



**TERASPEED  
CONSULTING  
GROUP**

# PLRD-01

## Physical-Layer Reference Design

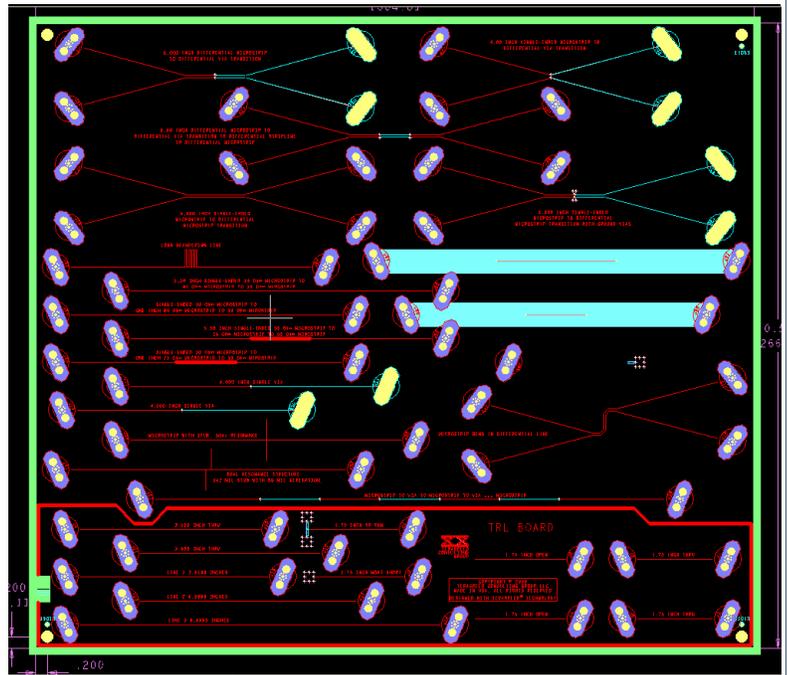
**PRELIMINARY**

### System Highlights

- TRL calibration:  $S_{21} \pm .03\text{dB}$  typical to 20GHZ
- Tuned SMA launches
- Beatty Standards
- Tuned and non-tuned via fields
- Mixed mode S-parameter structures
- Spiral inductors
- Single and offset resonators
- Differential coupled VIA systems
- Memory stick included with calibrated S-parameter Touchstone measurements
- ADS2008 Project modeling of all structures in Momentum
- Simbeor 2008 models of all structures
- Application notes included:
  - Material Properties Extraction
  - De-Embedding Made Easy

### Applications

- Measure-based methods analysis
- Material properties extraction tool
- Calibration verification
- Benchmark 3D field solver
- Correspondence
- Signal integrity training
- Physical layer reference design



**Physical-Layer Reference Design PLRD-01**

### General Description

The PLRD-01 is a significant board design comprised of a large host of test structures with on-board VNA calibration for each structure. Accompanying this board level product are several application tools useful for establishing user-specified calibrations; carefully measured S-parameter measurements which are de-embedded by both TRL and T-matrix methods in ADS. Models of all structures in ADS2008 and Simbeor 2008 are provided. Supporting collateral includes an application note on material properties extraction.

All calibrations and measurements are verified up to 20 GHz, which make analysis of this product useful for development up to 10 Gbspec.

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## Product Description

### On Board VNA Calibration:

- TRL Calibration
  - Line 1,2,3, Thru, Reflect
- LRM Calibration
  - Line 1,2,3, Thru, Reflect, Matched
- SOLT Calibration
  - Short, Open, Load, Thru
- TRL, LRM Documentation for Self Start Cal
- Material Extraction ( $D_k$ ,  $D_r$ , W-element, RLCG) Application Note
- Spreadsheet for User Defined Calibration Structures

### On Board Structures:

- Single-Ended Microstrip
- Single-Ended VIA, non-tuned
- Single-Ended VIA, tuned
- Single-Ended 0402 passive capacitor
- Resonator
- Offset Resonator
- 2 Beatty Standard's (25 and 90ohms)
- Serpentine Tightly Coupled
- Layer Transition with 4 Layers
- Differential Coupled Lines
- Differential line and Coupled VIA transition
- Coupled VIA transition
- Differential line and Tuned Coupled VIA transition
- Differential line and 2 Coupled VIA transition
- Differential Coupled mitered 90degree bend
- Differential Coupled two mitered bends, +90 degrees and -90 degrees

### Supporting Collateral:

- ADS Project of all structures using Momentum
- Simbeor physical layer defined models
- Correspondence Data Model versus Measurement
- Spreadsheet for establishing TRL and LRM user specified calibration requirements
- Documentation explaining TRL, LRM calibration
- Measurements of all structures in Touchstone format

## Ordering Information

Mfg Part Number	Pricing
PLRD-01	\$17,950