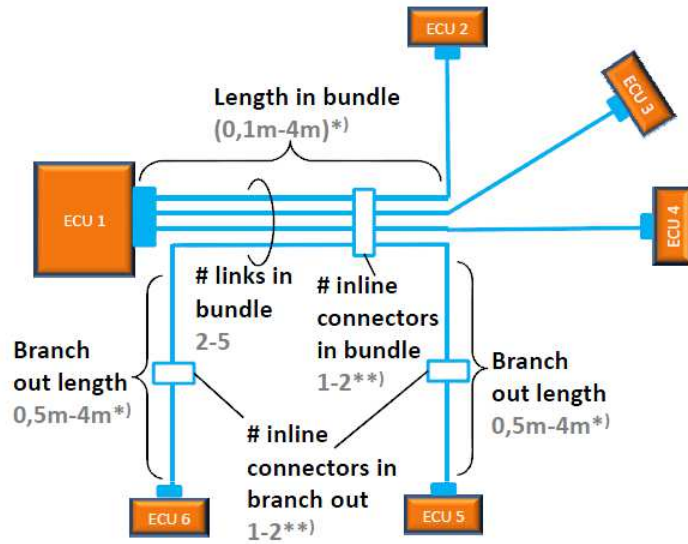


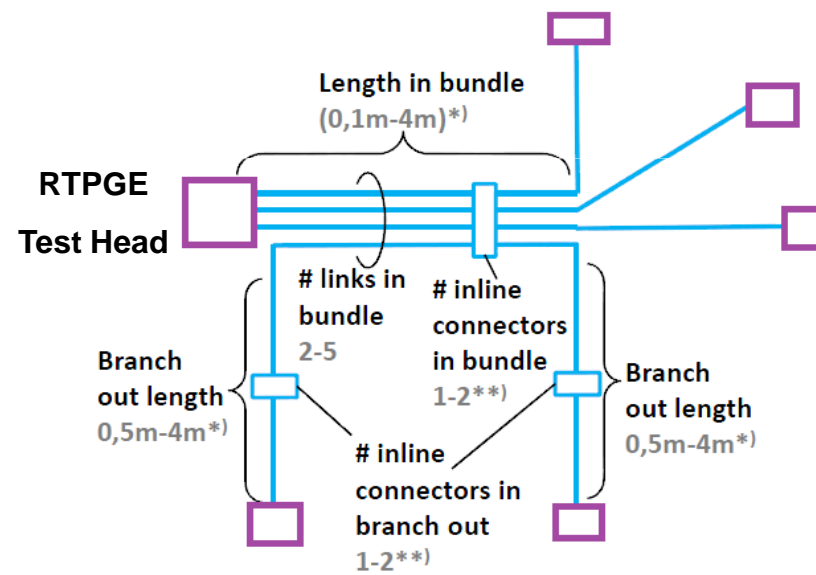
# RTPGE Test Head Proposal

## Simulation and Measurements

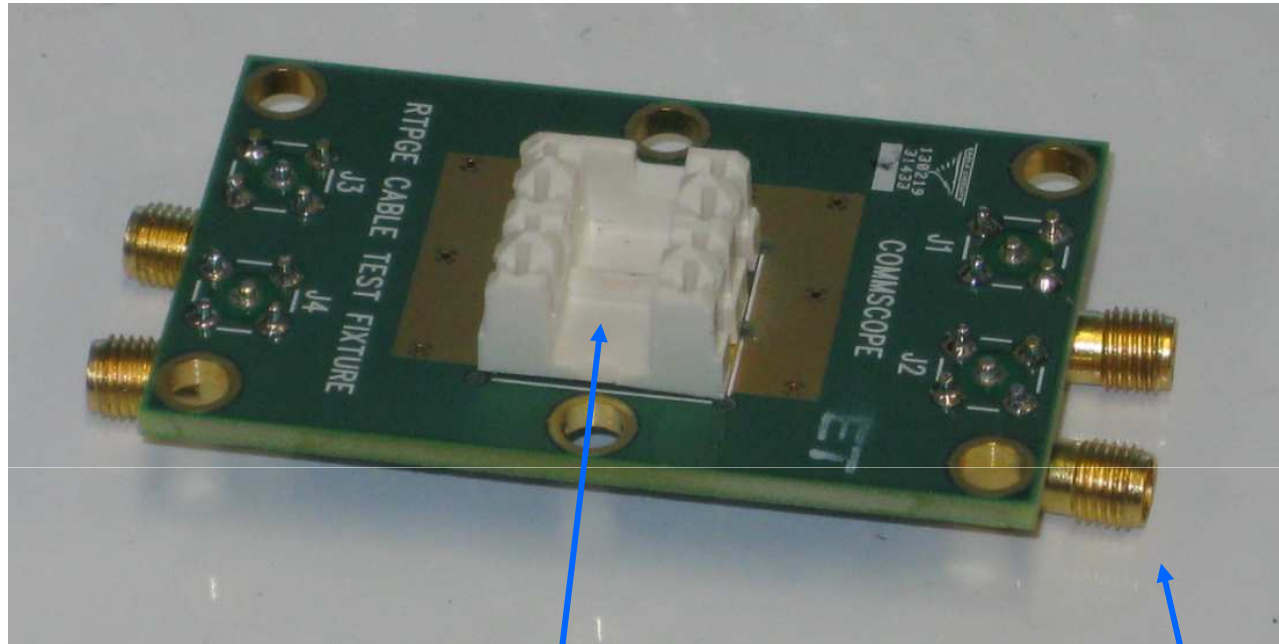
Bryan Moffitt, CommScope



## IDC based Channel Test Proposal



# RTPGE test head



2 pair IDC  
punch block

4 SMA ports

## RTPGE Test Fixture (PCB Layout and Simulation)

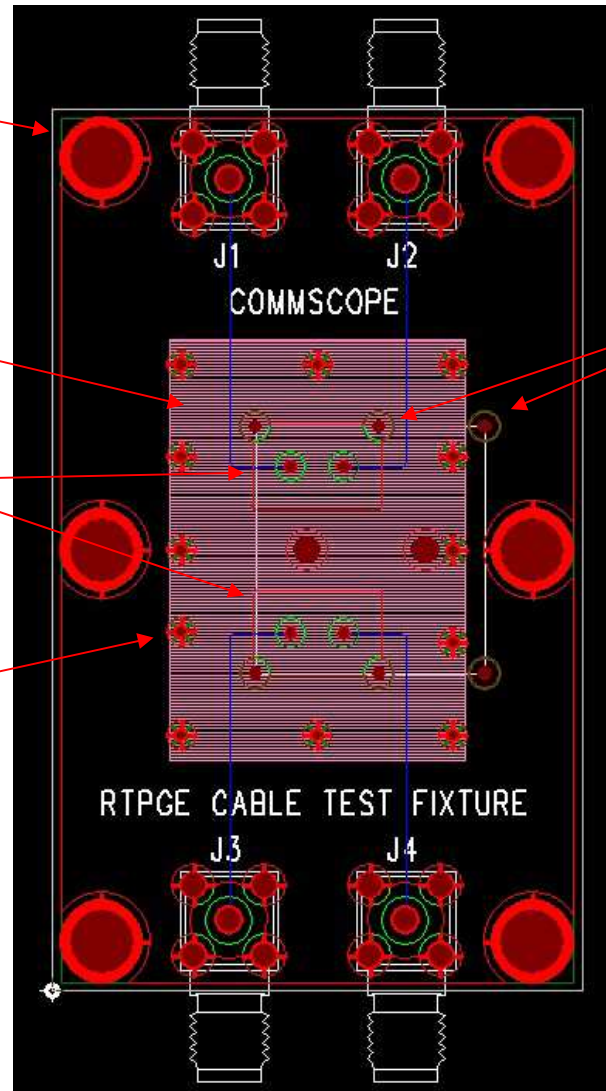
Plated through-holes  
for mounting and grounding

Solder mask opening  
exposes ground plane

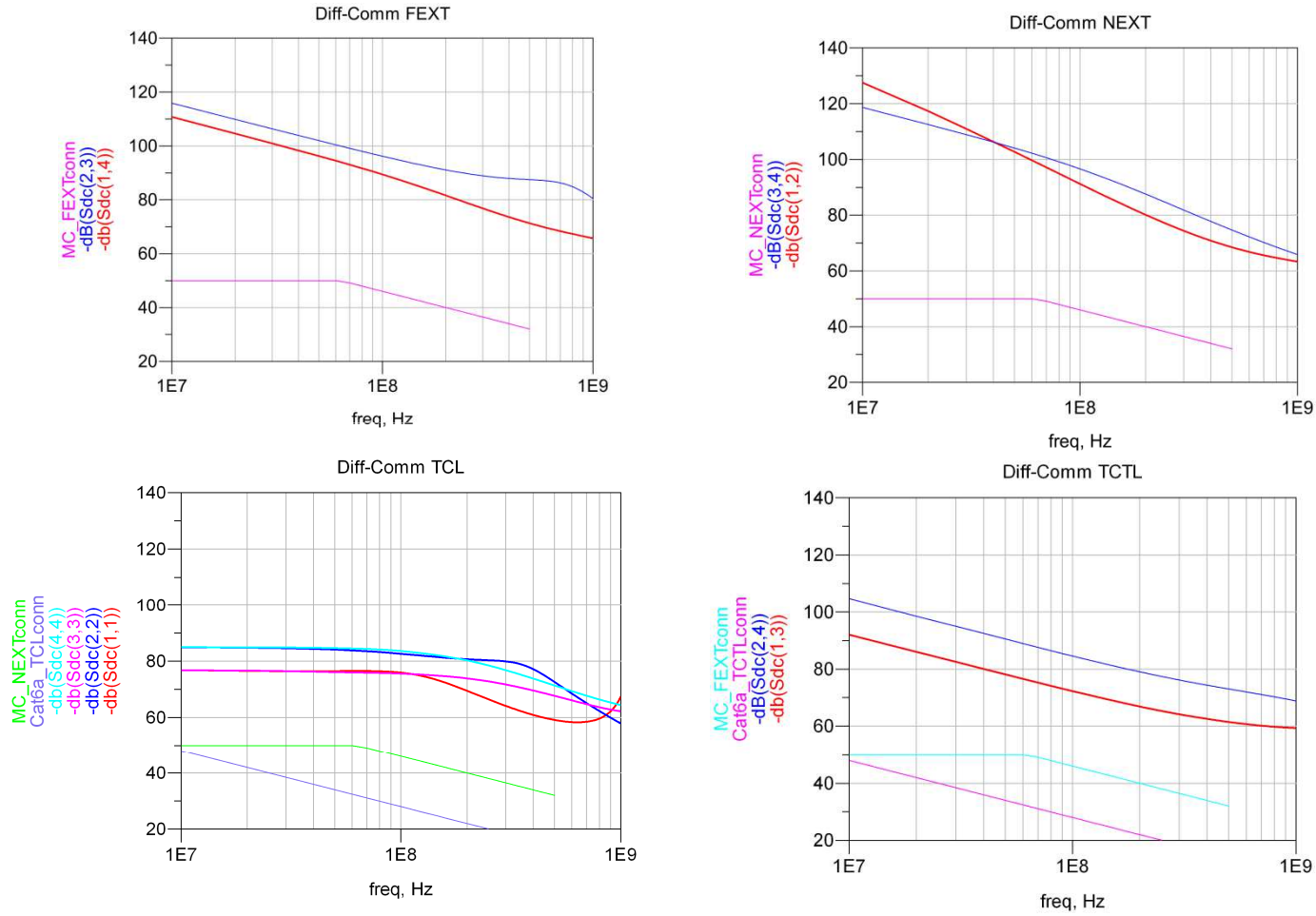
No ground plane  
under IDCs

Thermally relieved vias  
Sized for up to  
22 AWG wire

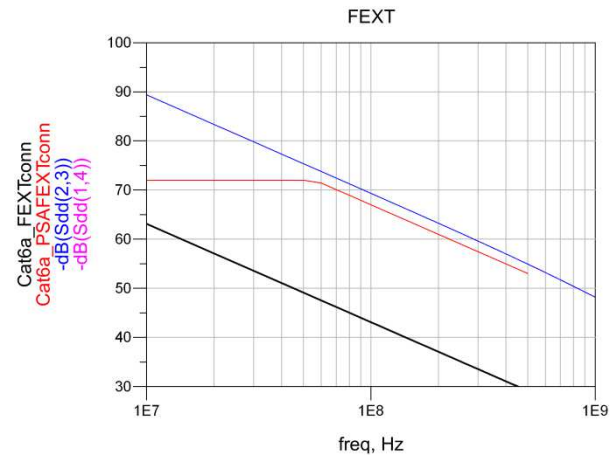
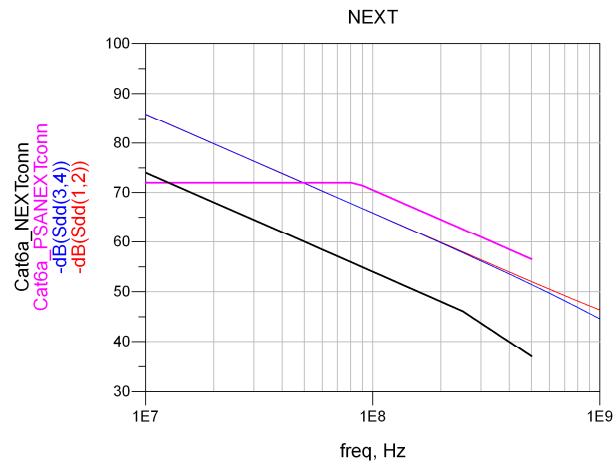
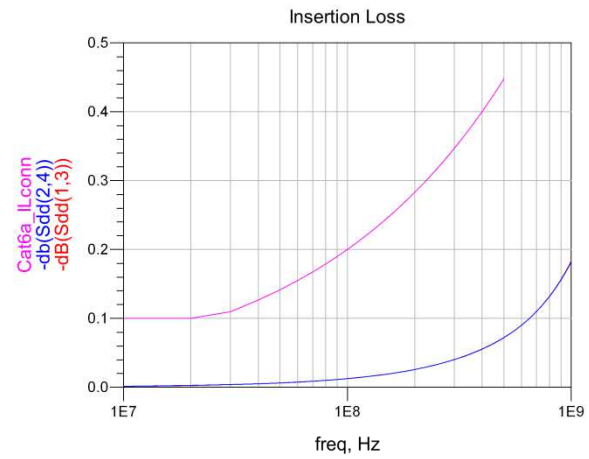
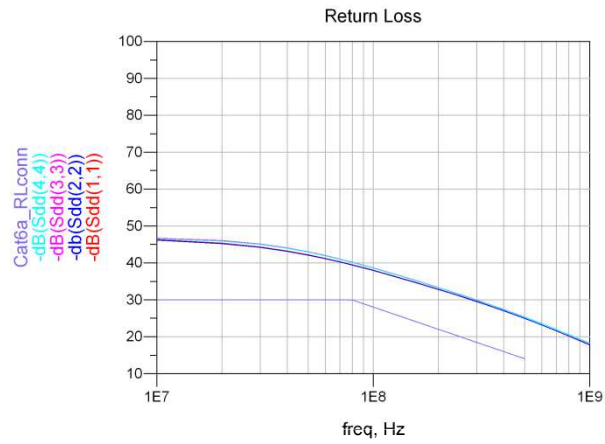
Non-plated through-holes  
to epoxy plastic housing to PCB



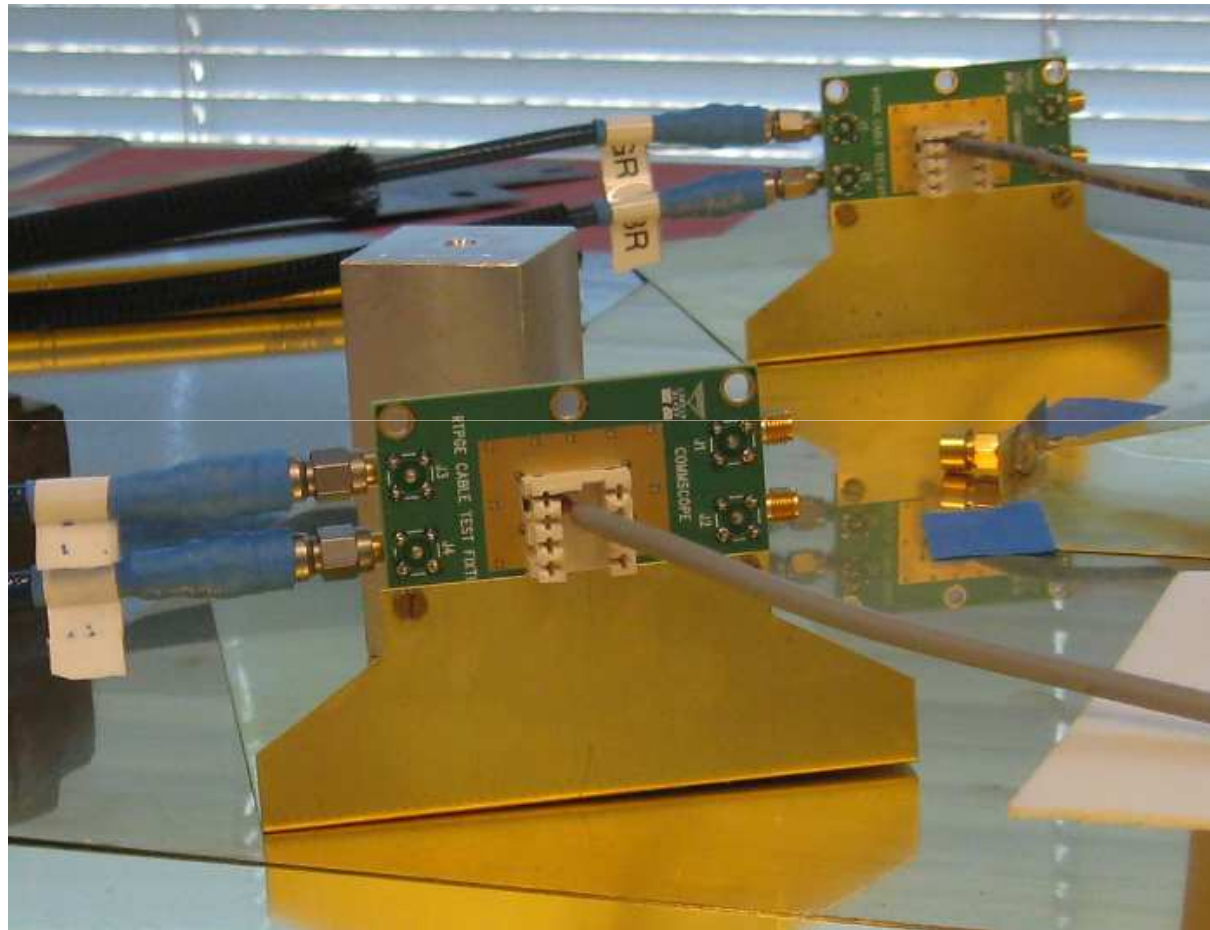
# Simulation Balance



# Simulation Differential



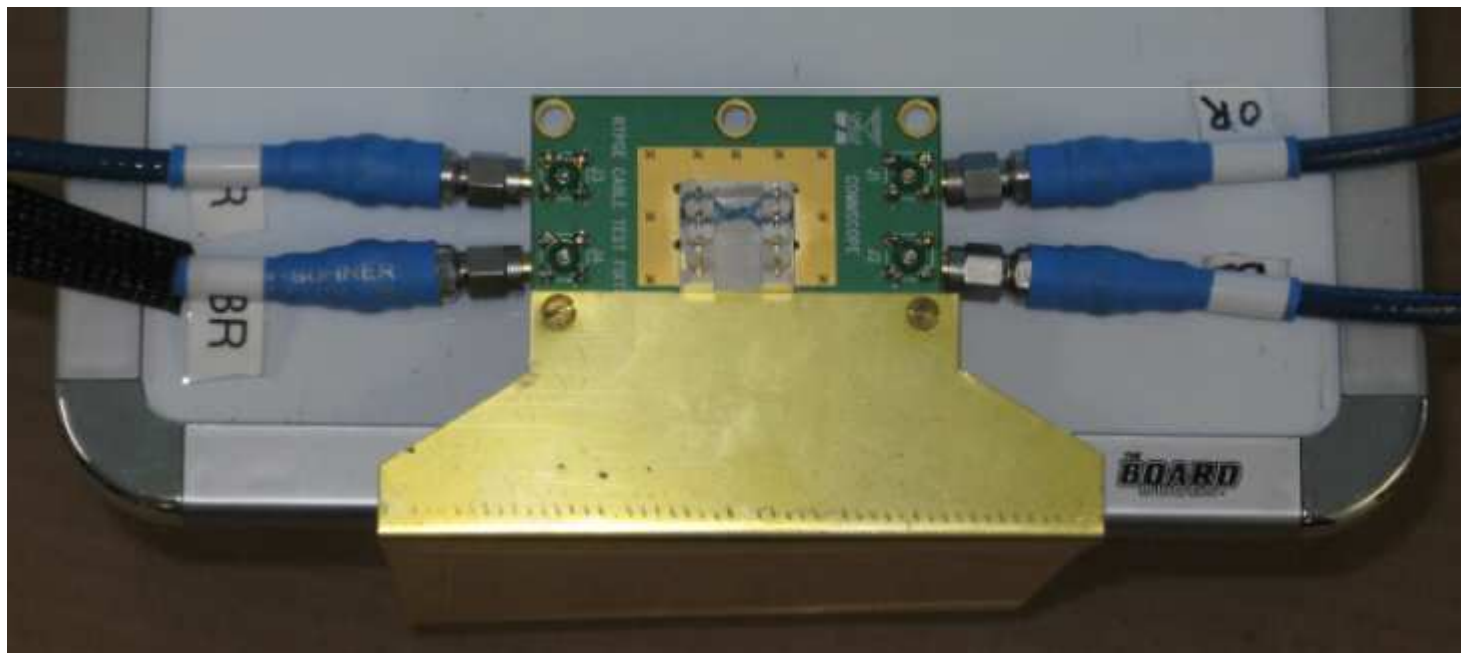
Mounted on ground reference holder plates  
(shown driving 1 pair cable)



The easiest way to measure the head:

With a 100  $\Omega$  pair punched in as a thru connection -

- Mode conversion better than 43 dB @ 500MHz with centered punch (plus 6dB for each port)
- RL better than 27 dB @ 500MHz with tight entry
- IL better than 0.3 @ 500MHz dB

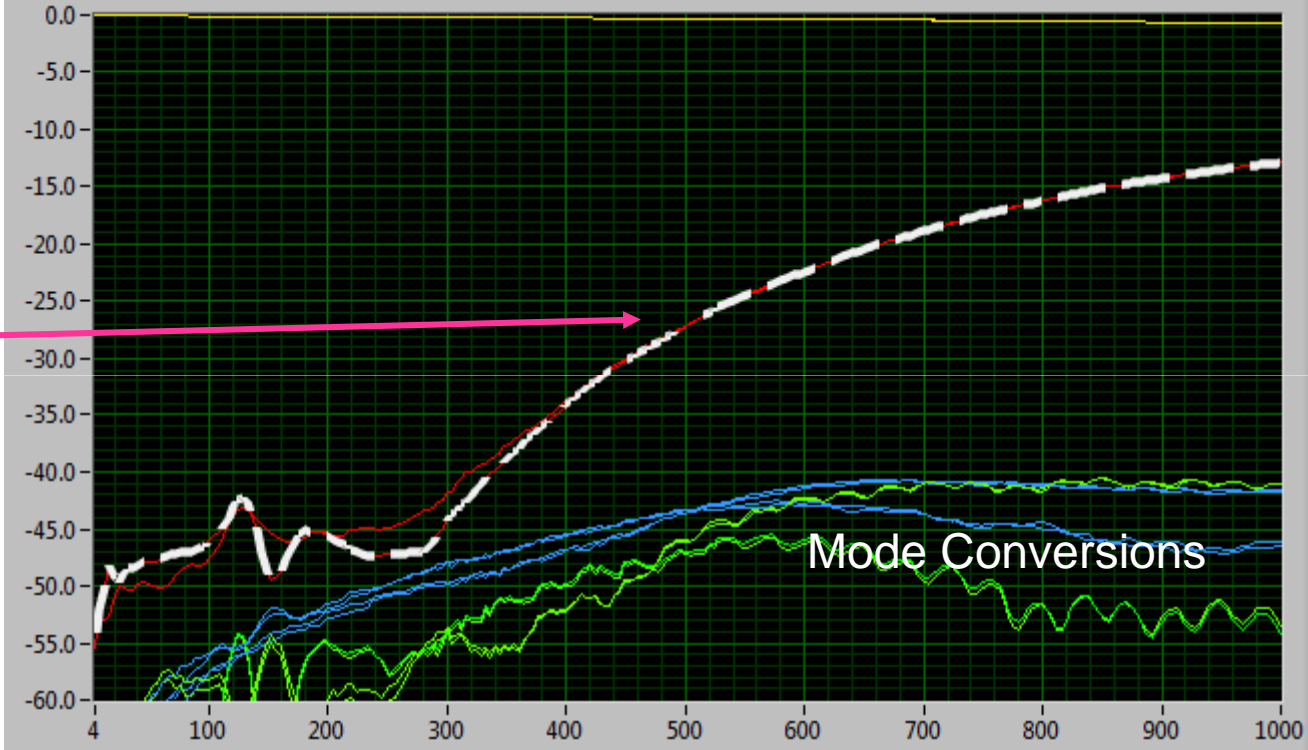


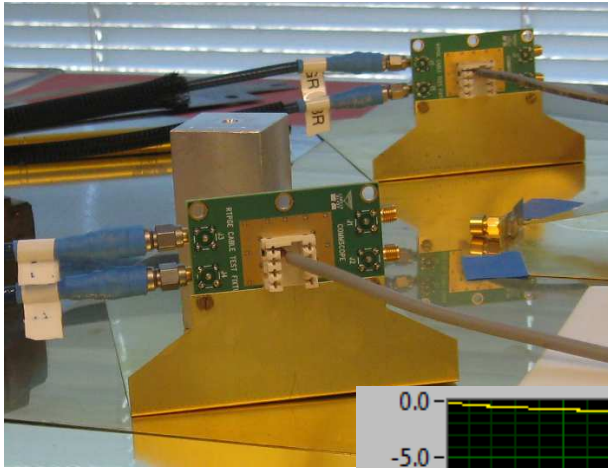


# RTPGE test head measurement

0.3 dB IL  
@ 500 MHz

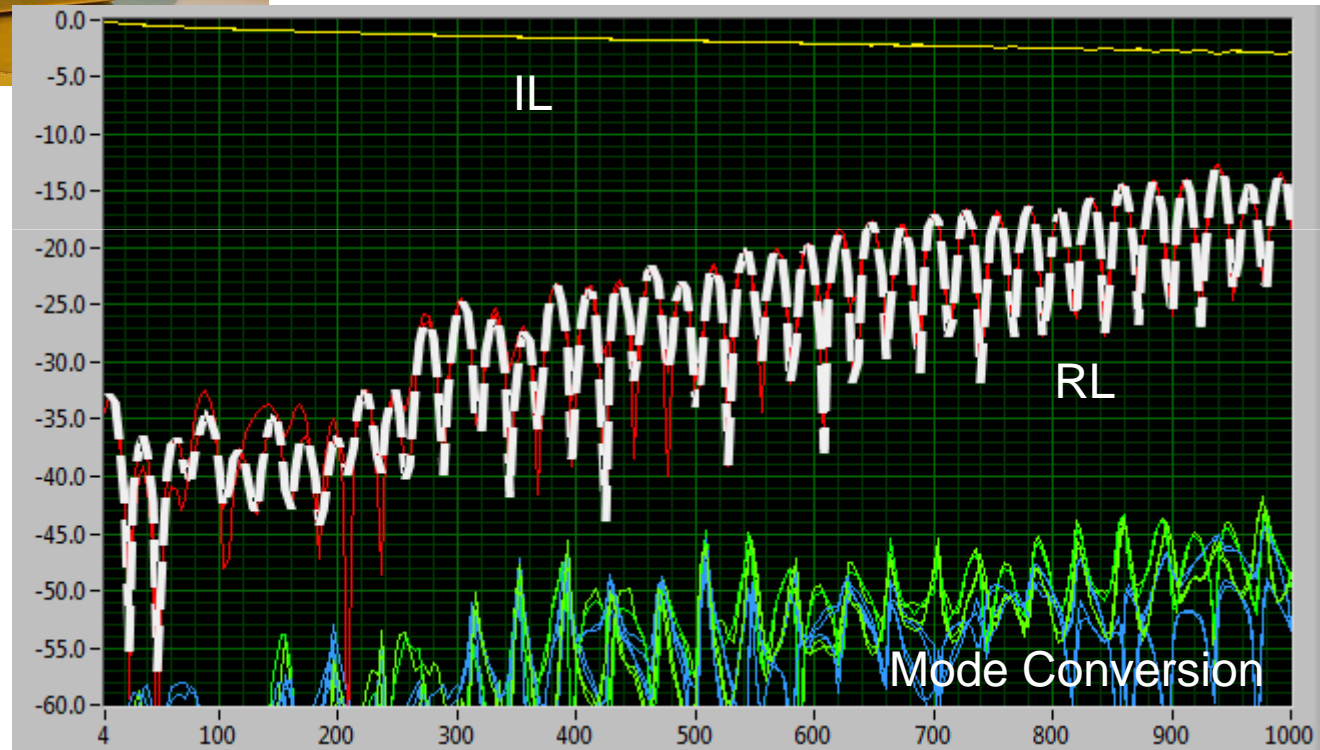
27 dB RL  
@ 500 MHz



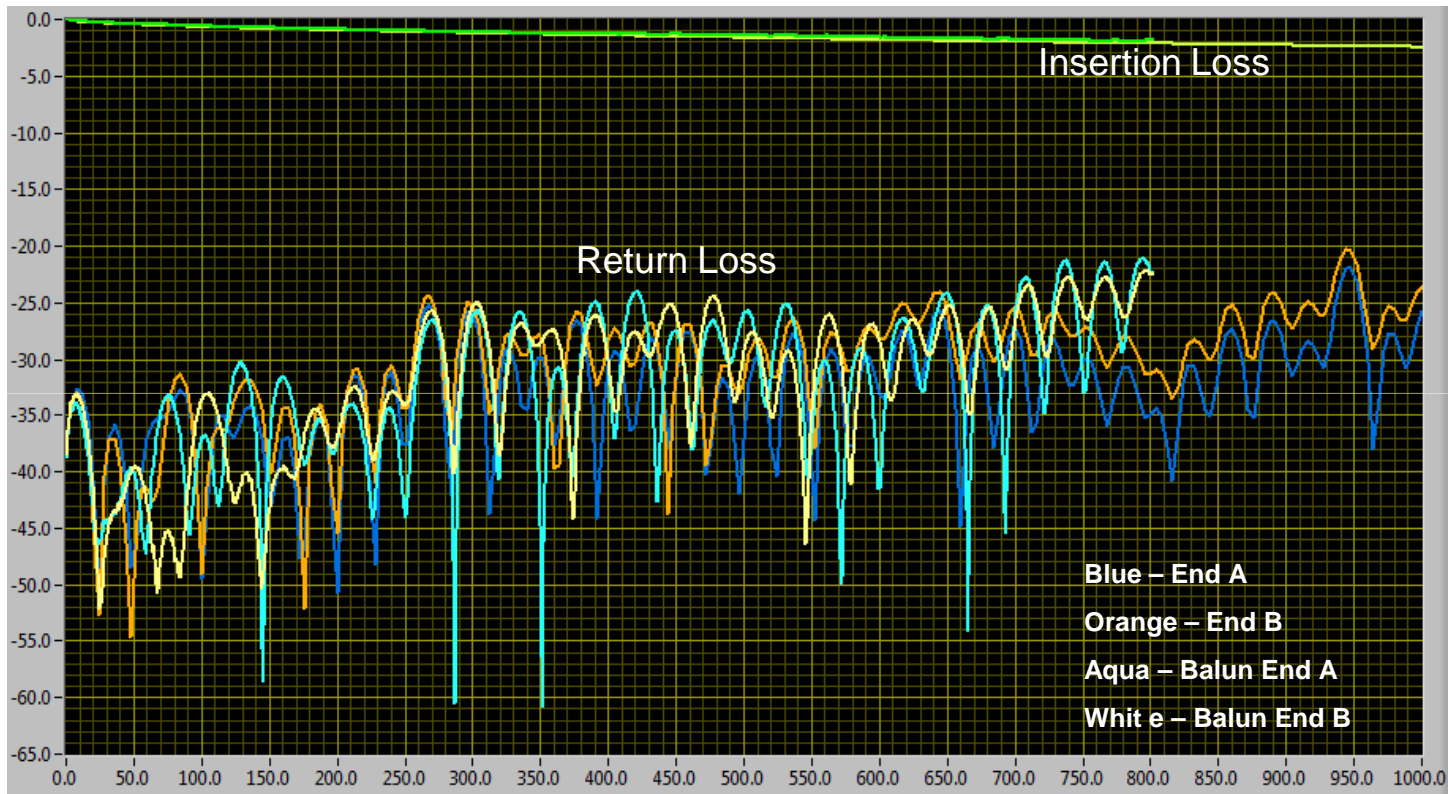


Measuring 1 pair 100  $\Omega$  cable  
(3.5 meters)

Well behaved  
out to 1 GHz  
Suitable for  
EMC work

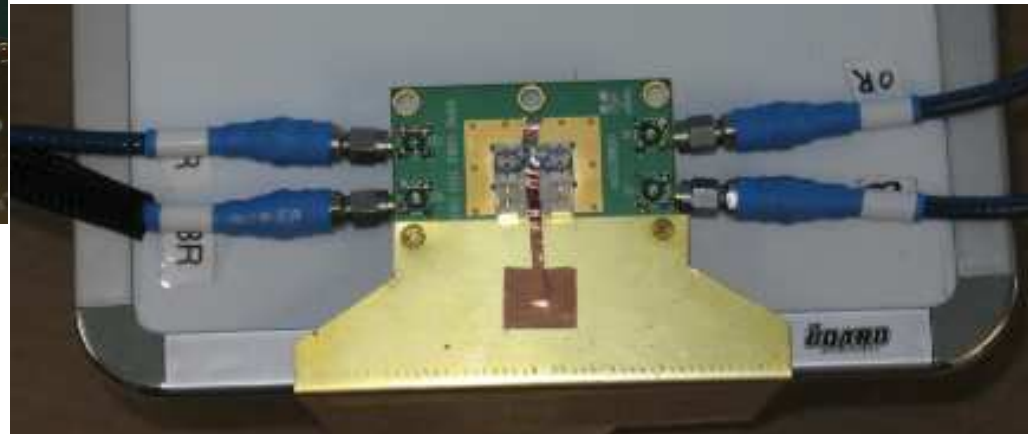


Comparison with BALUN based 800 MHz measurement system  
(Using initial RTPGE Test Head de-embedding)



Measuring NEXT requires separate pairs with a Far End grounded quad termination pack

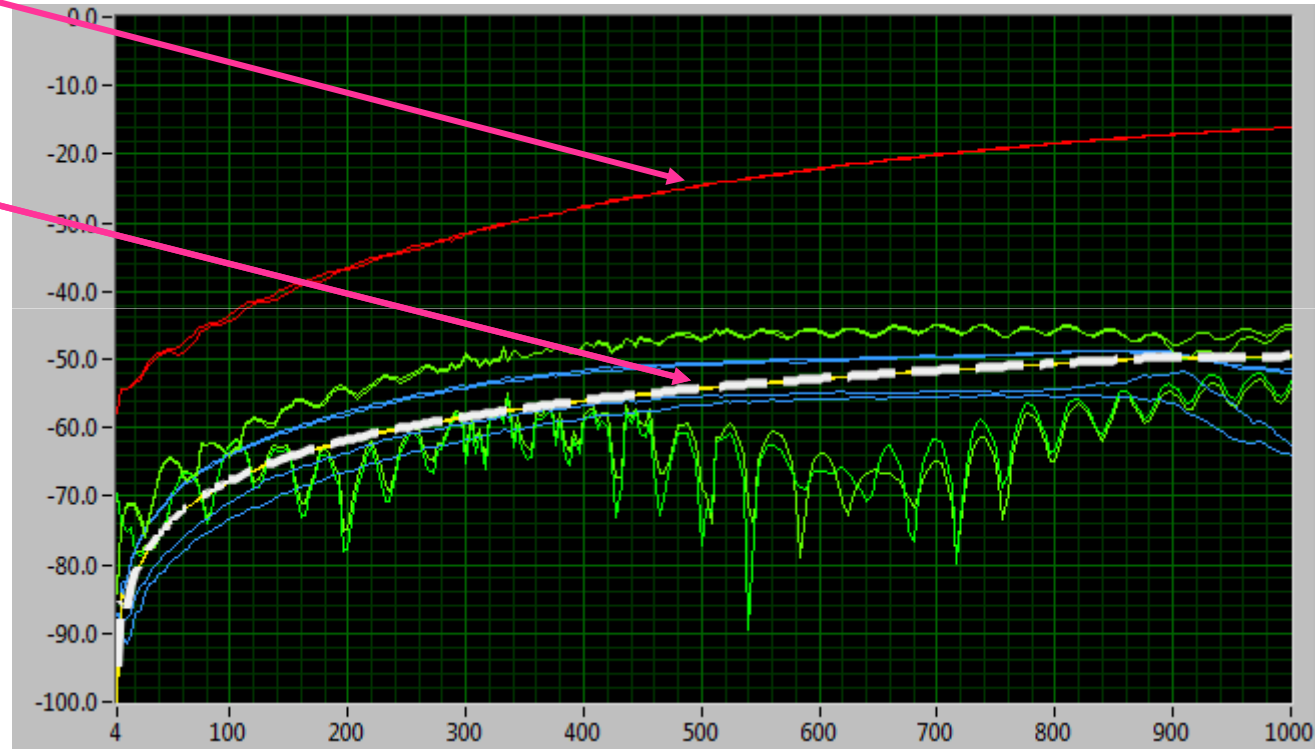
- Mode conversion better than 46 dB @ 500MHz
- RL better than 24 dB @ 500MHz
- Differential NEXT better than 54 dB @ 500MHz



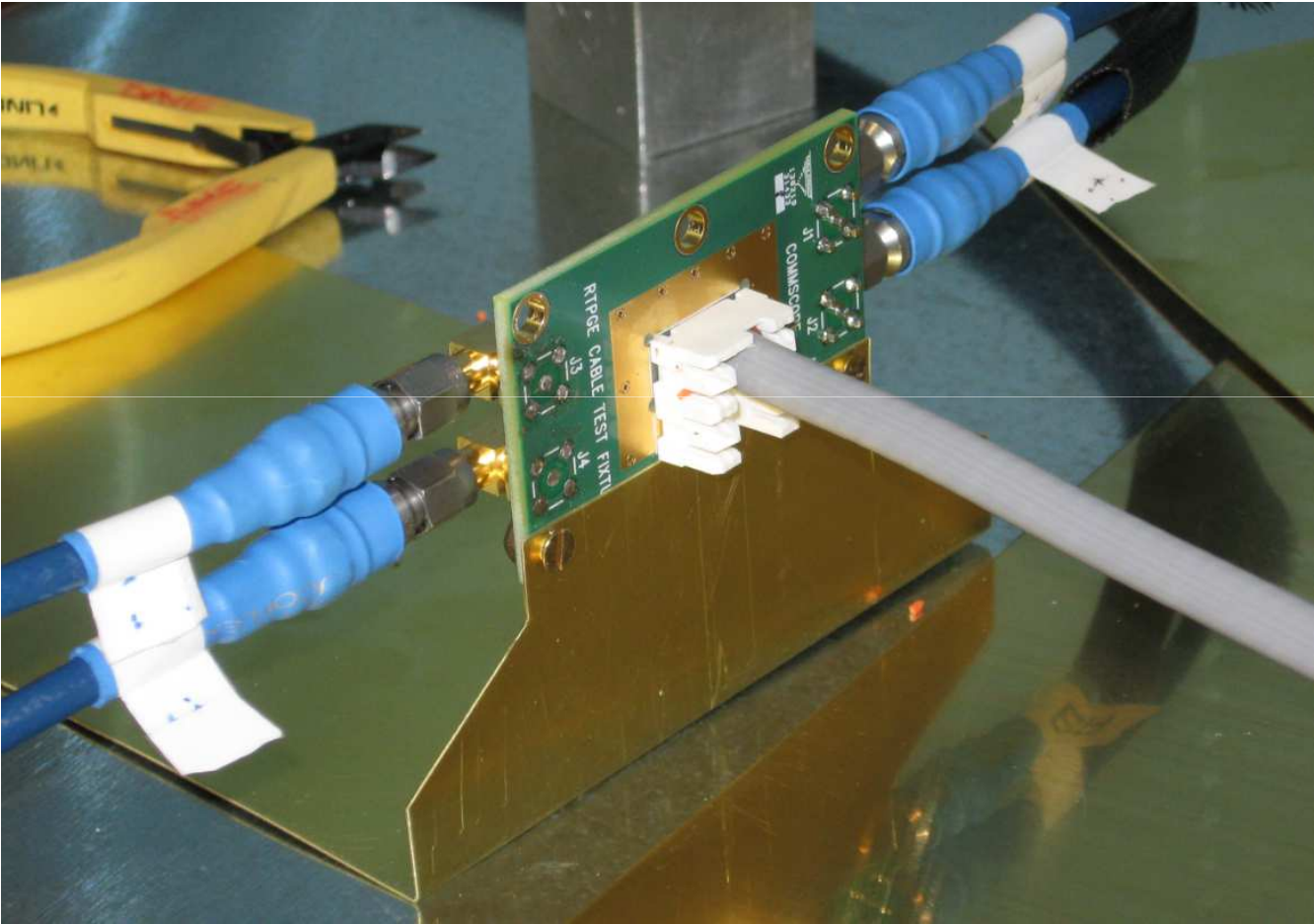
# Test Head NEXT Measurement Results

24 dB RL  
@ 500 MHz

54 dB  
NEXT @  
500 MHz



High performance 2 pair cable terminated



## 2 Pair Cable NEXT Measurement

Consistent  
NEXT result

