

Reality Check

- Length Distribution
  - Case 1 – 40 inches
  - Case 7 -13 inches
- Reality of this variation for links
  - For aggressors / victims originating at same connector and terminating at different cards – yes
  - For aggressors / victims originating and terminating at the same line cards in similar aggressor / victim relationship – not preferred to no
- However, victims / aggressors originating at different line cards and terminating at the same fabric in victim / aggressor pattern
  - only share 1 connector
  - What does the xtalk of a shared single connector net look like from a crosstalk perspective?
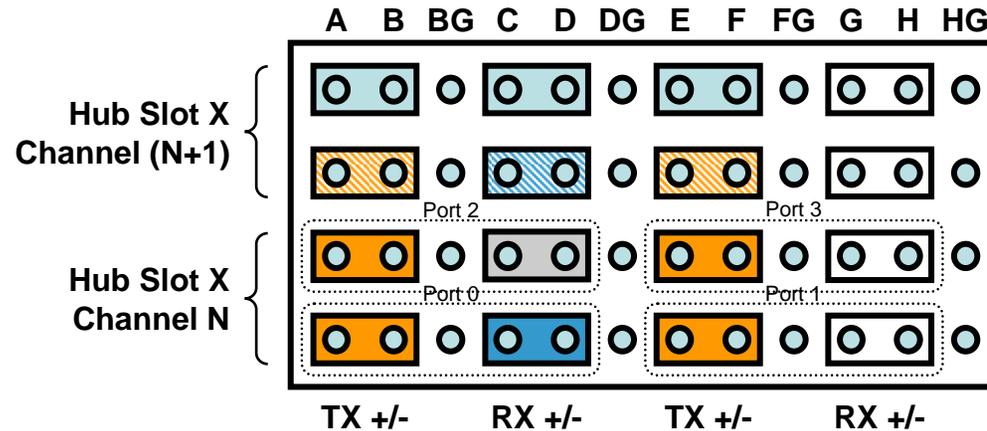
ATCA Test Channels

Figure provided by
Adam Healey

- For ATCA, a "channel" consists of a total of 8 pair.
- Previous data for ATCA needs to be revisited
  - All FEXT data came from nets that shared two connectors at line card / fabric or assumed both FEXT aggressors shared two connectors at line card / fabric.
  - Two connector FEXT aggressors only true for nets within the same "channel"

Synthesized comparison
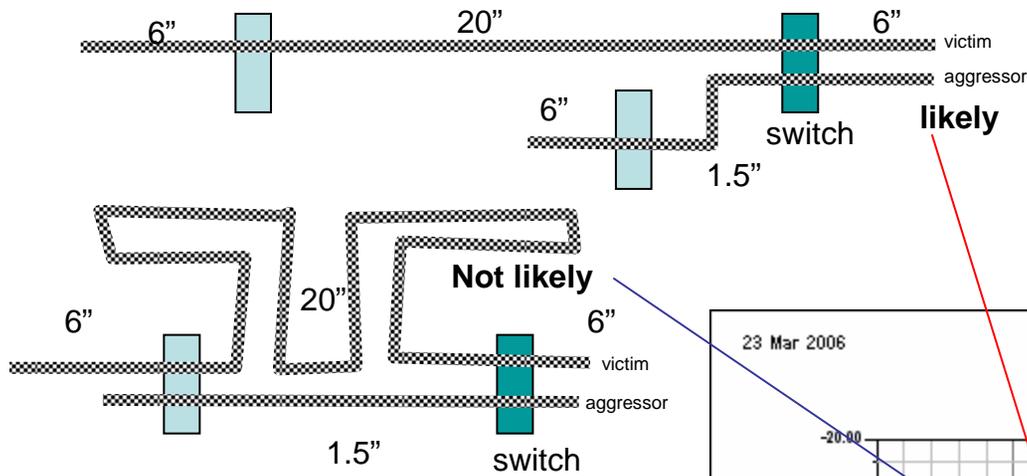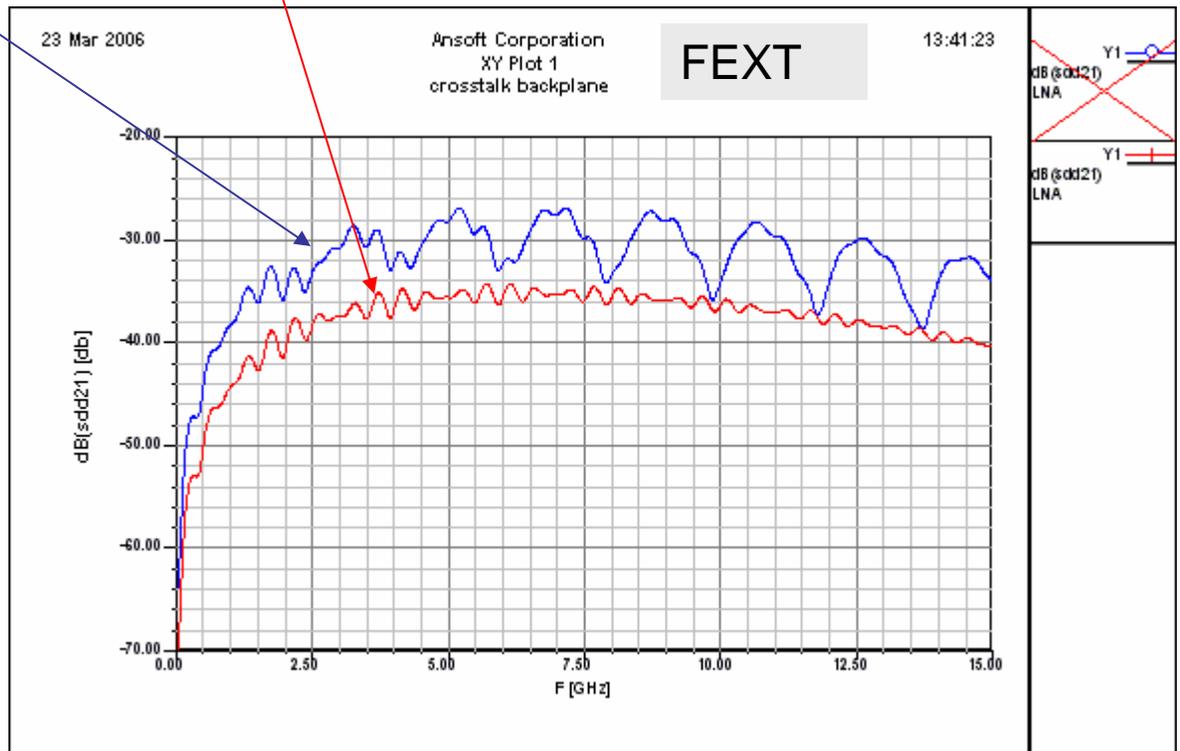
EITsimulations.pdf channel report

| Channel/Test	ICR	ILD	IL	Acceptable Eye Opening at Slicer (with 2 different methods)
TYCO 7	fail	fail	pass	fail
m_82_ripple_90	fail	pass	pass	fail
m_60_ripple_98	fail	pass	pass	fail

Conclusions

- ATCA FEXT data usage needs to be revisited.
- Proposal to use Tyco Case#7 should be replaced with Intel B1 or M1 case
  - Case 7 is a near top layer
- Proposal to use Tyco Case#7 with m_82_ripple_90
  - Will artificially inflate required SDD21
- Consider adding constraint that will keep forward channel response of victim and aggressors to similar or constrained difference
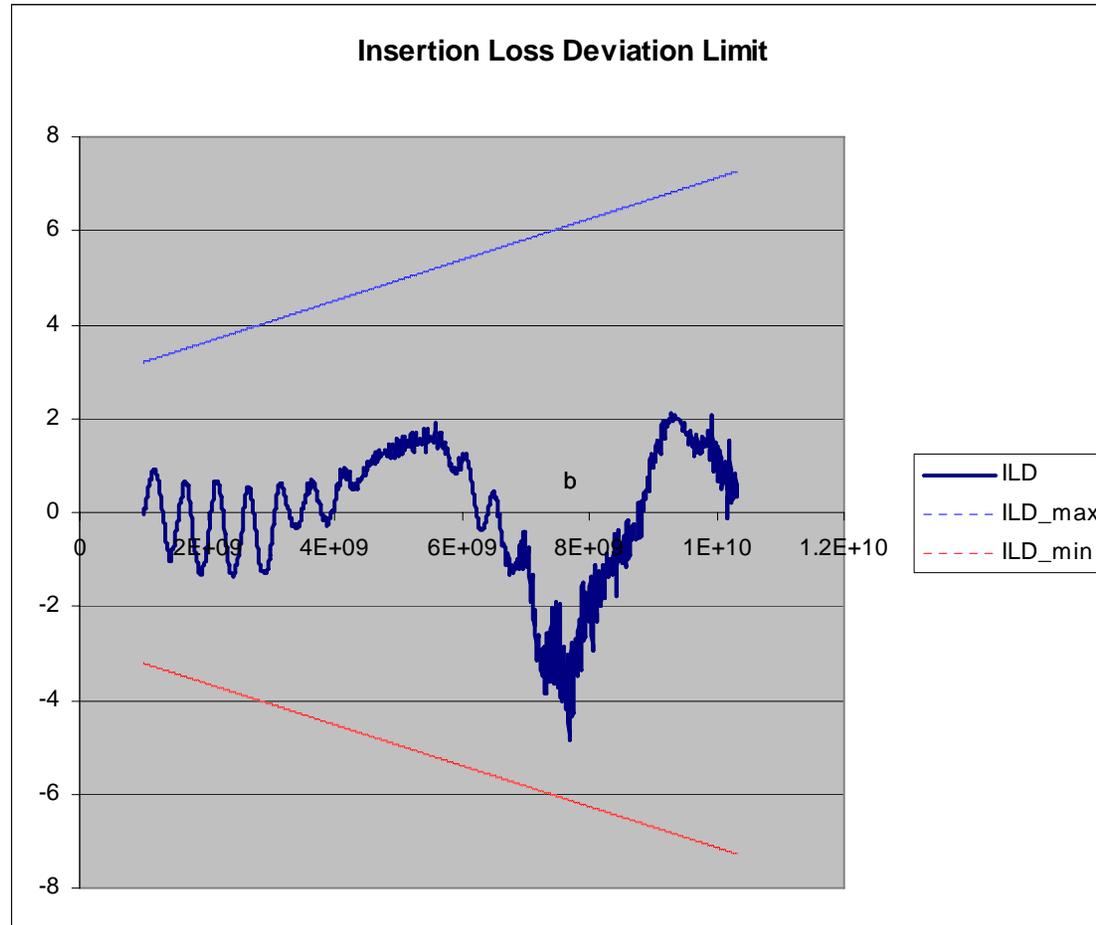- Consider using channel sets that are marginally working

Backup Data

TYCO 7 ILD baumer_03_06 limits
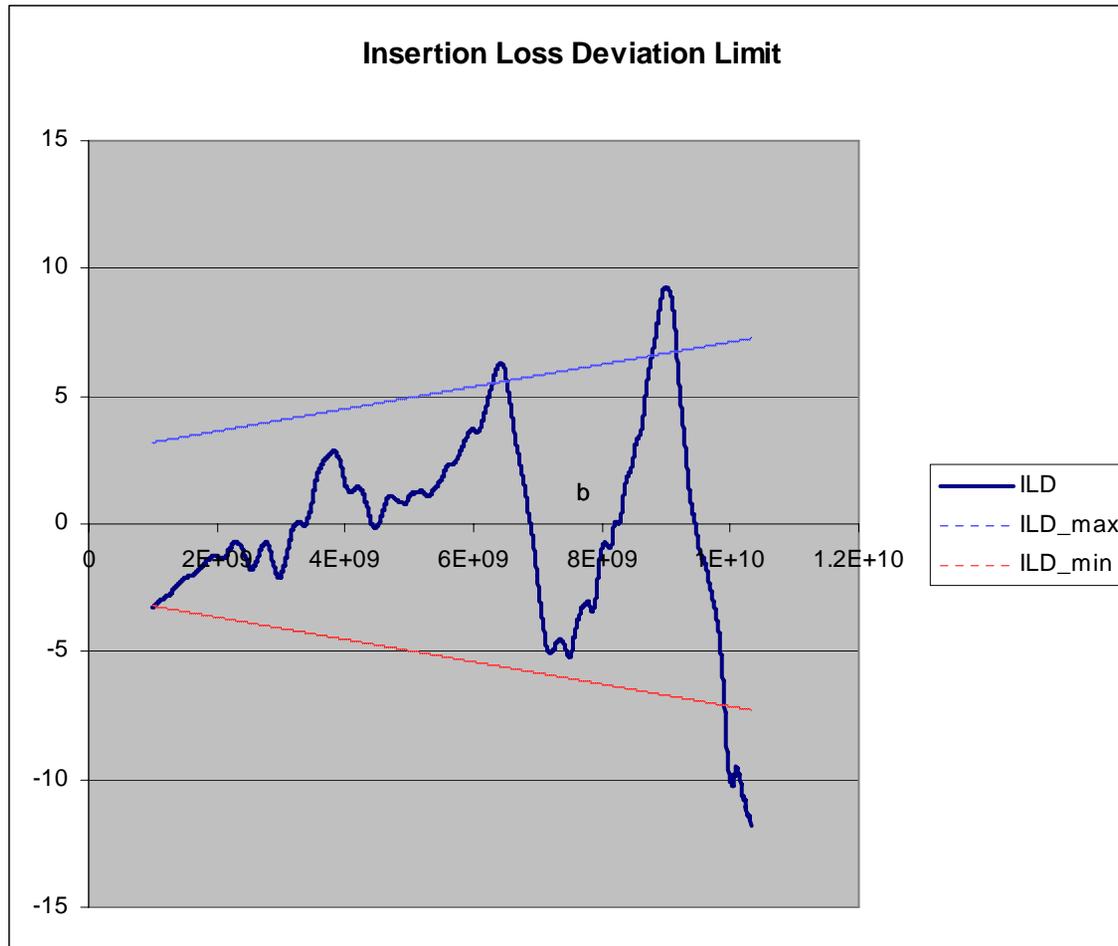
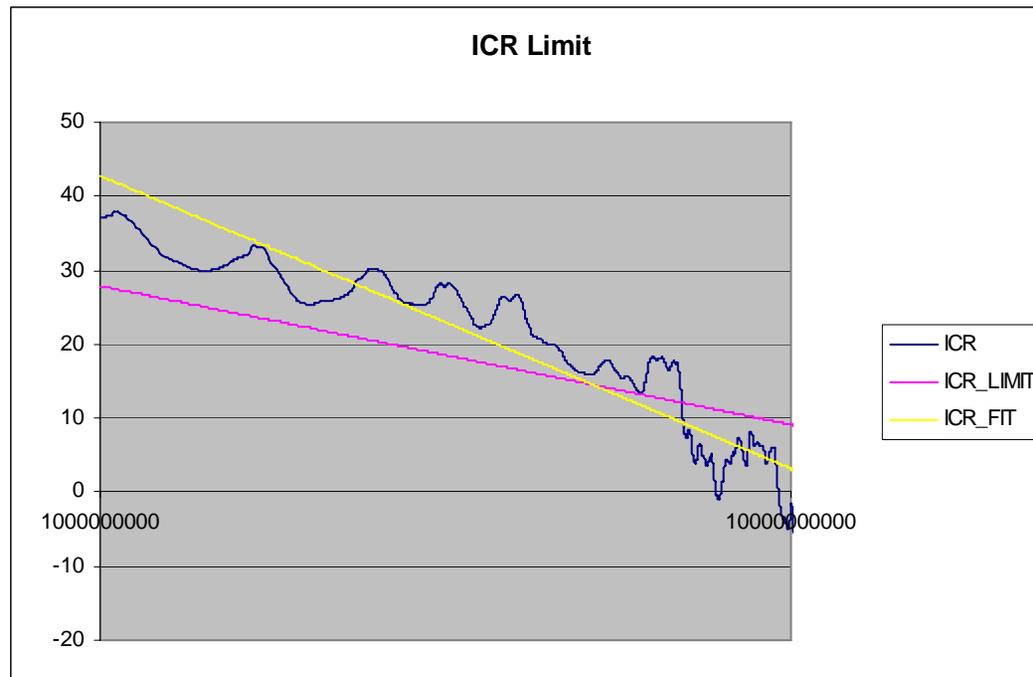# m_82_ripple_90 ILD
baumer_03_06 limits

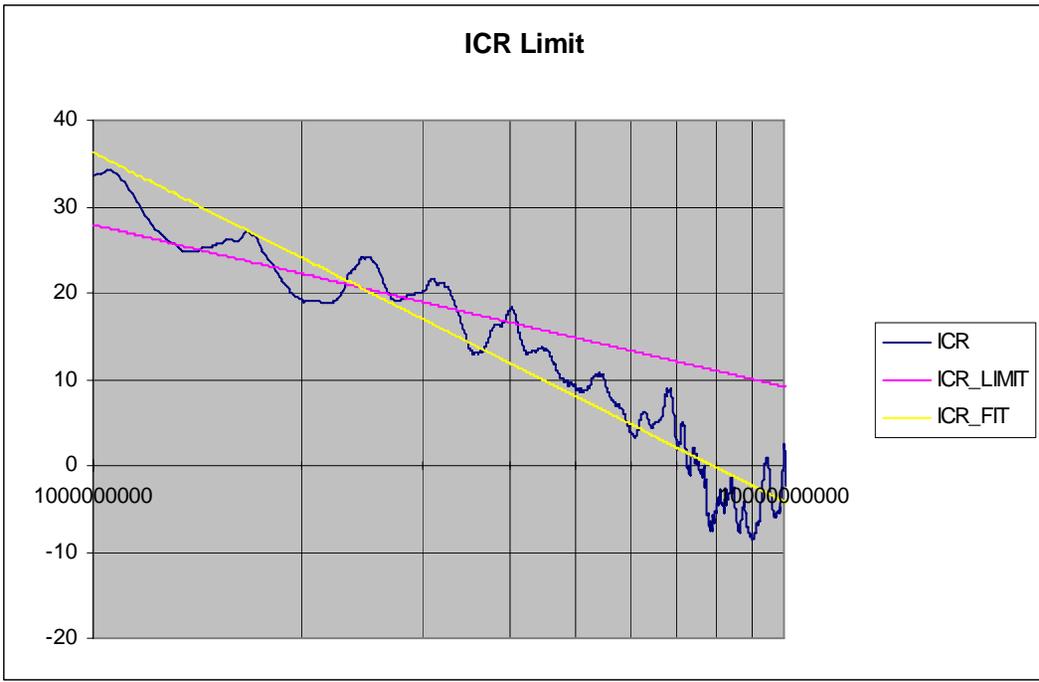**Insertion Loss Deviation Limit**
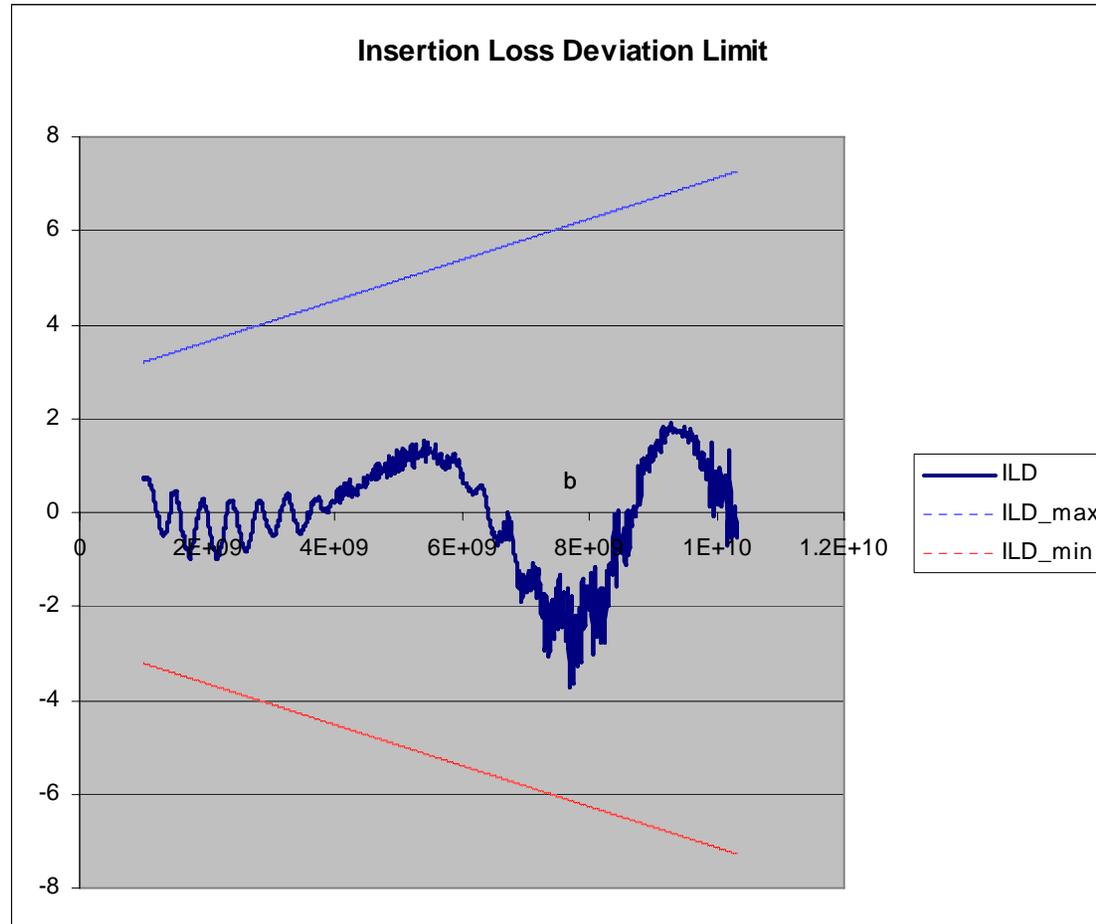
m_60_ripple_98
ILD

TYCO 7 ICR
Using 10GB limit (baumer_03_06)

m_82_ripple_90 ICR
Using 10GB limit (baumer_03_06)

m_60_ripple_98 ICR
Using 10GB limit (baumer_03_06)

TYCO 7 IL

Insertion Loss Minimum Limit

Legend:
- SDD21(db)
- spec
- IL_min_gray
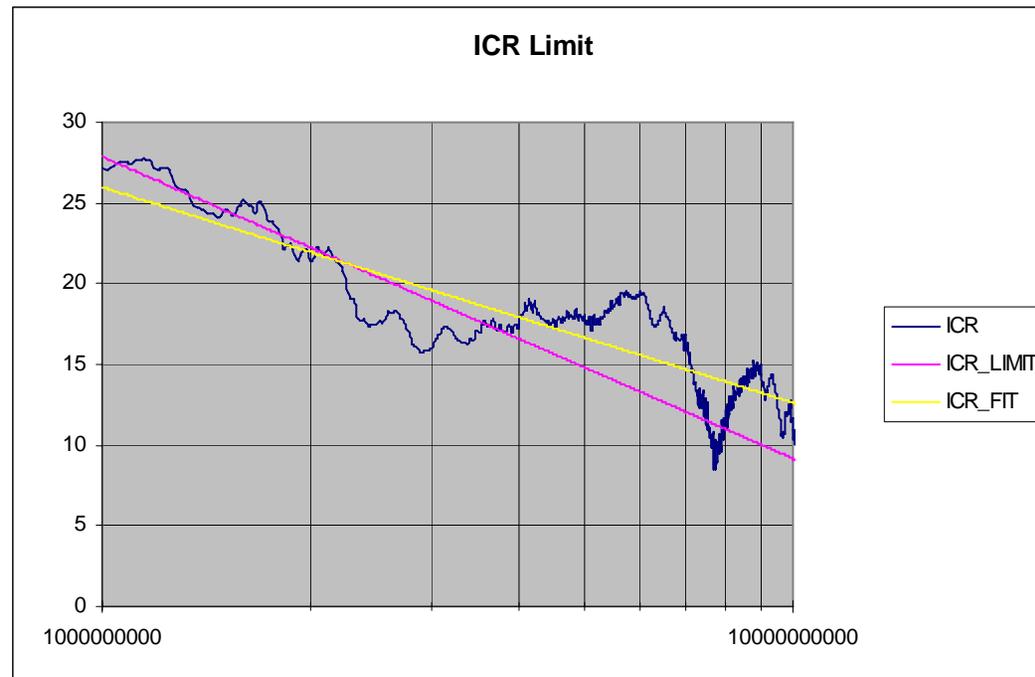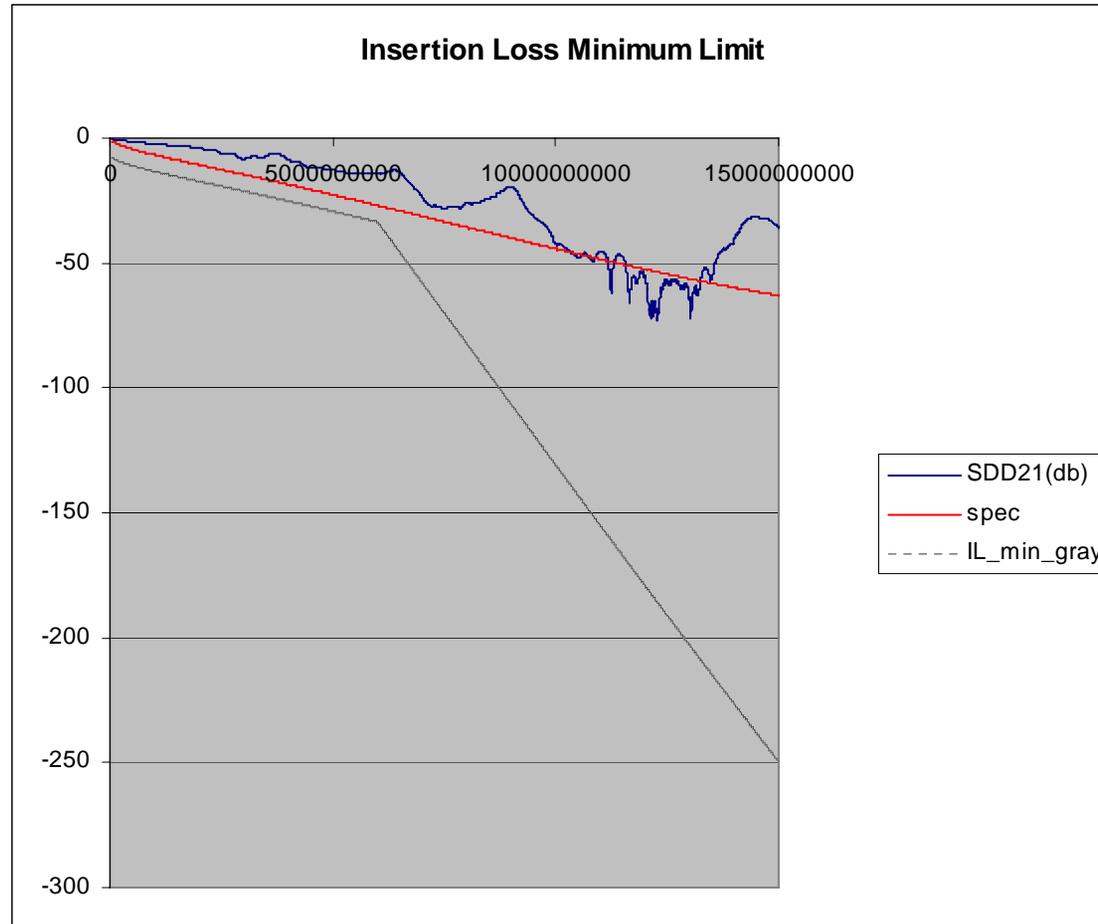
m_82_ripple_90 IL

m_60_ripple_98
IL