



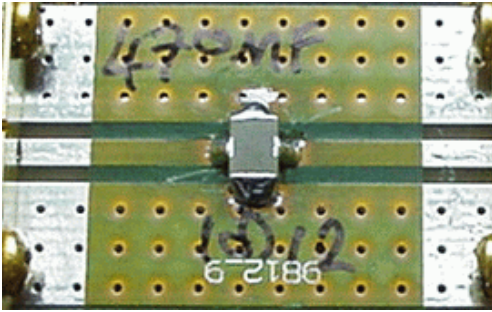
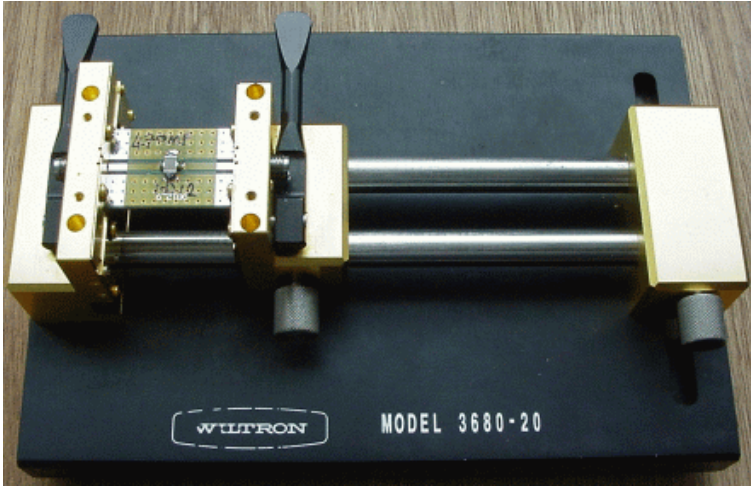
# Shunt Measurement

## (1) X2Y vs. (2) Standard Capacitors

## Test Results #TR 3002, v2.0

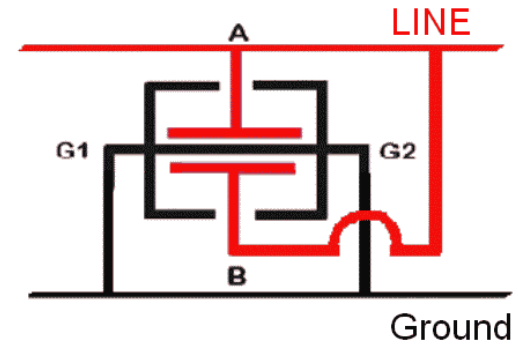
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- Shunt measurement using a PCB.
  - ✓ Caps are soldered on a PCB.
  - ✓ PCB: FR-4 substrate FR-4, 1mm thickness, with 50 Ohm microstrip line.
  - ✓ PCB mounted in Wiltron model 3680-20 fixture.
  - ✓ HP 8753D Vector Network Analyzer.
  - ✓ Calibration: full 2-port.

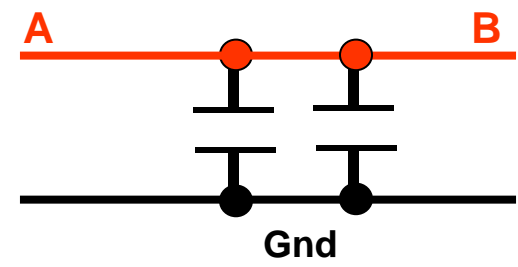


## Equivalent circuits:

X2Y: 2 Y-caps parallel

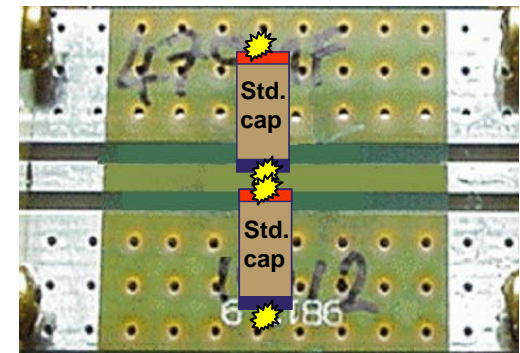
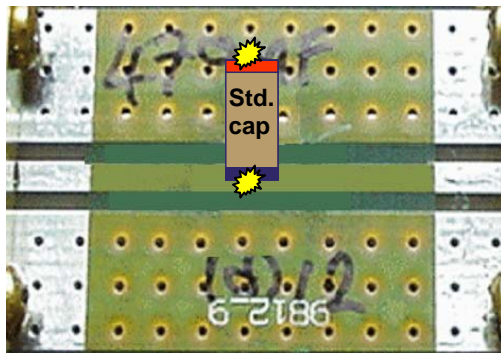
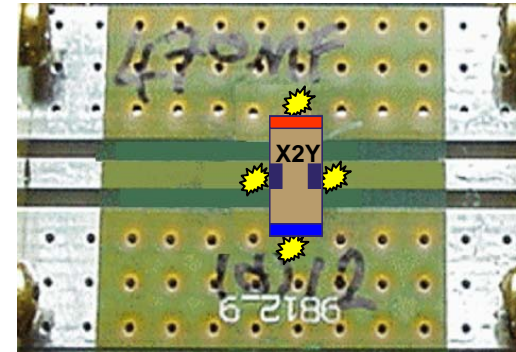
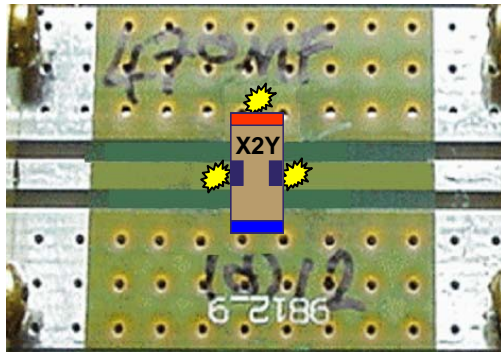


## 2 standard caps

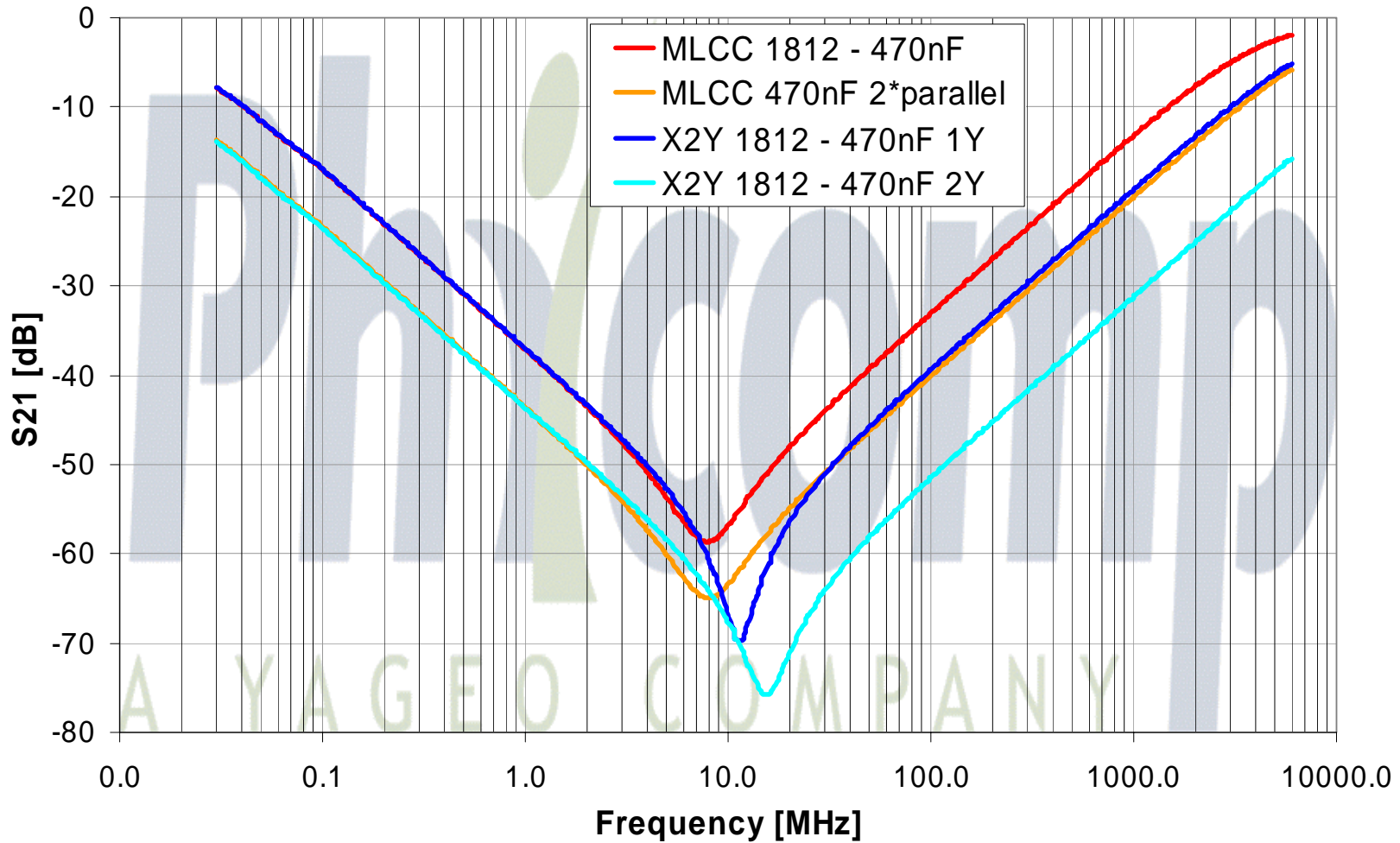


## (1) 1812 470nF Capacitor

## (2) 1812 470nF Capacitors



## Shunt Insertion Loss 470nF-MLCC vs 470nF-X2Y



- **Calculation of ESL based on 470nF yields:**
  - ✓ (1) X2Y - SRF 11.87MHz = 0.38nH
  - ✓ (1) Standard capacitor - SRF 8.36MHz = 0.77nH
  
- **Calculation of ESL based on 940nF yields:**
  - ✓ (2) X2Y - SRF 16.69MHz = 0.1nH
  - ✓ (2) Standard capacitor - SRF 8.36MHz = 0.39nH

Test and measurements by Yageo/Phycomp, [www.yageo.com](http://www.yageo.com)

Direct inquiries and questions about Test Reports, Application Notes, or X2Y<sup>®</sup> products, please contact:



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