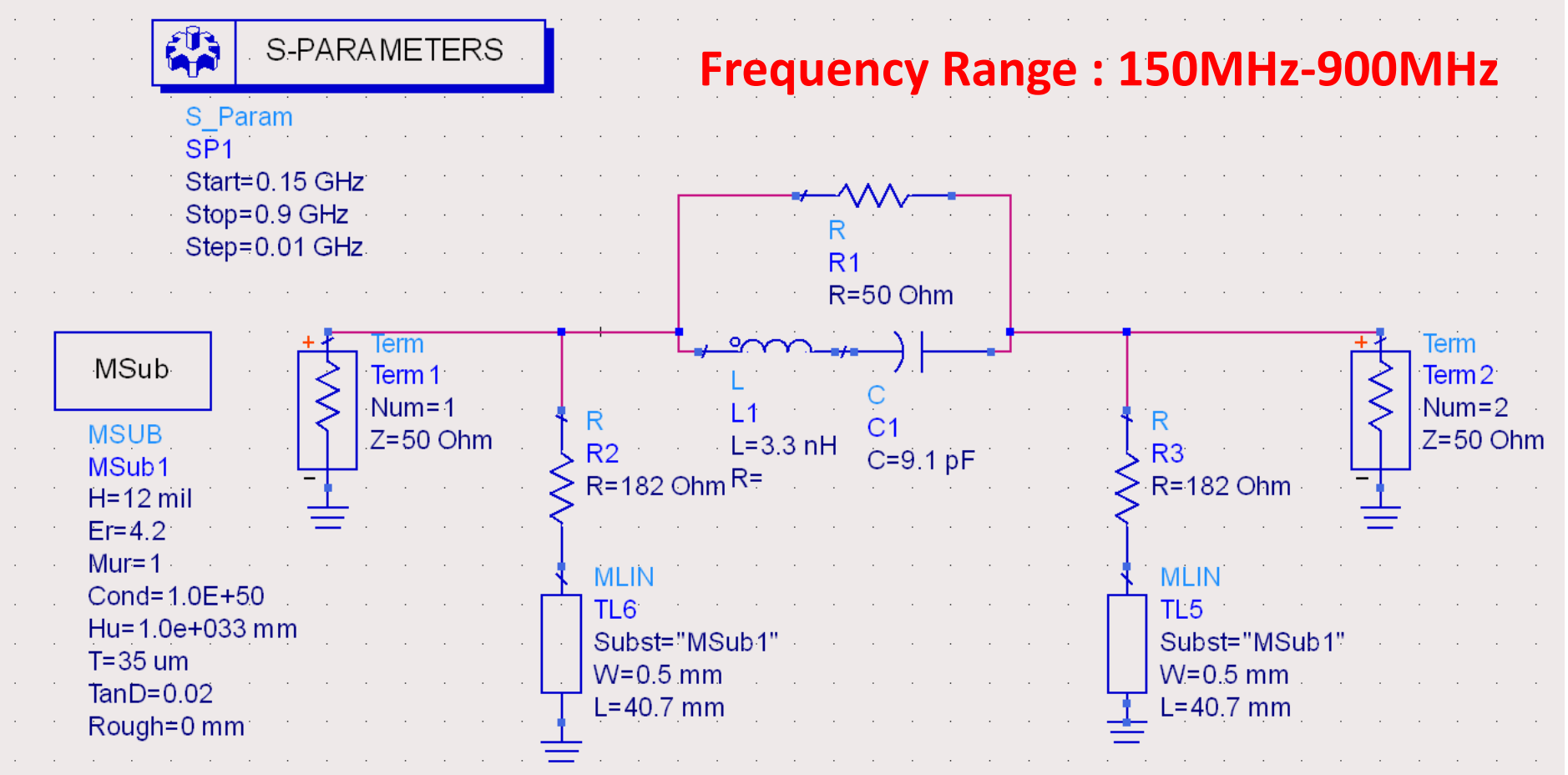
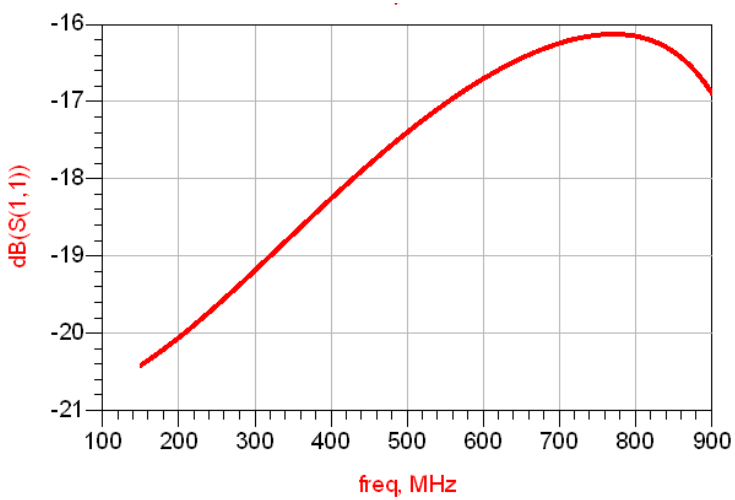
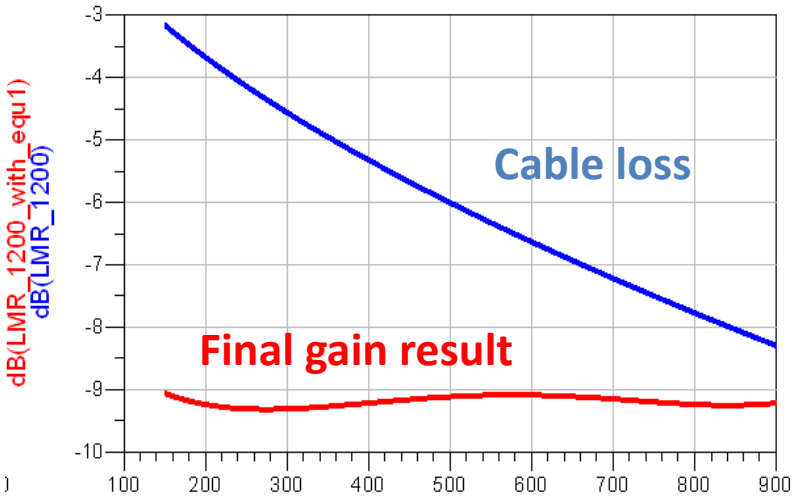
Equalizer Design for 200M LMR-1200 Cable



Simulation Result

Frequency Range : 150MHz-900MHz

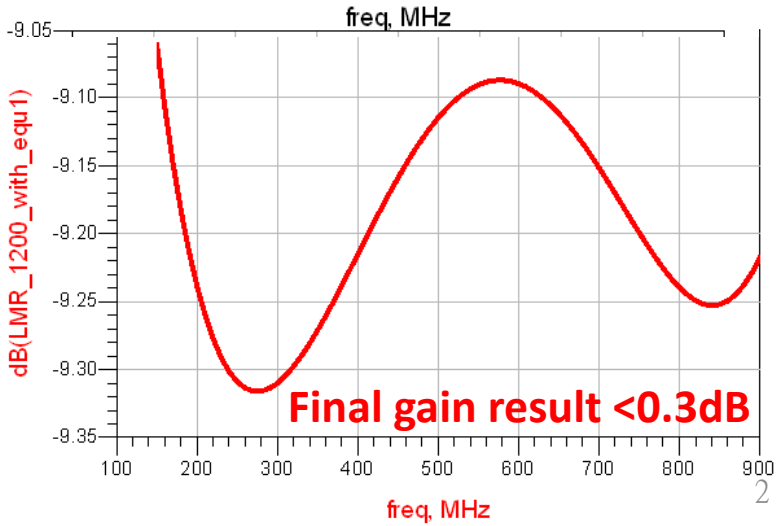




Goal:

S11 < 15dB (Reflection < 3%)

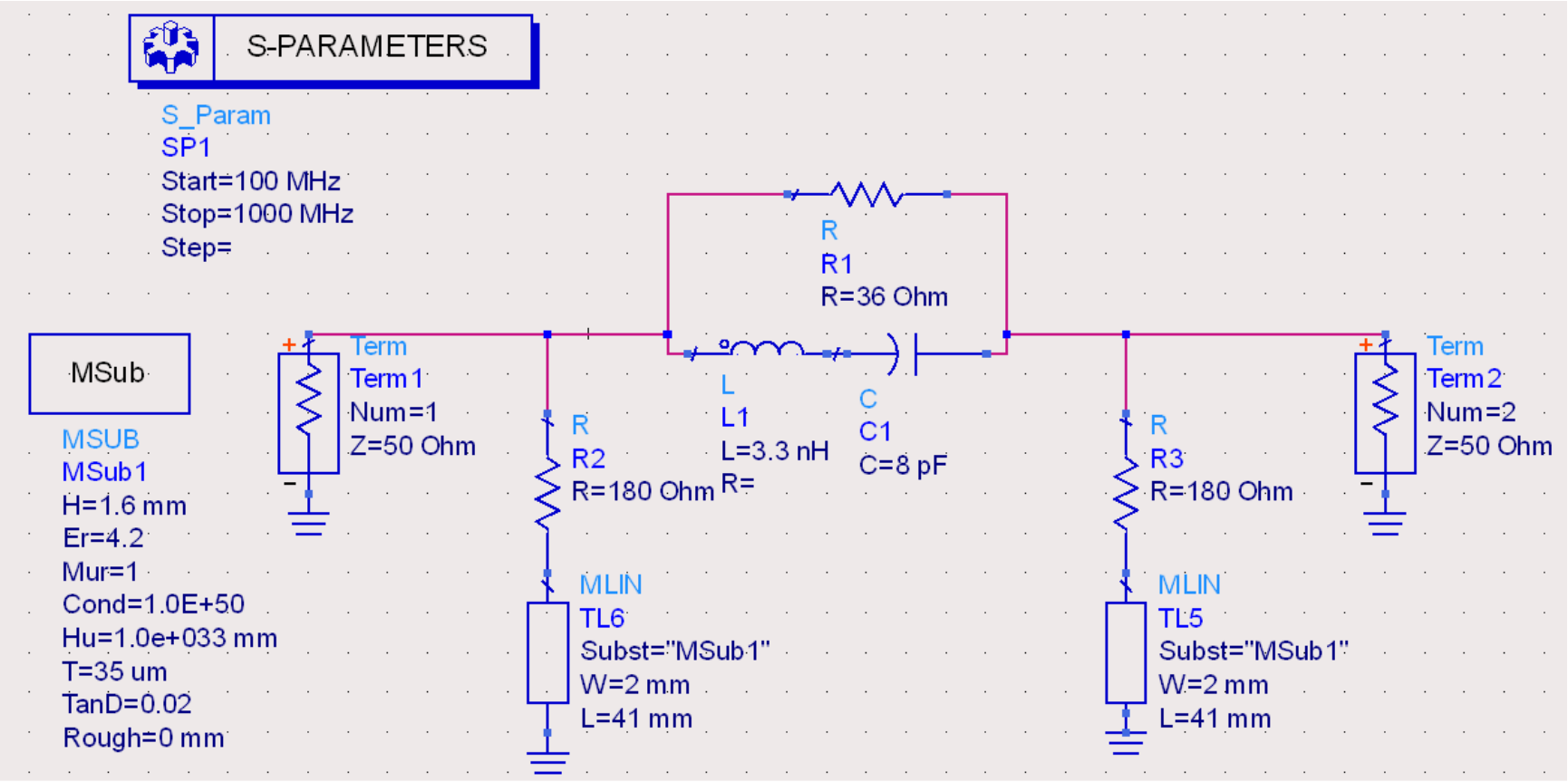
Gain flatness < 1dB



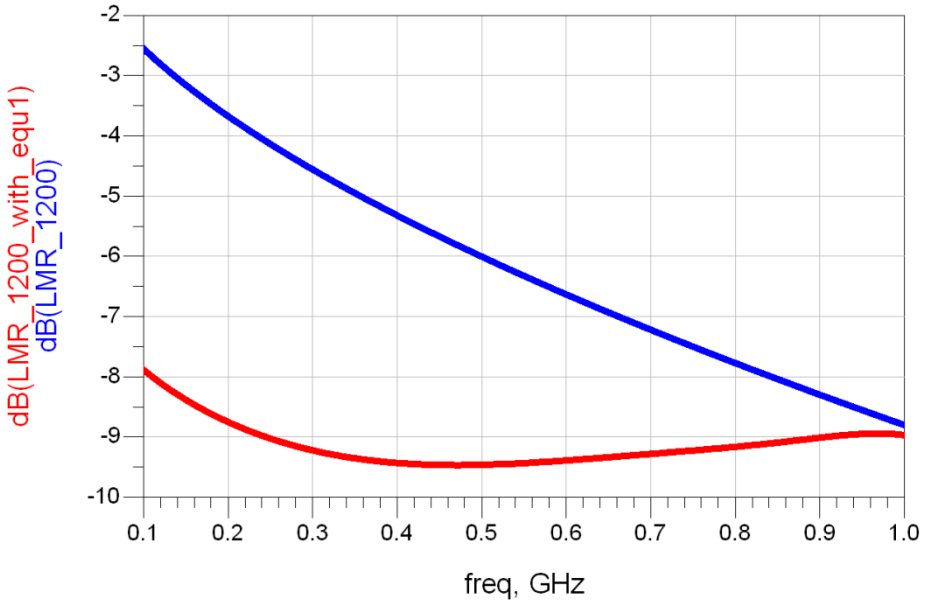
Some Constrain …..

- I don’t have suitable value in my hand
- Re-simulate by used component’s value
- R1 : 50 Ohm -> 36 Ohm
- C1 : 9.1 pF -> 8 pF
- For testing, exposure and etching by hand.

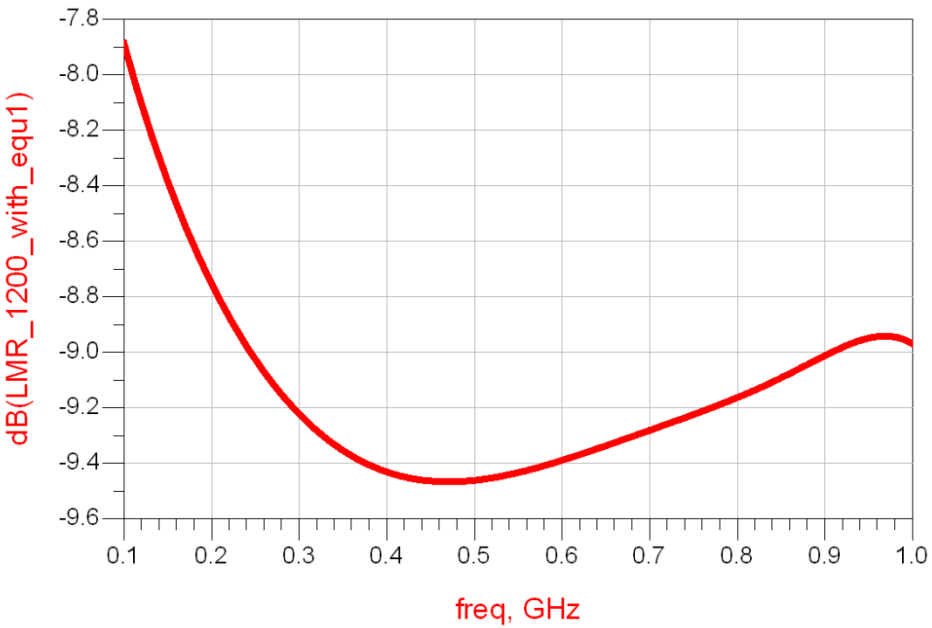
Design of Real Components Value



Simulation Result of Real Case

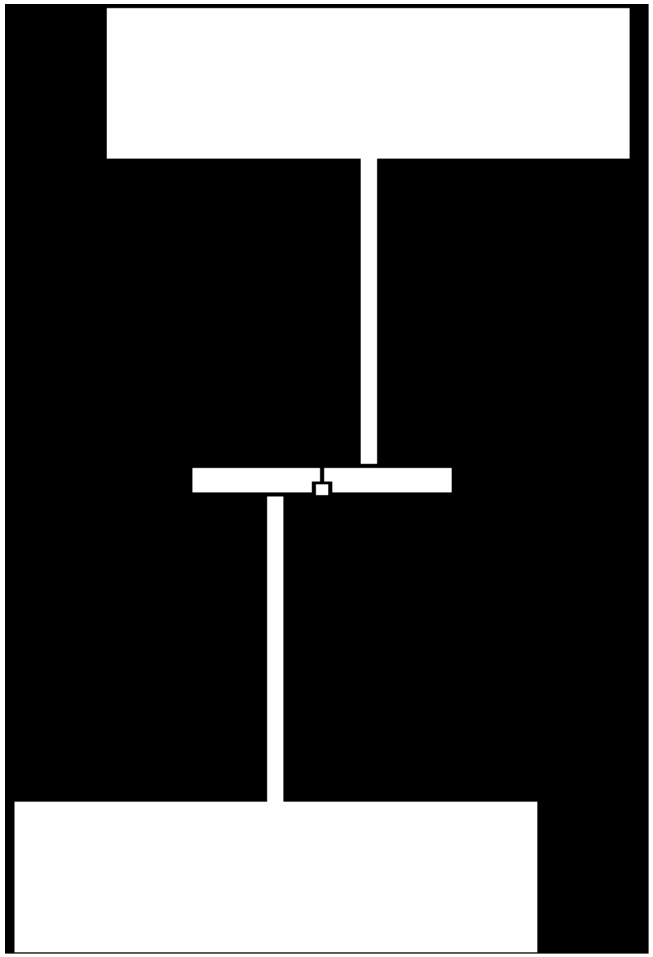


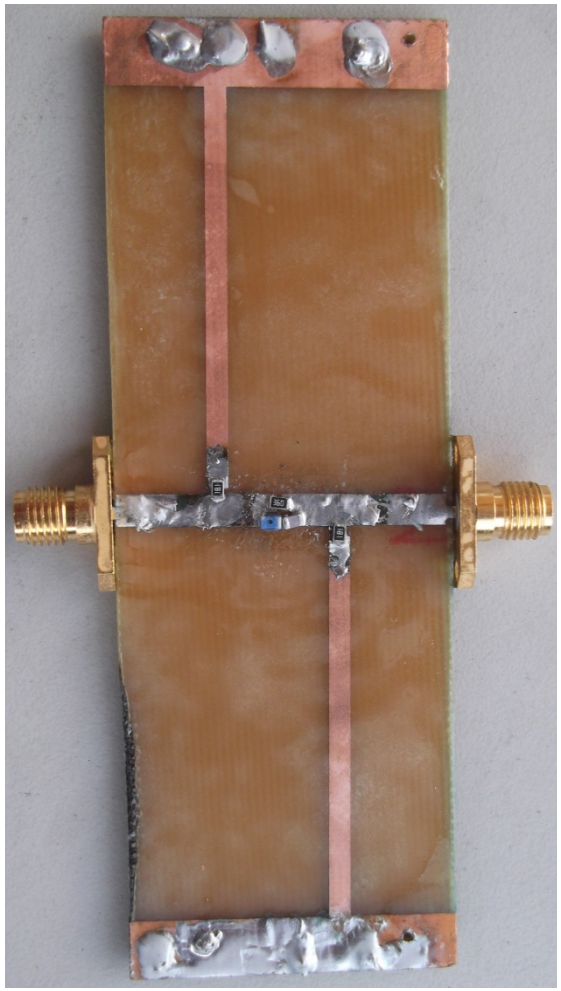
Zoom in



Gain flatness ~ 1dB

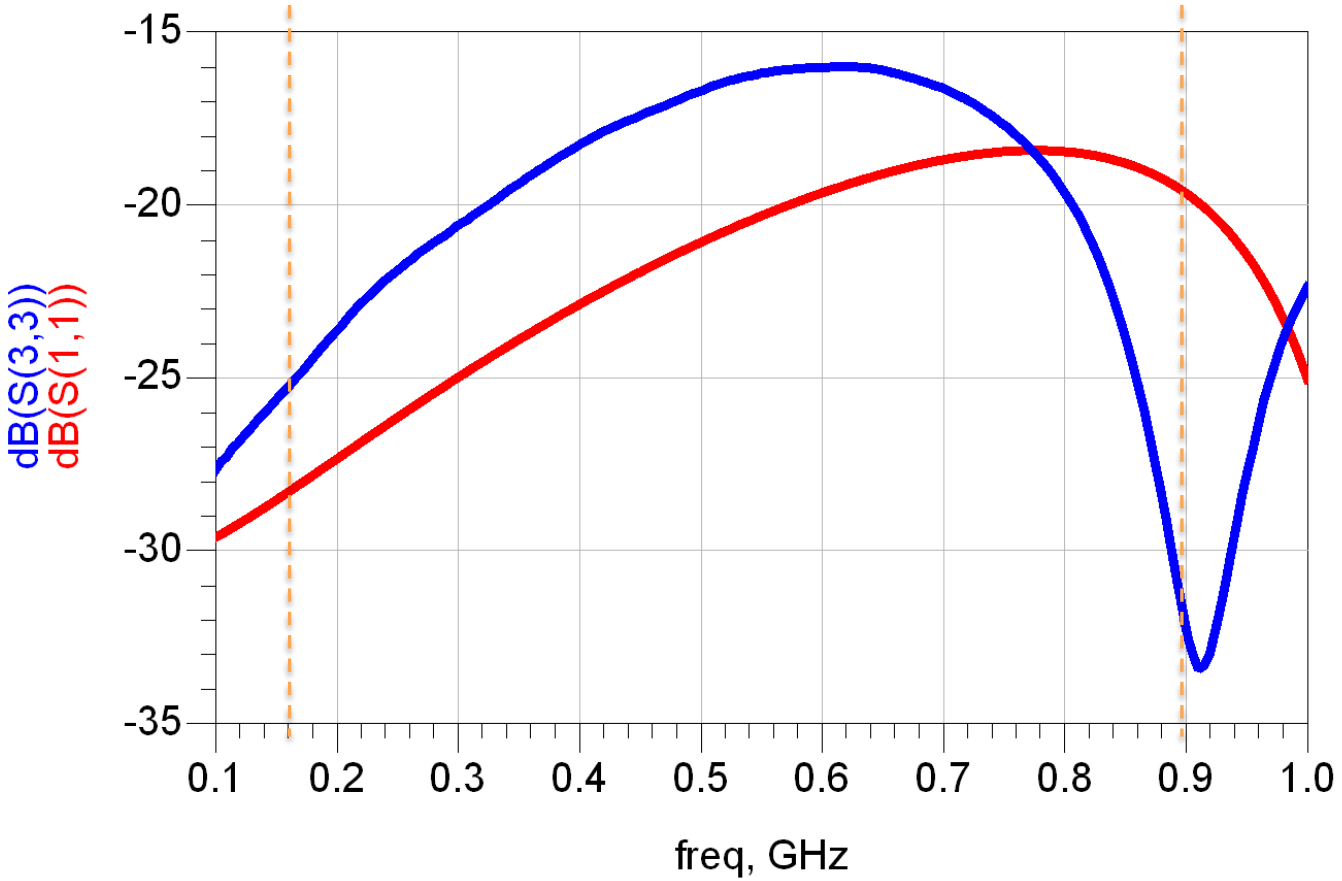
Layout and Product





Measurement Result
Reflection (S11)

Frequency Range : 150MHz-900MHz

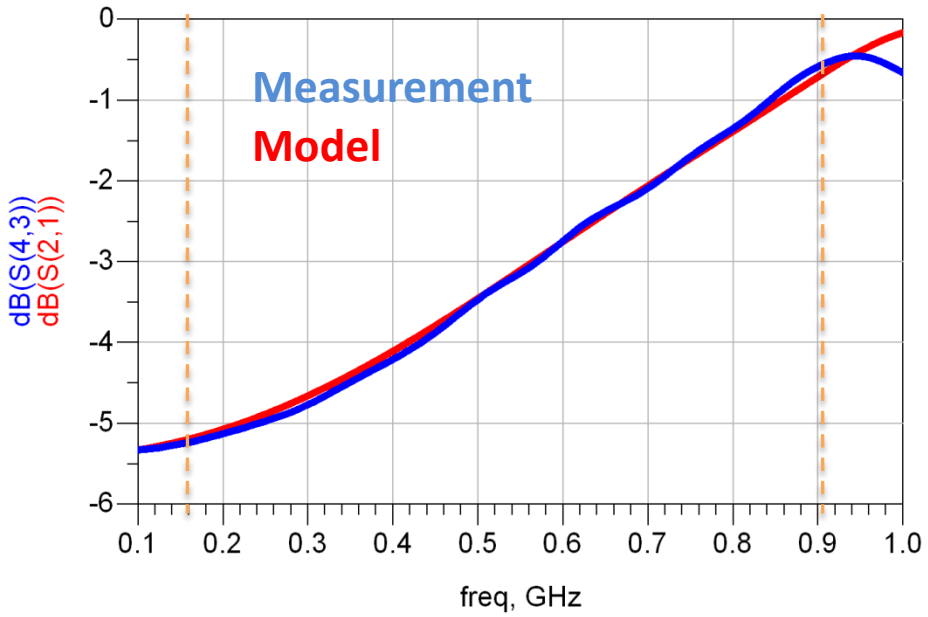


Measurement
Model

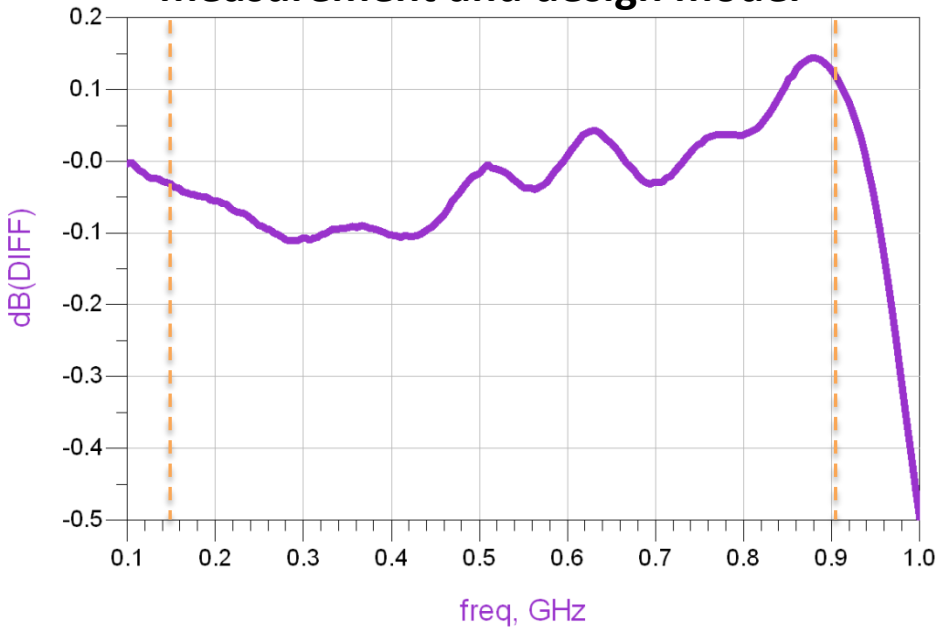
S11 < -15 dB

Measurement Result
Attenuation (S21)

The comparison of measurement and simulation model



The difference between measurement and design model



Frequency Range : 150MHz-900MHz **The difference less then 0.2 dB!**

Conclusion and Next Step

- **Conclusion**
  - The design rule and model is conformed with measurement
- **Next Step**
  - Purchase the correct value (high grade?) components (5cent USD per component I used)
  - Try to deduce the layout size
- **Future work**
  - Design equalizer for other RF cable candidates