Equalizer Design for 200M LMR-1200 Cable

Frequency Range: 150MHz-900MHz
Simulation Result

Frequency Range: 150MHz-900MHz

Goal:
S11 < 15dB (Reflection < 3%)
Gain flatness < 1dB

Final gain result < 0.3dB
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

Gain flatness $\sim 1\text{dB}$
Layout and Product
Measurement Result

Reflection (S11)

Frequency Range: 150MHz-900MHz

\[ S11 < -15 \text{ dB} \]
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