nAUI Channel Data Description

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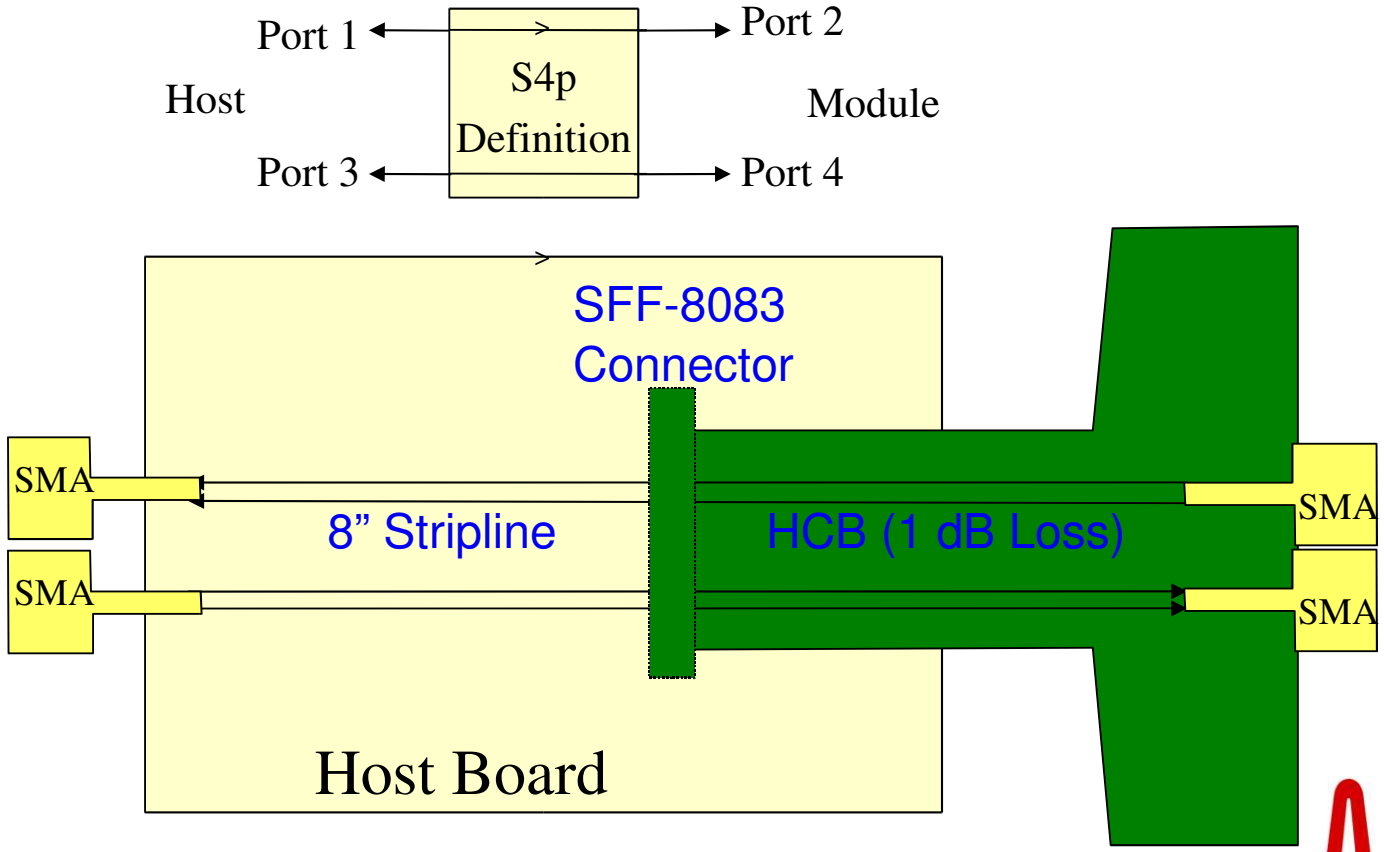
Overview

- **Channel data are provided as basis for xAUI simulation**
- **These files are provided for courtesy as is**
- **Channel included in the zip file**
  - ⇨ 8+ dB loss channel @ Nyquist (file CAUI_8dB_channel.s4p)
  - ⇨10 dB loss channel @ Nyquist (file CAUI_10dB_channel.s4p)
  - ⇨Device+PKG just meeting nAUI return loss (file CAUI_PKG.s4p)
  - ⇨Device+PKG + DUT board just meeting nAUI return loss (file CAUI_DUT.s4p)
  - ⇨3.3 dB loss channel @ Nyquist (file CAUI_Module.s4p)

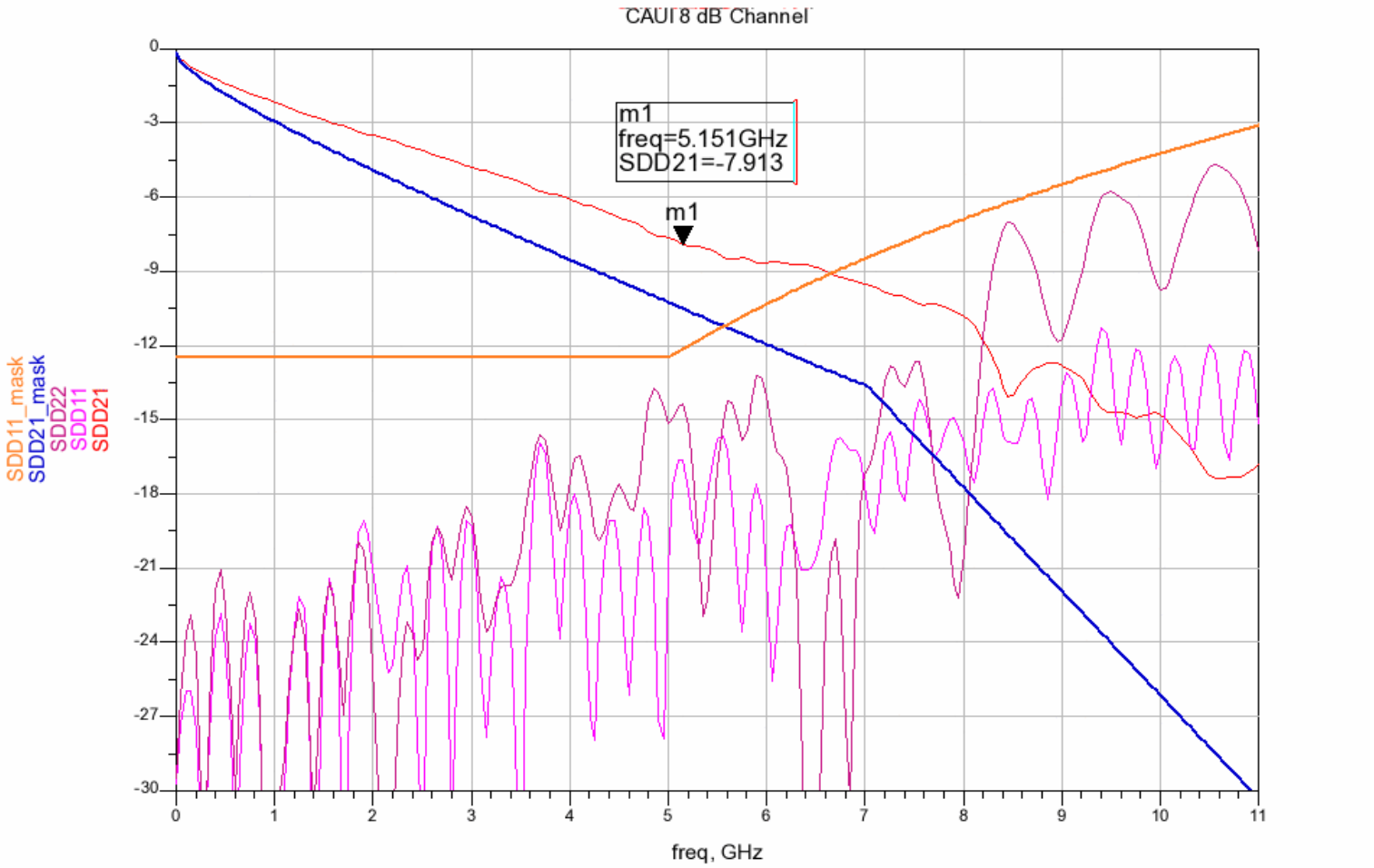
Channel Description

Channel based on Isola FR4-08

- 8” host board trace are 5 mils wide 8 mils gap with 2 vias at each end 13 mils long with 8+ dB loss (file CAUI_8dB_channel.s4p)
- SMA-PCB-SMA board with 2 dB loss was added to the above trace for about 10 dB loss (file CAUI_10dB_channel.s4p)



8 dB nAUI Channel



Eqn SDD21=dB(S(1,2)-S(3,2) - S(1,4) +S(3,4))-6

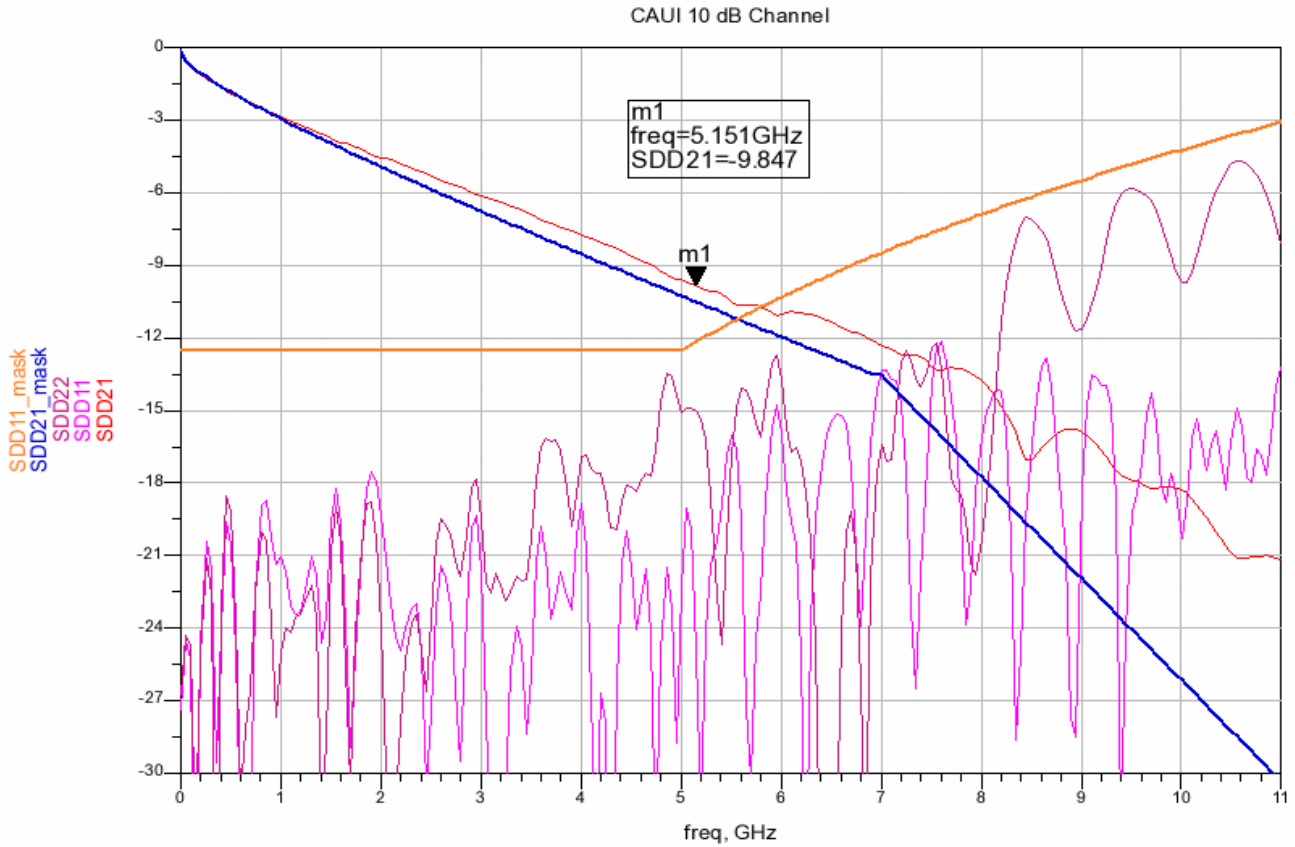
Eqn SDD11=dB(S(1,1)-S(3,1) - S(1,3) +S(3,3))-6

Eqn SDD22=dB(S(2,2)-S(4,2) - S(2,4) +S(4,4))-6

Eqn SDD21_mask=if(freq<7e9) then (-0.15 - 1.39*sqrt(freq/1e9) - 1.4*freq/1e9) else (15.86 -4.2*freq/1e9)

Eqn SDD11_mask=if(freq<5e9) then (-12.5) else (-12.5+27.5*log10(freq/5e9))

10 dB nAUI Channel Created with Cascade of 8 dB channel with 2 dB PCB



Eqn SDD21=dB(S(1,2)-S(3,2) - S(1,4) +S(3,4))-6

Eqn SDD11=dB(S(1,1)-S(3,1) - S(1,3) +S(3,3))-6

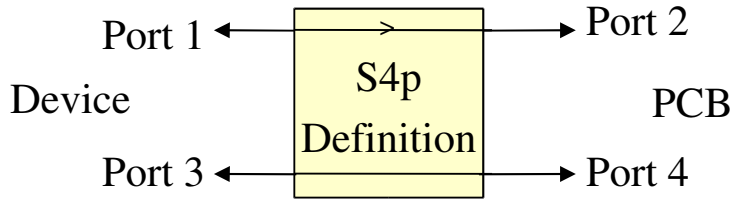
Eqn SDD22=dB(S(2,2)-S(4,2) - S(2,4) +S(4,4))-6

Eqn SDD21_mask=if(freq<7e9) then (-0.15 - 1.39*sqrt(freq/1e9) - 1.4*freq/1e9) else (15.86 -4.2*freq/1e9)

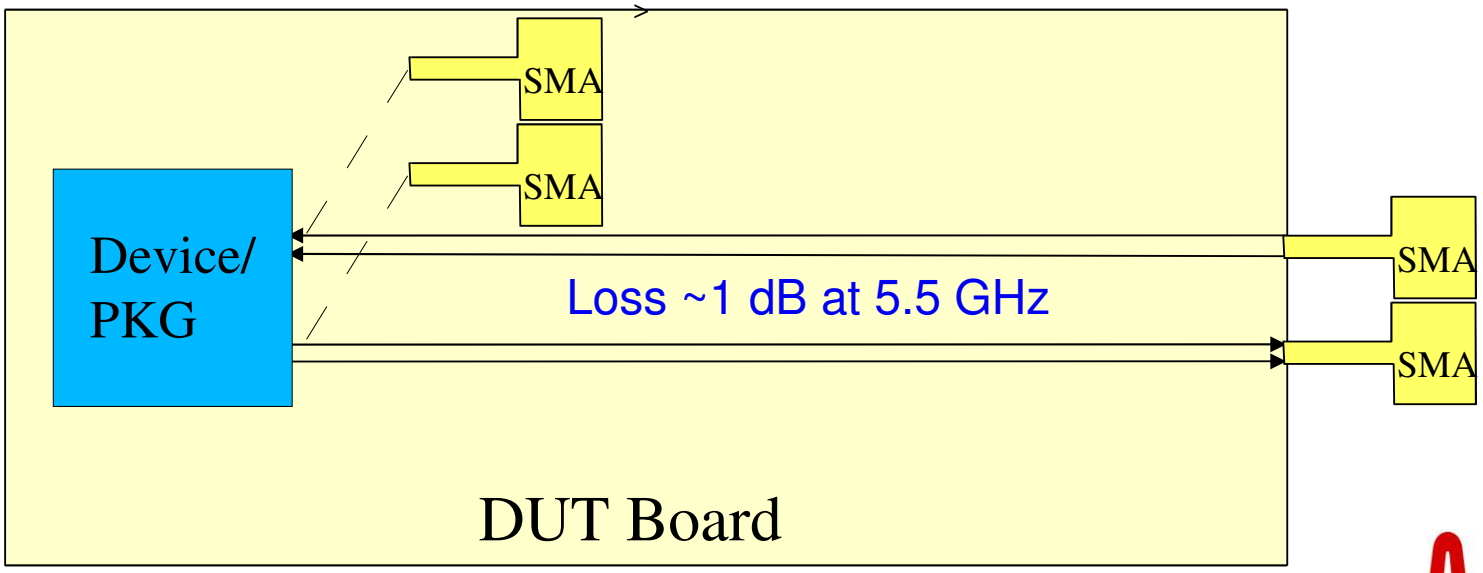
Eqn SDD11_mask=if(freq<5e9) then (-12.5) else (-12.5+27.5*log10(freq/5e9))

PKG and DUT Description

- **The package was based on a Quad retimer distributed model with ESD diode adjusted to just meet the nAUI SDD11/SDD22**
  - ⇨Package with driver ESD without DUT board (file CAUI_PKG.s4p)
  - ⇨Package with driver ESD and DUT board with about 1 dB loss at 5.5 GHz(file CAUI_DUT.s4p)

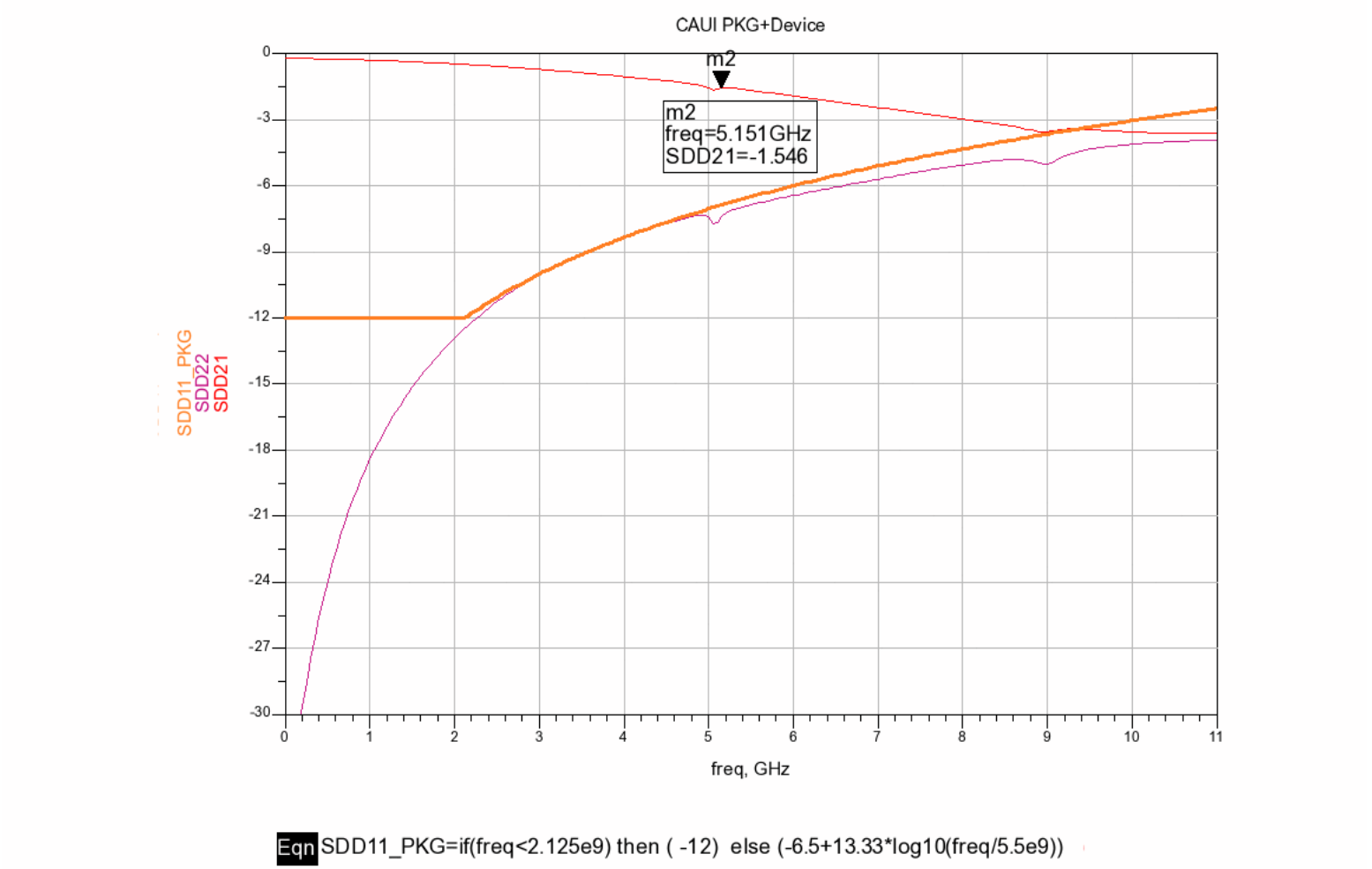


HCB (1 dB Loss)



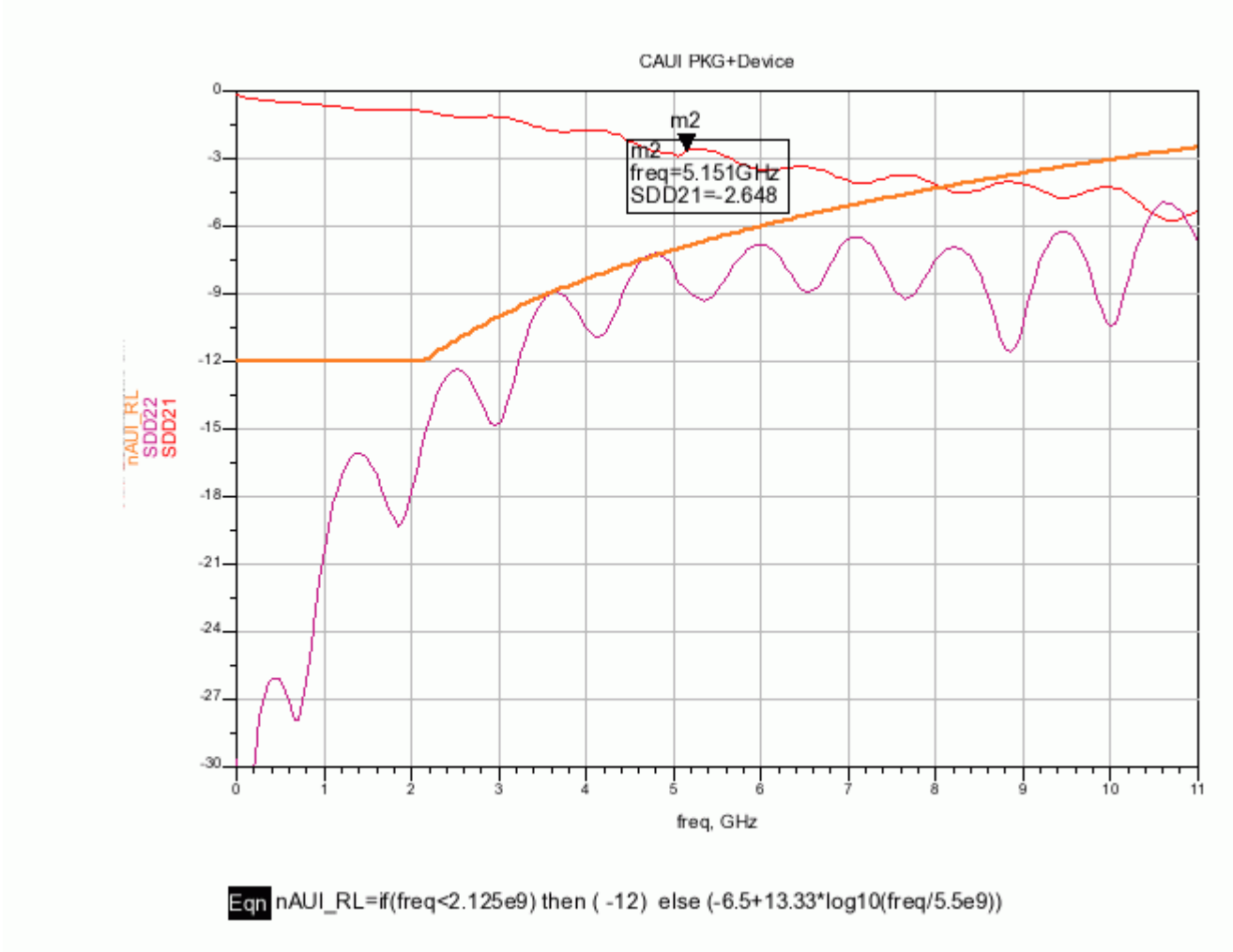
nAUI Worst Case Device+Package Model

- **Example nAUI device model including package model and ESD to just meet nAUI return loss.**



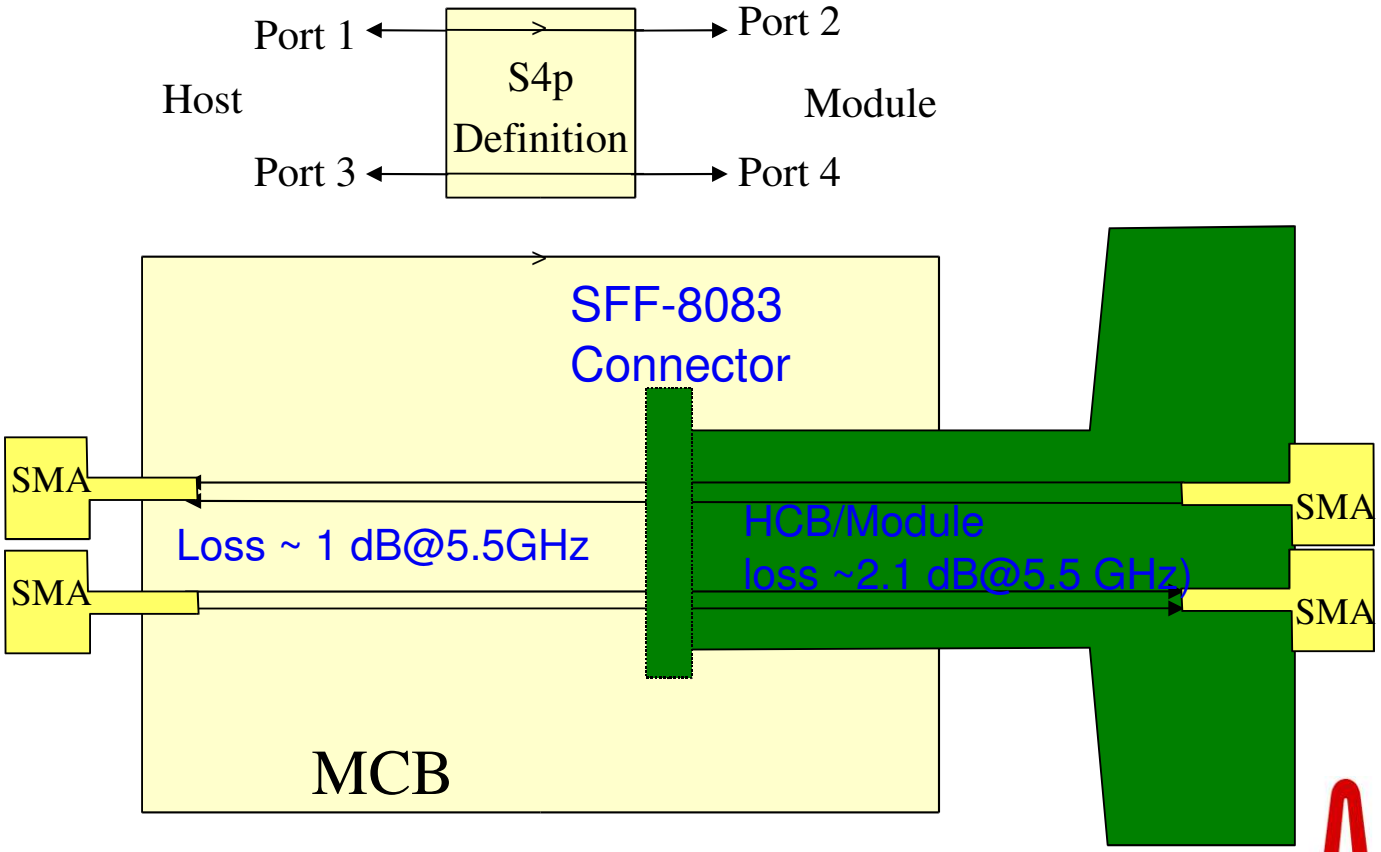
nAUI Worst Case Device+Package+ DUT PCB

- DUT PCB has loss of ~1 dB at Nyquist



nAUI Module Min Loss Channel Description

- **nAUI module min loss channel assumes the MCB loss is 1 dB and HCB or the module loss of 2.1 dB.**
  - ⇨The target loss was created by using the SFP+ MCB-HCB by flipping input output port and then cascading a suitable PCB trace to meet the target loss (file CAUI_Module.s4p).



nAUI Module Min Loss Channel Response

- nAUI Channel SDD11 and SDD21 are shown for reference