

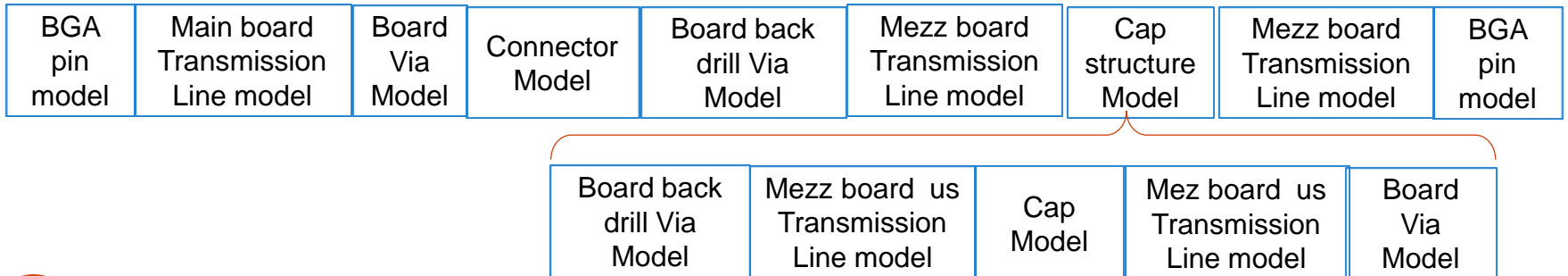
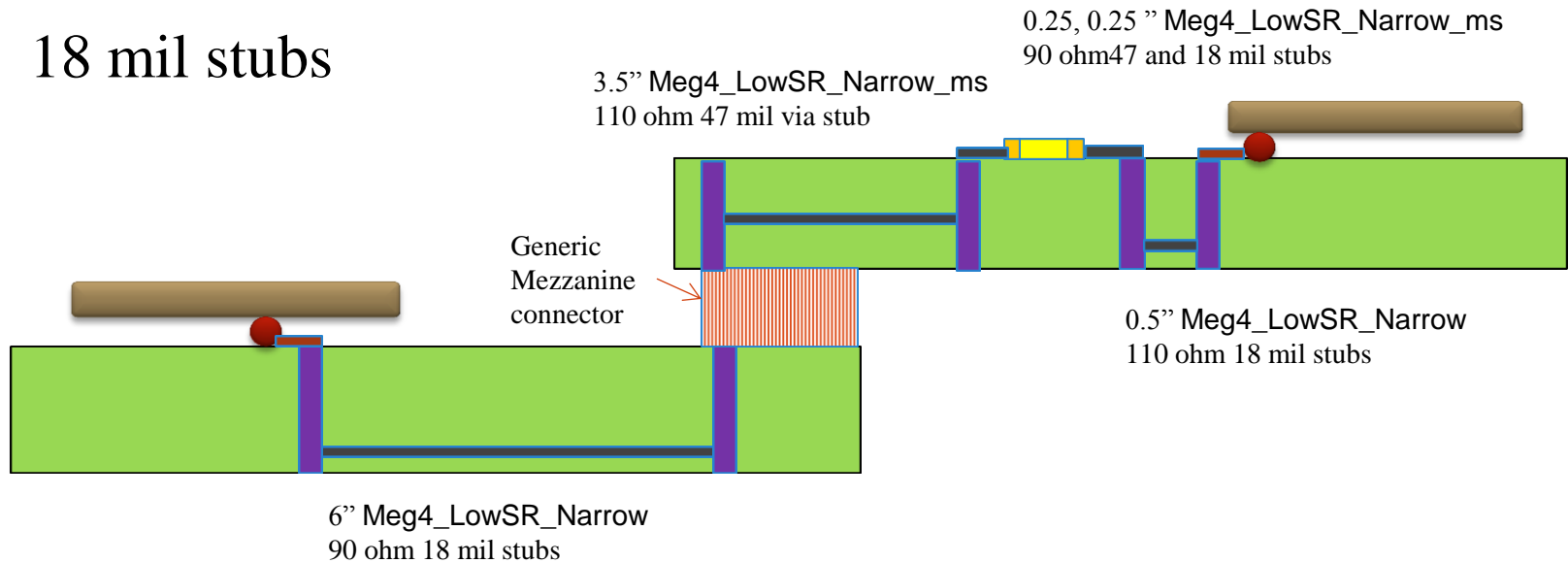
# Topology Description

## CAUI-4 Main Mezzanine Design and 50 mil via stub (19.38 dB)

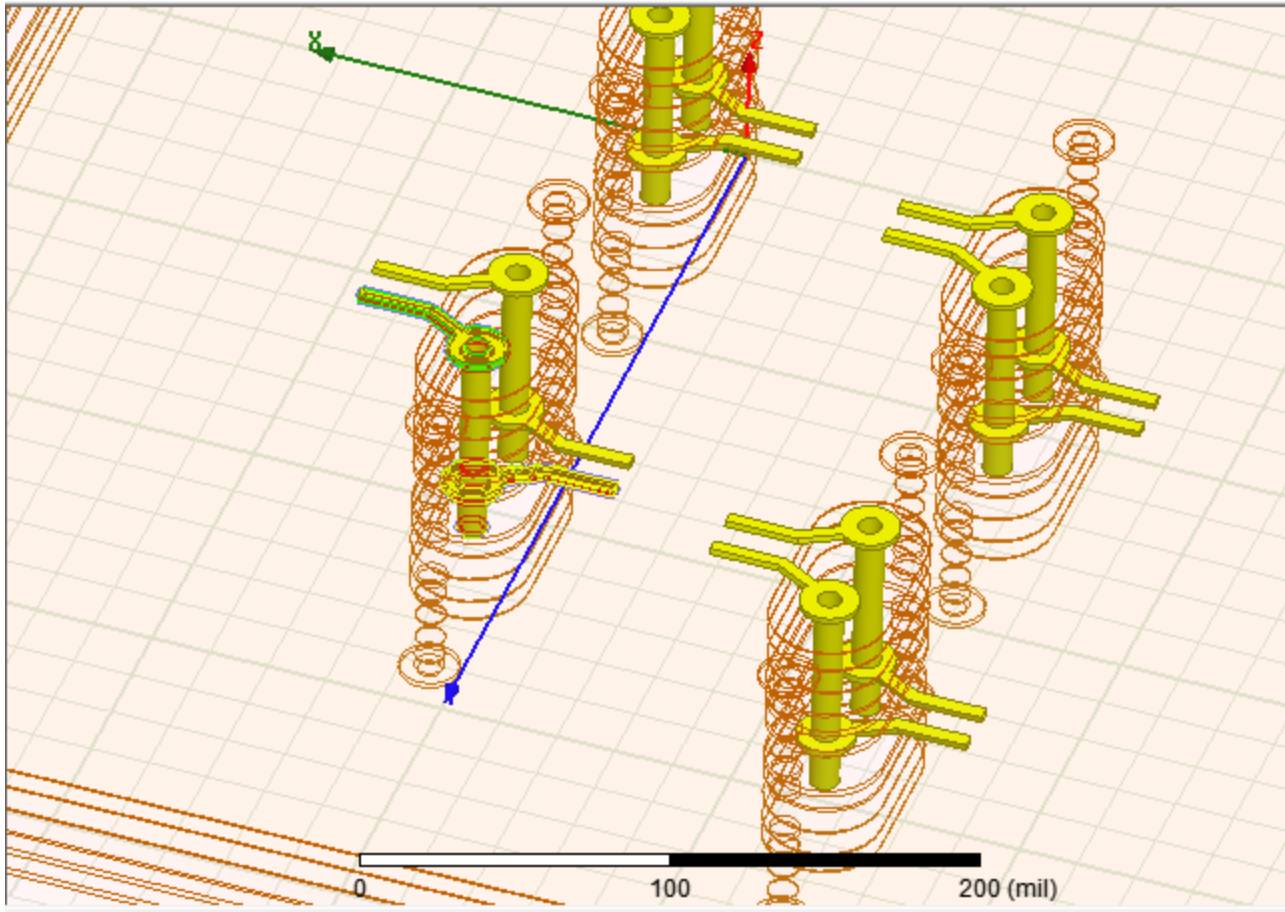
Richard Mellitz  
Intel Corporation  
09/24/2013

# CAUI-4 Mezzanine Topology back drilled

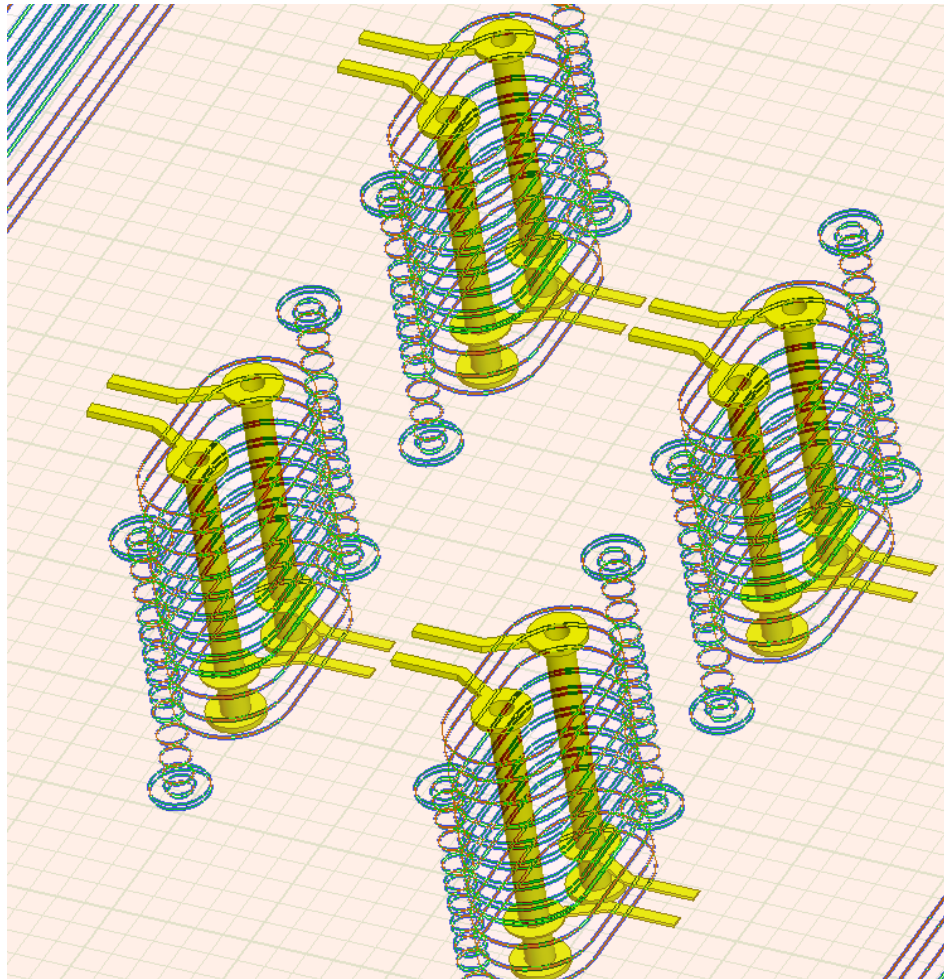
18 mil stubs



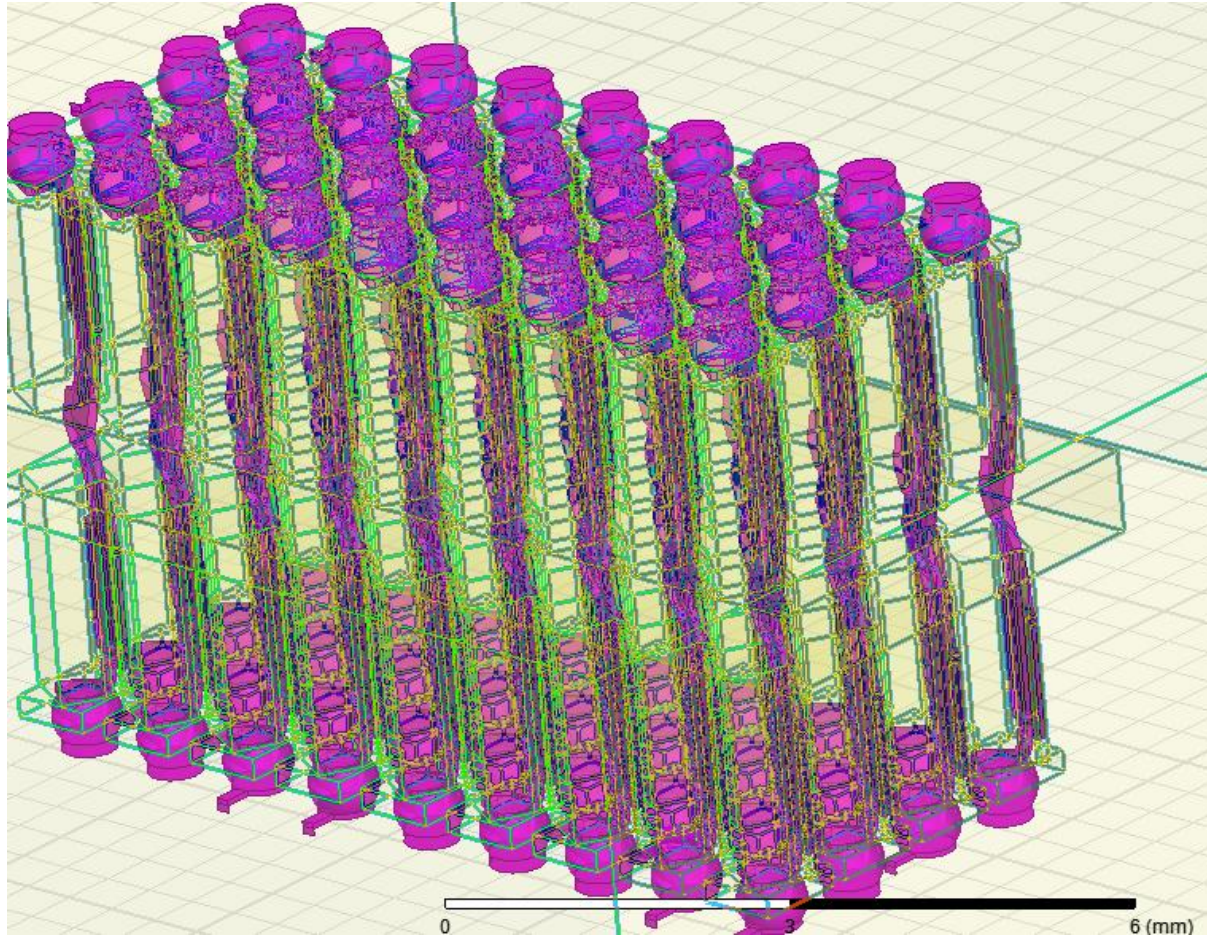
# Stubbed / back drilled Via Model - 12 layer stack up 18 mil stub (47 mil stub similar)



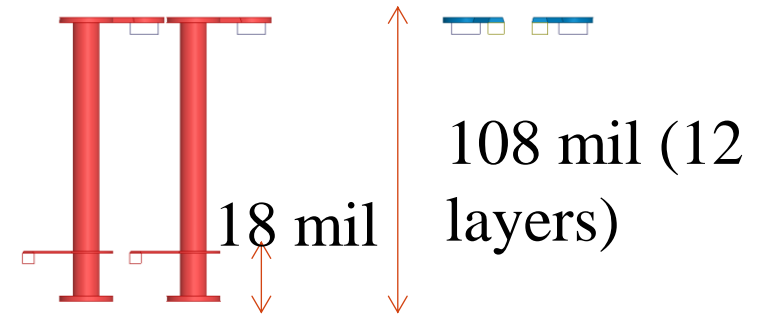
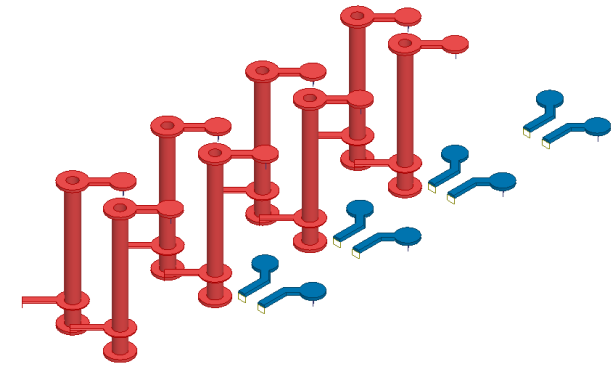
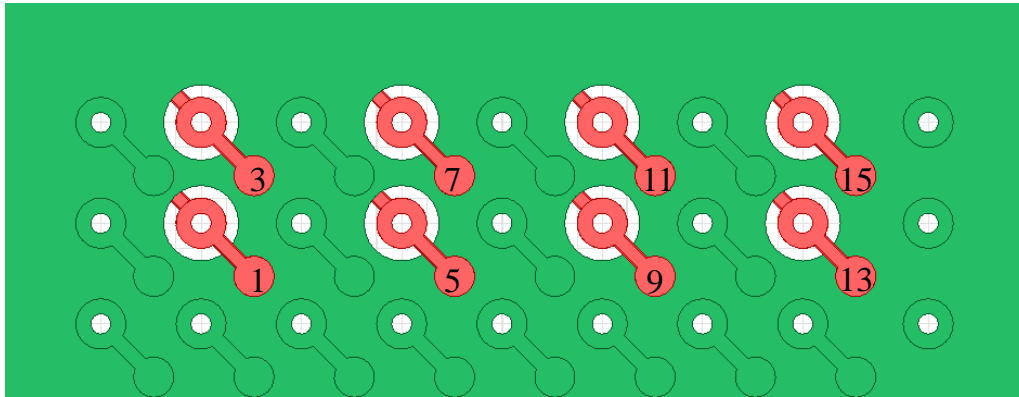
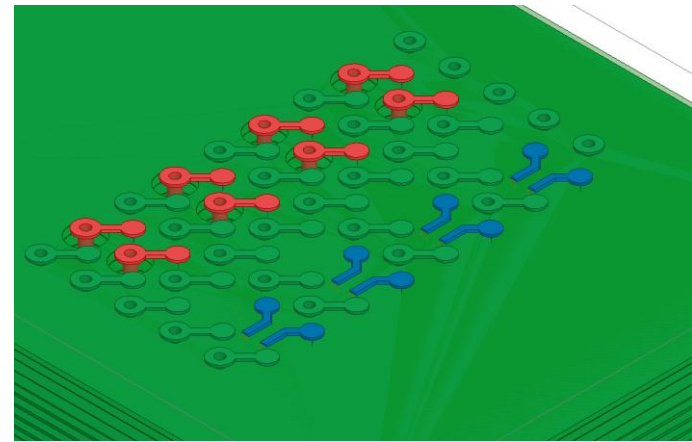
# Stubbed Via Model - 12 layer stack up 18 mil stub



# Mezzanine Connector Model



# BGA Attach Model

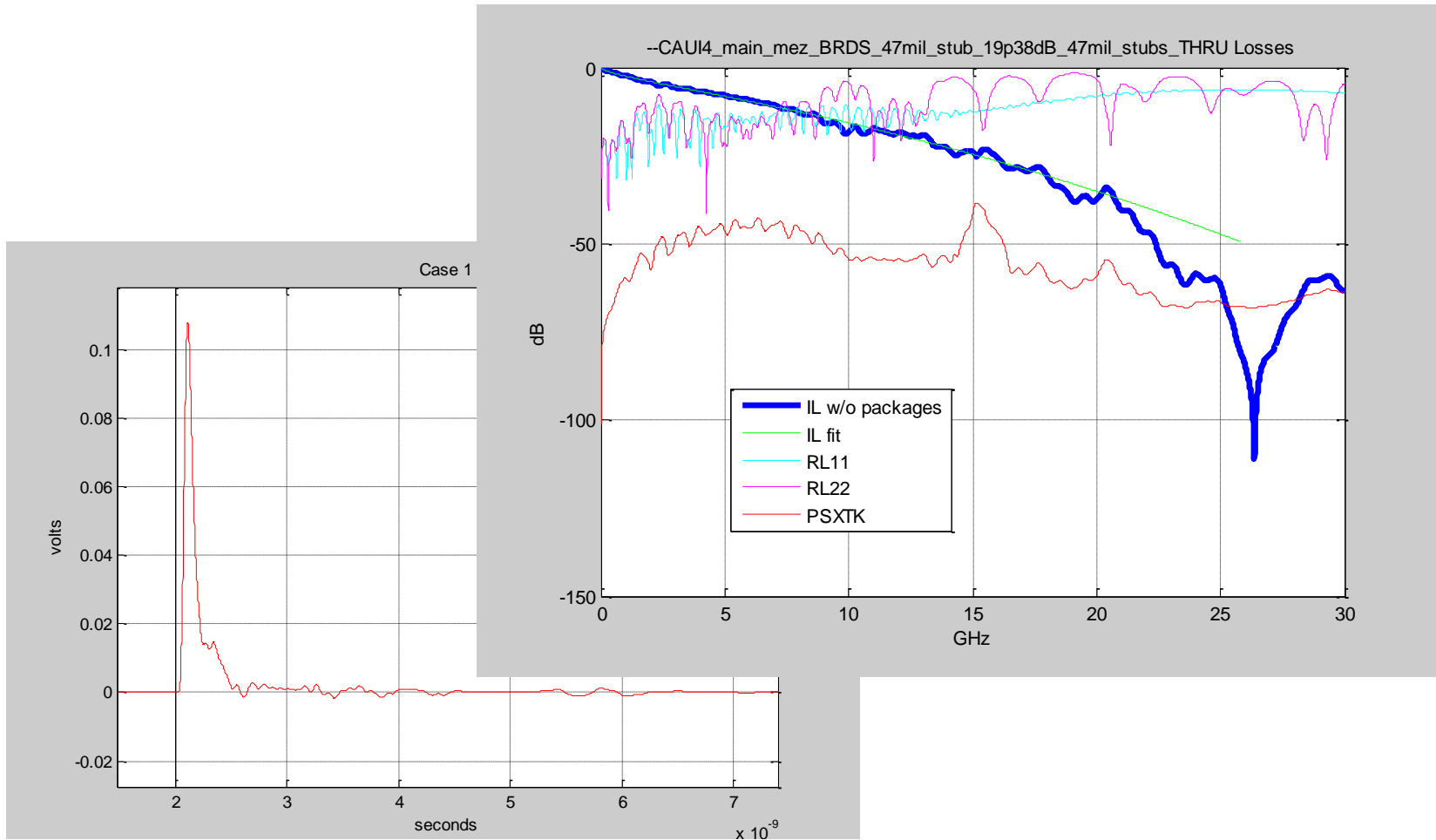


# Transmission line models

|                      | Z0<br>(ohms) | Loss<br>dB/in<br>@12.9GHz | Finished<br>Trace Width<br>(mils) |  |
|----------------------|--------------|---------------------------|-----------------------------------|--|
| Meg4_LowSR_Narrow    | 89.98        | -1.40                     | 3.71                              |  |
| Meg4_LowSR_Narrow    | 110.03       | -1.27                     | 3.31                              |  |
| Meg4_LowSR_Narrow_ms | 90.01        | -0.87                     | 6.21                              |  |

|                          | z target | H above or SM thickness | SM width | height below | trace thickness | in pair space | inter pair space | dielectric above | dielectric below | loss tangent | SRF model | Sphere radius | RMS peak width | No. of Spheres | SM ER | SM tand | etch factor | conductivity | final value, Diff Z0 | ~dB/in @ 12.9 GHz |
|--------------------------|----------|-------------------------|----------|--------------|-----------------|---------------|------------------|------------------|------------------|--------------|-----------|---------------|----------------|----------------|-------|---------|-------------|--------------|----------------------|-------------------|
| Z90_Meg4_LowSR_Narrow    | 90.00    | 3.24                    | 3.48     | 3.24         | 1.41            | 8.344         | 37.43            | 3.36             | 3.36             | 0.008        | Huray     | 0.5           | 9.4            | 40             | 3.80  | 0.008   | 0.30        | 4.85E+07     | 89.98                | -1.40             |
| Z110_Meg4_LowSR_Narrow   | 110.00   | 4.31                    | 3.31     | 4.31         | 1.12            | 8.690         | 35.69            | 3.27             | 3.27             | 0.008        | Huray     | 0.5           | 9.4            | 40             | 3.80  | 0.008   | 0.30        | 4.85E+07     | 110.03               | -1.27             |
| Z90_Meg4_LowSR_Narrow_ms | 90.00    | 0.50                    | 6.21     | 4.03         | 1.95            | 5.790         | 32.79            | 3.41             | 3.82             | 0.008        | Huray     | 0.5           | 9.4            | 40             | 3.80  | 0.008   | 0.30        | 4.85E+07     | 90.01                | -0.87             |

# Differential IL and RL Responses and SBR w 12 mm Package



4<sup>th</sup> order Bessel Thomson Rx filter applied

IEEE802.3bm Task Force CAUI-4 Ad Hoc