

# SFP+ Channel Data Description

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# Overview

## □ Channel data for several microstrip and striplines with PT enhanced connector in s4p files

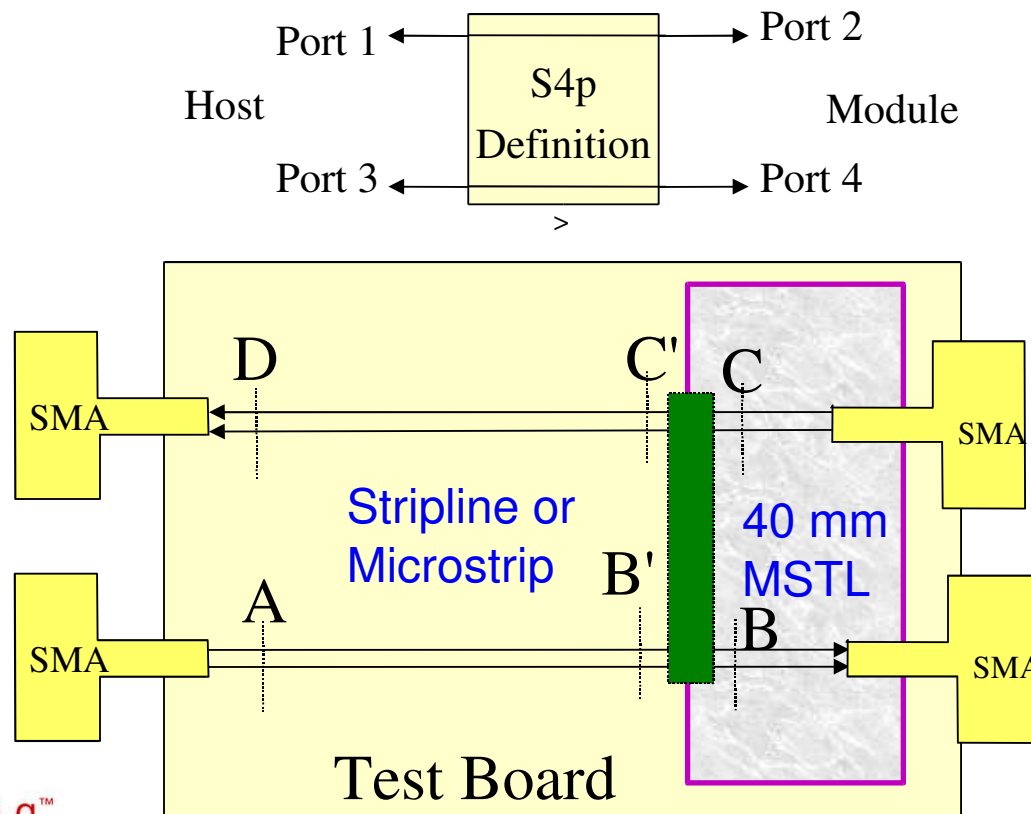
- These files are provided for courtesy as is.

s4p file	s4p file zip file	Description
BRCM_50mmMSTL_12mils.s4p	06-683v0.zip	50 mm long Microstrip 12 mils wide
BRCM_150mmMSTL_12mils.s4p		150 mm long Microstrip 12 mils wide
BRCM_300mmMSTL_12mils.s4p		300 mm long Microstrip 12 mils wide
BRCM_50mmSTL_5mils.s4p		50 mm long Stripline 5 mils wide
BRCM_150mmSTL_5mils.s4p		150 mm long Stripline 5 mils wide
BRCM_200mmSTL_5mils.s4p		200 mm long Stripline 5 mils wide
BRCM_300mmSTL_5mils.s4p		300 mm long Stripline 5 mils wide
BRCM_50mmMSTL_12mil_NEXT.s4p		50 mm long Microstrip 12 mils wide NEXT
BRCM_50mmSTL_12mil_NEXT.s4p		50 mm long Stripline 5 mils wide NEXT

# PT Enhanced Channel

## □ Based on Nelco 4000-13

- ⇒ Module test card is 12 mils wide microstrip
- ⇒ Host Microstrip card has 12 mils wide traces
- ⇒ Host striplines card have 5 mils wide traces with 2 vias each having 15 mils long stubs

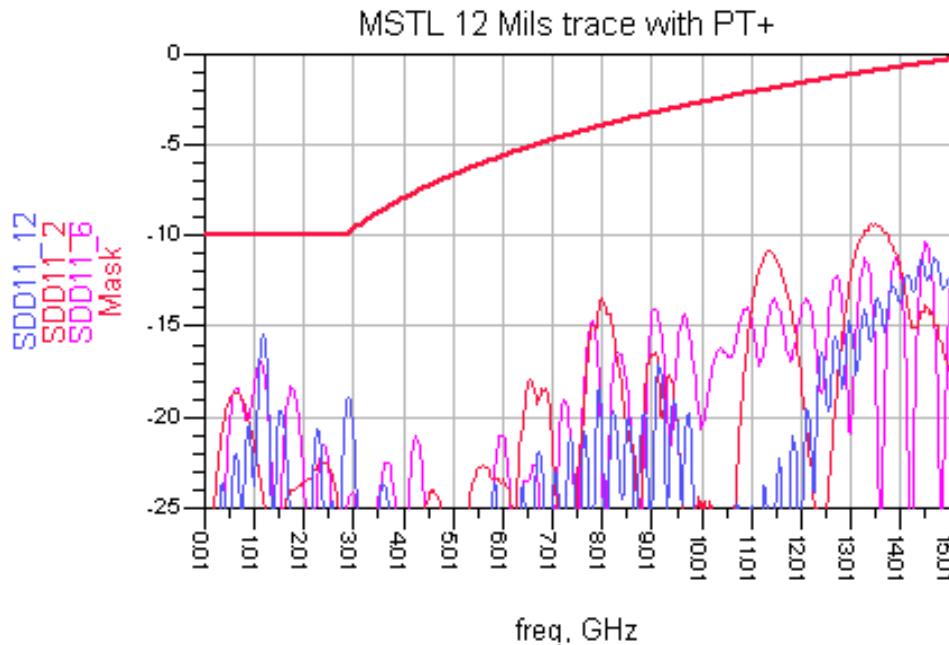


# Broadcom Microstrip Board with PT Enhanced

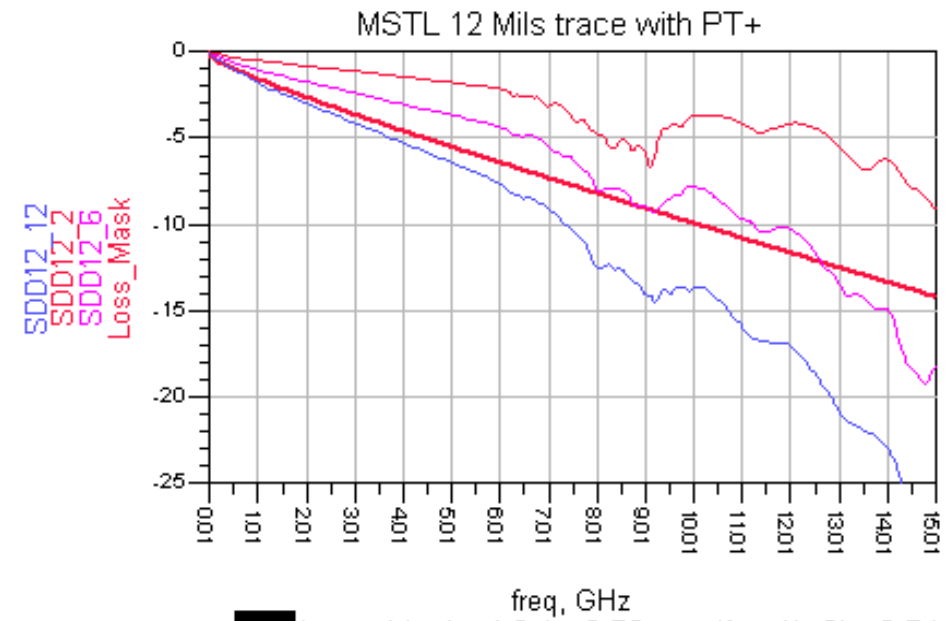
□ Based on Fr4-13 board with 12 mils for 2, 8, and 12”

⇒ Return loss mask only shown for reference

⇒ 12” MSTL fails insertion loss limit



Eqn Mask=if(freq<2.8e9)then -10 else (-3.8 + 13.33\*log10(freq/8.2e9),

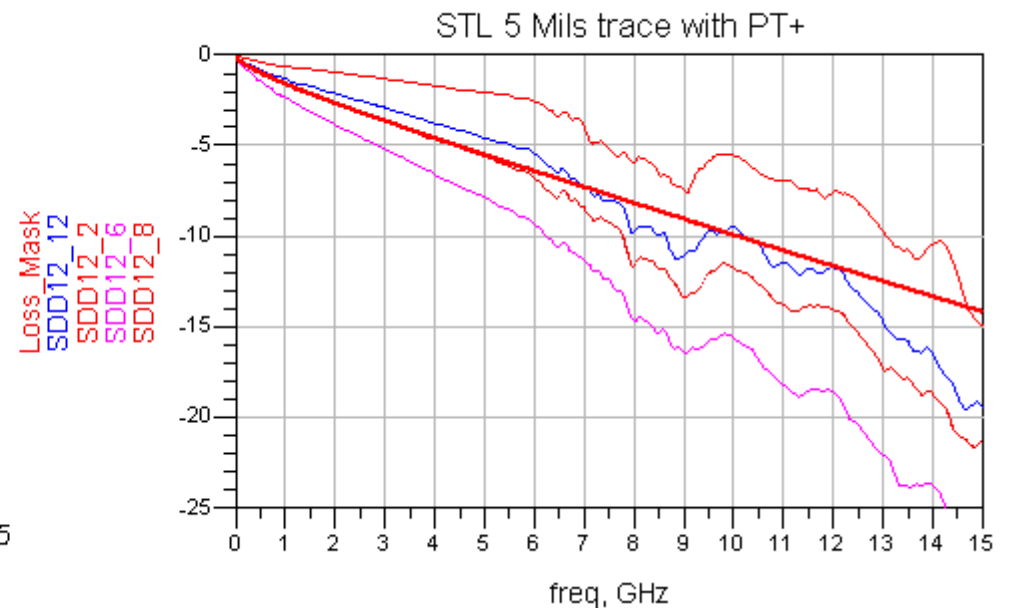
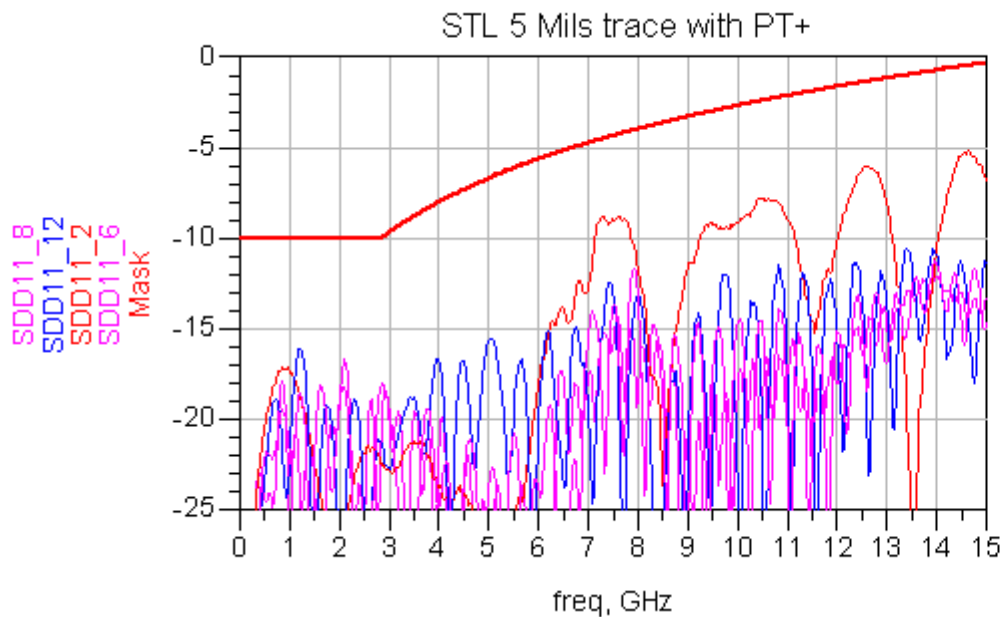


Eqn Loss\_Mask= (-0.1 - 0.78\*sqrt(freq/1e9) - 0.74\*freq/1e9)

# Broadcom Stripline Board with PT Enhanced

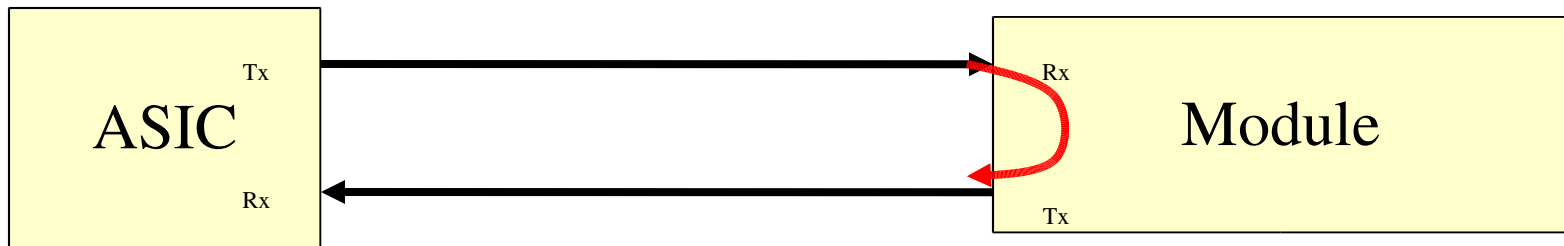
## □ Based on Fr4-13 board with 5 mils for 2, 6, 8, and 12"

- ⇒ Return loss mask only shown for reference
- ⇒ 8" and 12" STL fail insertion loss limit
- ⇒ Board have two via with 15 mils stubs



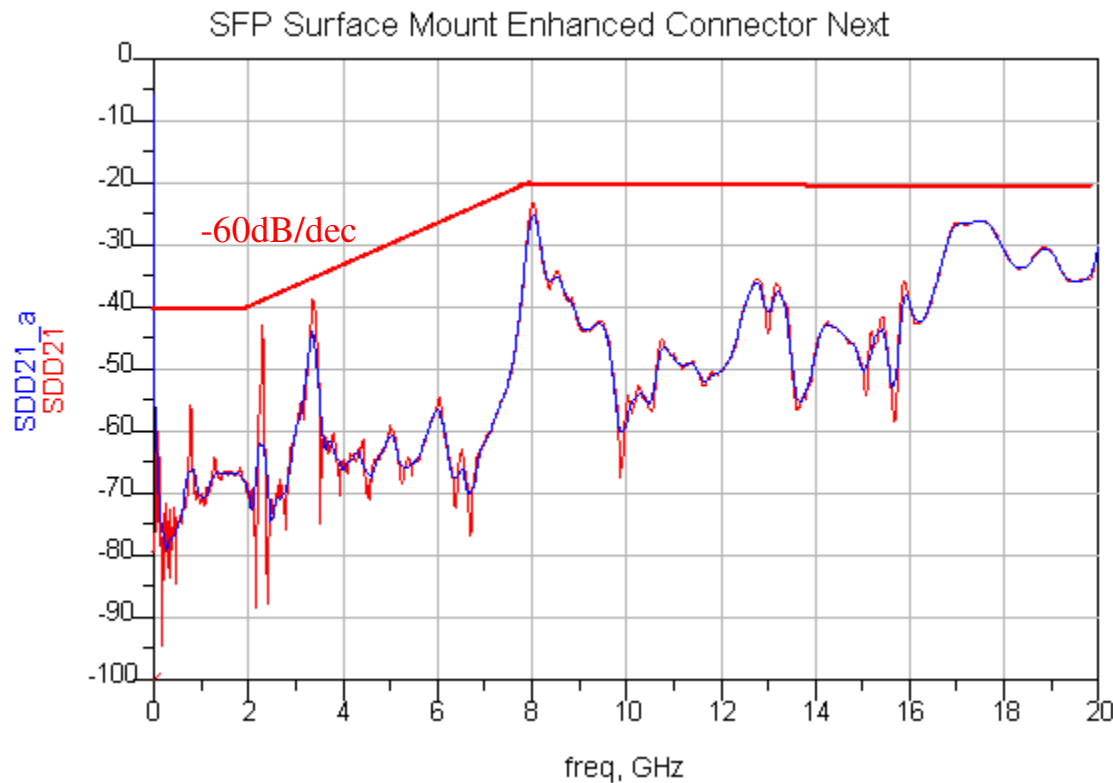
# Measurement of NEXT

- The primary crosstalk mechanism in SFP+ is NEXT as defined by SDD21 as shown below



# PT Enhanced Surface Mount Connector Next (Mfg Supplied)

- Shown without averaging as well as 250 MHz moving average



# Surface Mount Connector NEXT for 50 mm Microstrip and Stripline Boards

- Data are without averaging, for compliance suggest to use 250 MHz averaging.

⇒ On SFP+ compliance boards fabricated from Roger 4350B the NEXT in the 6-8 GHz range has been reduced to <-30 dB. But these board has some additional pad optimization.

