

# Balance measurements of prototype Cat 8 cable

CommScope - 4/16/2014

# Introduction

- Contributors CommScope/BetaLaserMike
- Measure RL, TCL and TCTL using three different test platforms
- Consider difficulties encountered in comparing test platforms
- RL data
- TCL data
- ELTCTL data

## Conclusions from earlier work

- Current AXT specs are within reach for shielded cables
- TLT baluns are capable of evaluating **differential** alien crosstalk to frequencies beyond 2 GHz
- TLT baluns **were not** capable of evaluating common mode parameters

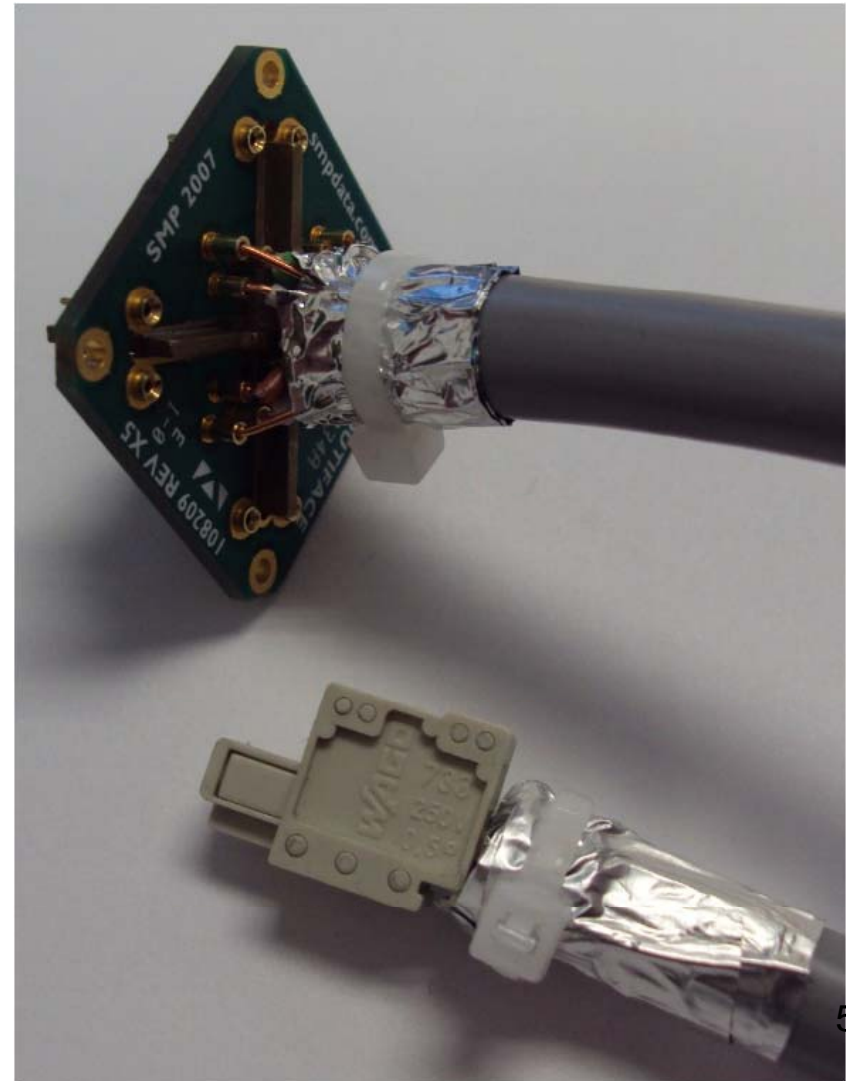
# Measure RL, TCL and TCTL three different ways

## Cat 8 prototype cable

- 50m in length
- Shielded 4 pair cable
- Single-wire test platform (SWTP)
- Conventional balun-based platform  
( $f_{\max} = 650 \text{ MHz}$ )
- TLT balun-based platform  
( $f_{\max} = 2 \text{ GHz}$ )

# Consider difficulties encountered in comparing test platforms

- Different hookups based on the test platform under use
- SWTP made use of cards
- Balun measurements made use of cage-clamp style connections



# Consider difficulties encountered in comparing test platforms

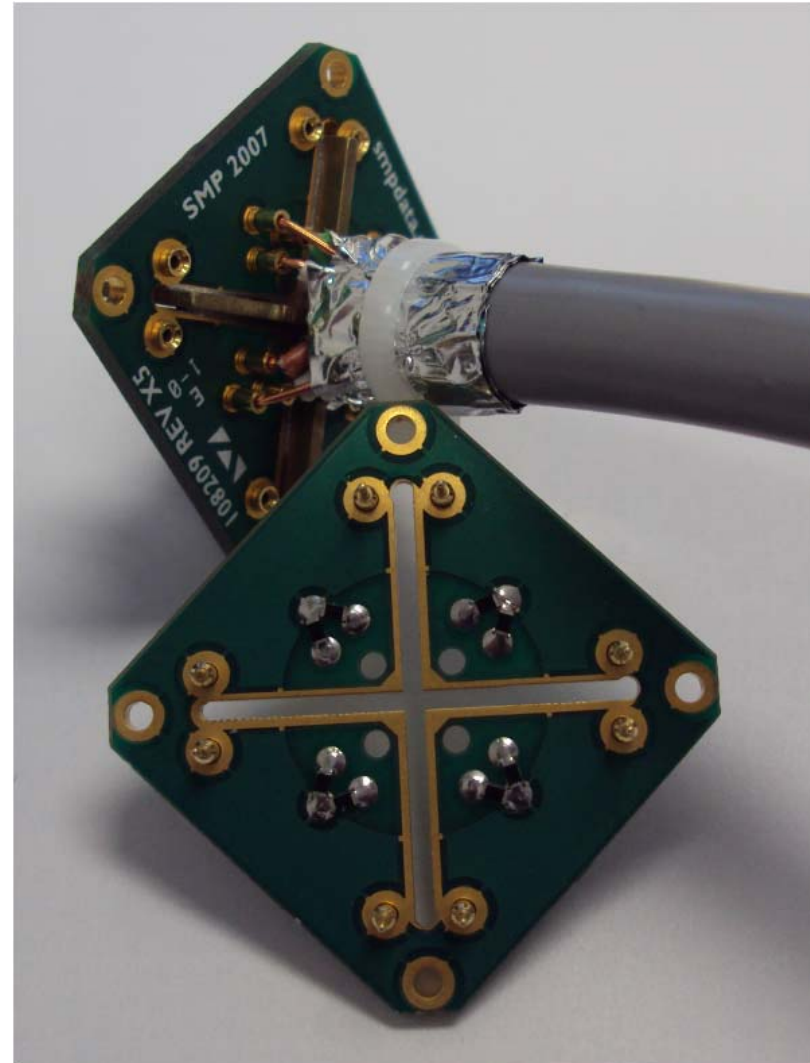
- Different termination at NE for TCL

Terminated on card with differential resistors for each wire and a common mode short-circuit

- Different termination at both ends for ELTCTL

Terminated on card with differential resistors for each wire and a common mode short-circuit

Short-circuited to body of balun

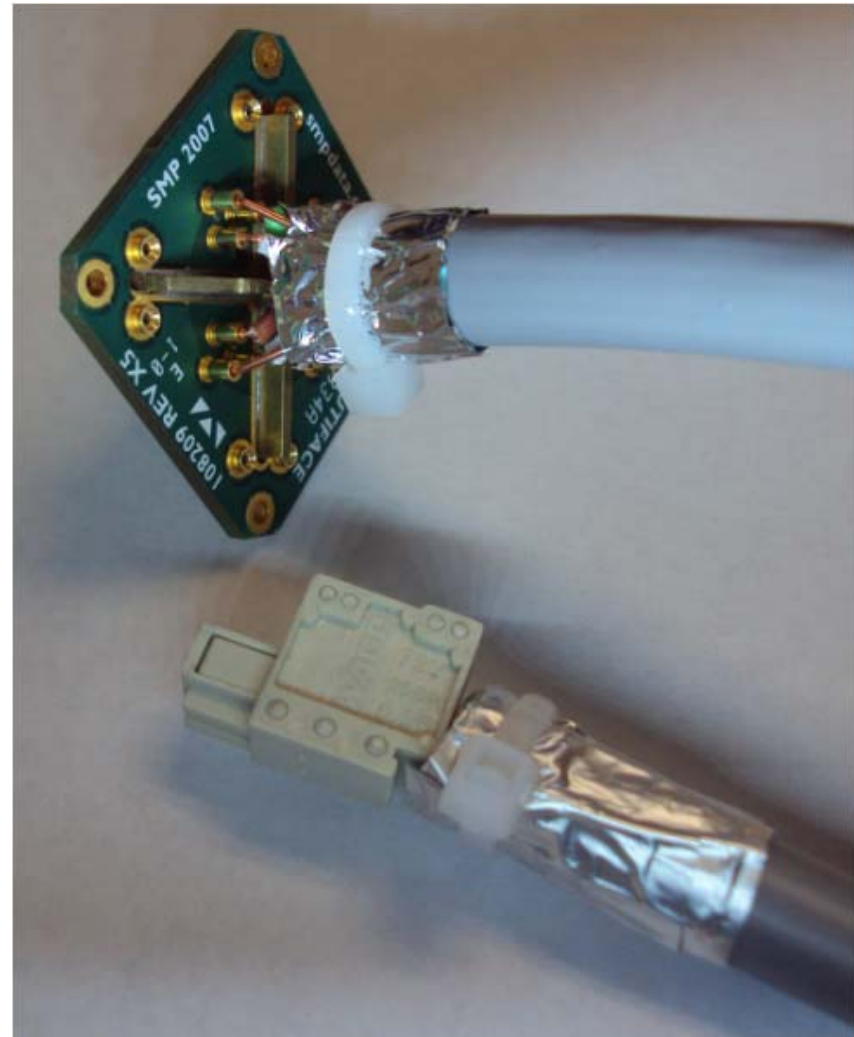


# Consider difficulties encountered in comparing test platforms

For RL and TCL, the same end of the same cable was measured

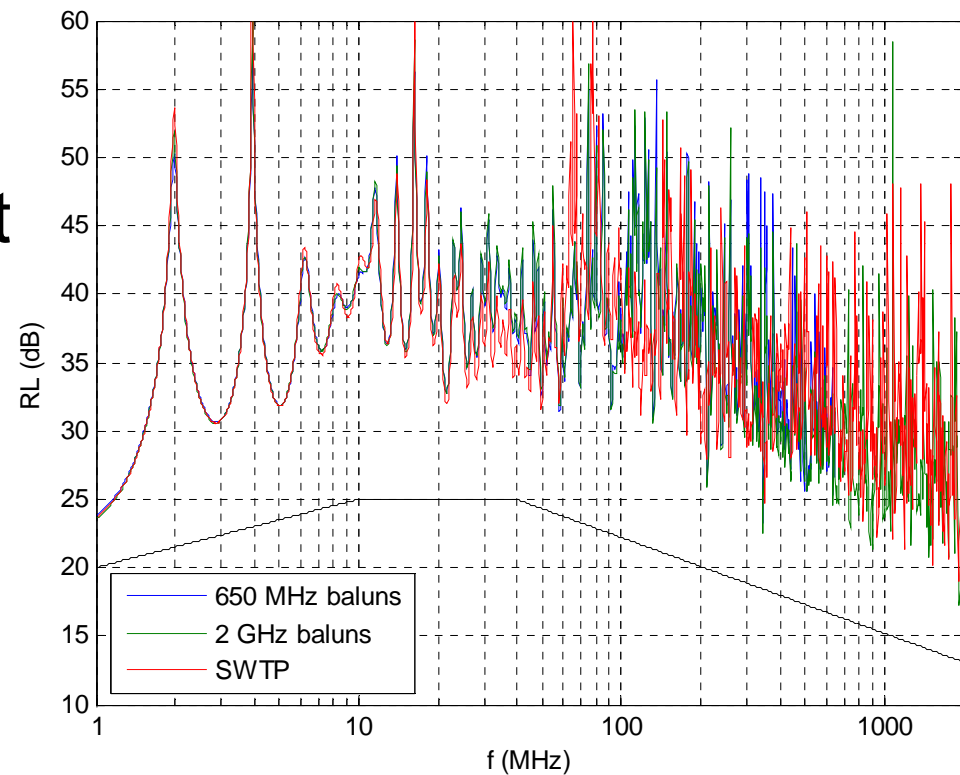
- on SWTP
- then on set with  $f_{\max} = 2 \text{ GHz}$
- then on set with  $f_{\max} = 650 \text{ MHz}$

The FE remained terminated on the SWTP



# RL data

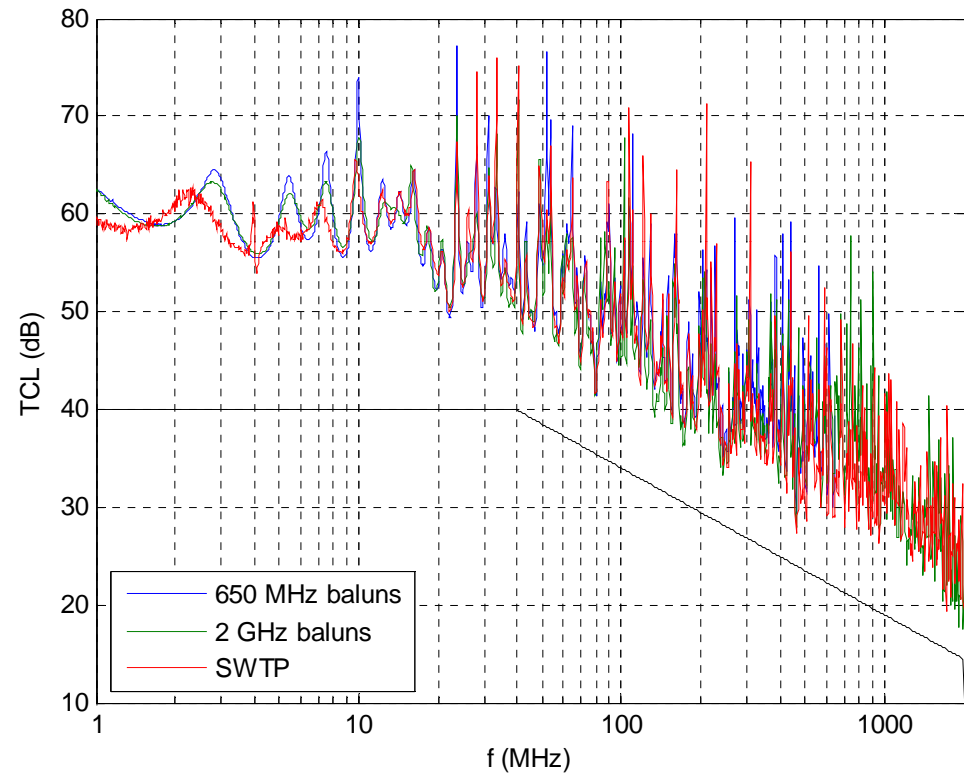
- Very similar at low frequency
- Small differences exist between balun and SWTP at high frequencies
- The slight differences may be due to unavoidable movement of cable





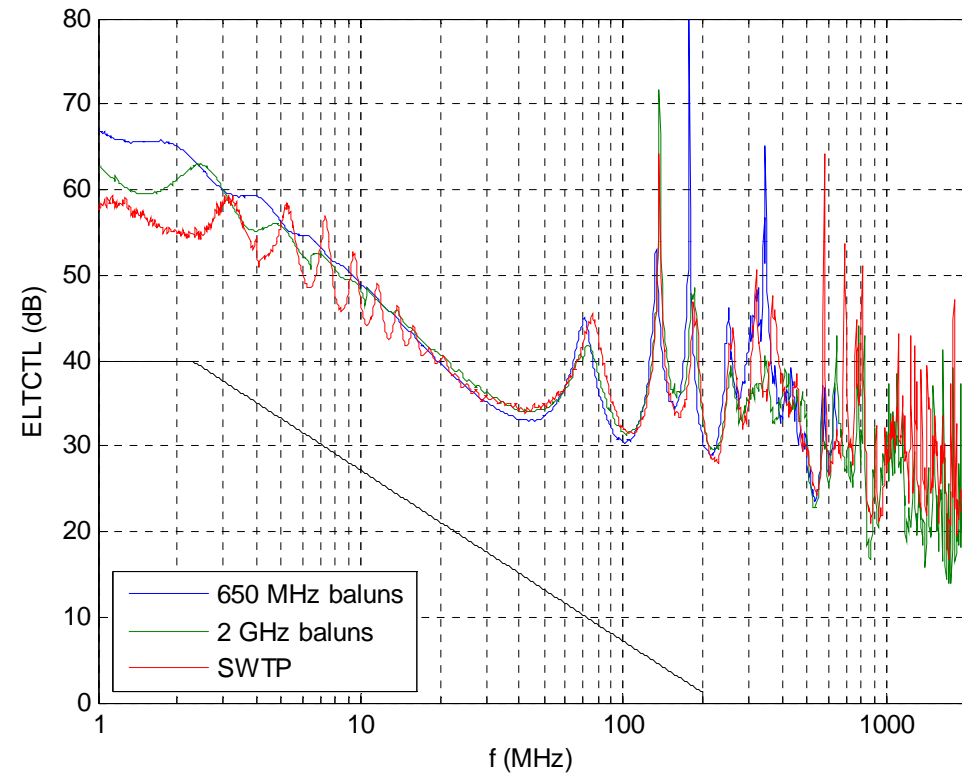
# TCL data

Agreement between  
three methods even  
with considerable  
common mode  
termination  
differences



# ELTCTL data

- SWTP demonstrates low frequency ELTCTL oscillation
- Agreement between three test platforms after 20 MHz



# Conclusions

- TLT baluns are capable of evaluating differential parameters (RL, AXT)
- TLT baluns are also capable of evaluating CM parameters (TCL, TCTL)
- Thanks to Beta Lasermike for allowing us to evaluate the 2 GHz DM/CM TLT baluns