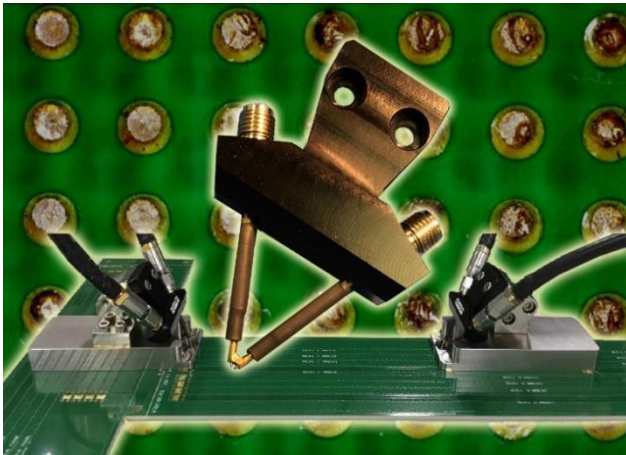


# D-Probe

Rugged 40/20 GHz differential probe (signal-signal only)



## Features:

- **High Bandwidth:** DC to 40 GHz
- **Low Insertion Loss:** < 3 dB @ 40/20 GHz
- **Signal-Signal Only:** Accurate S-parameter and TDR measurements without the need of nearby ground pads
- **Ruggedness:** Strong enough for direct probing of uneven solder bumps
- **High Repeatability:** No moving parts
- **Applications:** Measurements for Delta-L+ PCB, DDR memory, PCIe, USB, HDMI, Display Port, and 100 Gigabit Ethernet boards

## Overview

D-Probe series is designed for signal integrity and RF testing. Its strong beryllium copper (BeCu) tips are perfect for direct probing of test pads on uneven surfaces, such as solder bumps. With only two signal pins, D-Probe can perform accurate measurements without the need of nearby ground pads. For example, many DDR chips do not have enough ground pins around their differential signals. In this case, typical GSSG probes cannot be used.

Recent advancement in 2X-Thru de-embedding methodology makes the D-Probe ideal for signal-integrity measurements. There is no need to perform the 4-port probe-tip calibration that is laborious and time-consuming. A 4-port electronic calibration at the cable connectors can be done in minutes.

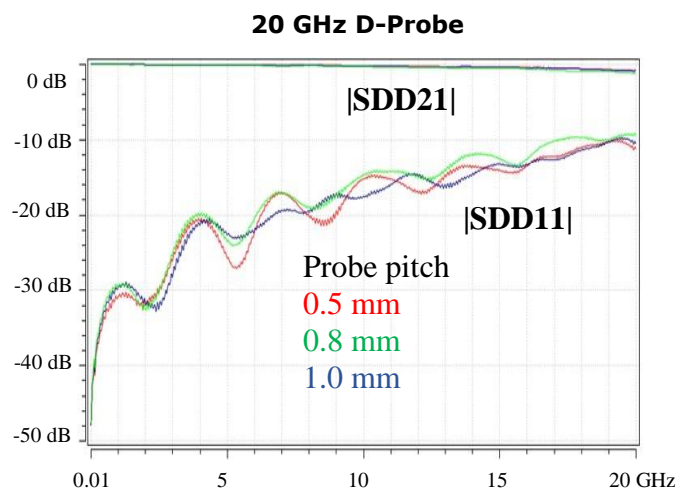
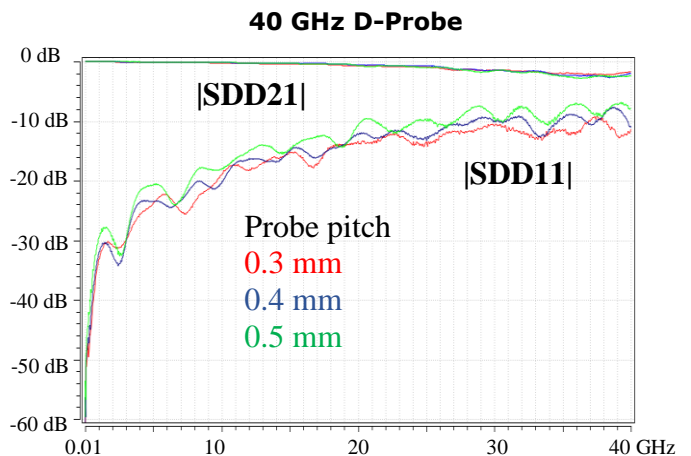
The user experience of D-Probe is similar to that of the microprobe. TP250 Precision Positioner allows an engineer to switch between the D-Probe and microprobe easily.

## Specifications

- **Bandwidth:** up to 40/20 GHz
- **Insertion Loss:** less than 3 dB @ 40/20 GHz
- **Impedance:** 100±3 Ohm
- **Connector Type:** 2.92mm/SMA Female
- **Size:** 51 x 38 x 12 mm (2 x 1.5 x 0.5 in)
- **Probe force:** 80 gm (typical)  
350 gm (max w/o damage)

## 20 GHz D-Probe Part No.

- **DP-SS-201504** – 20 GHz, 0.4 mm/16 mil pitch
- **DP-SS-201505** – 20 GHz, 0.5 mm/20 mil pitch
- **DP-SS-201508** – 20 GHz, 0.8 mm/32 mil pitch
- **DP-SS-201510** – 20 GHz, 1.0 mm/40 mil pitch
- **DP-SS-201512** – 20 GHz, 1.2 mm/48 mil pitch

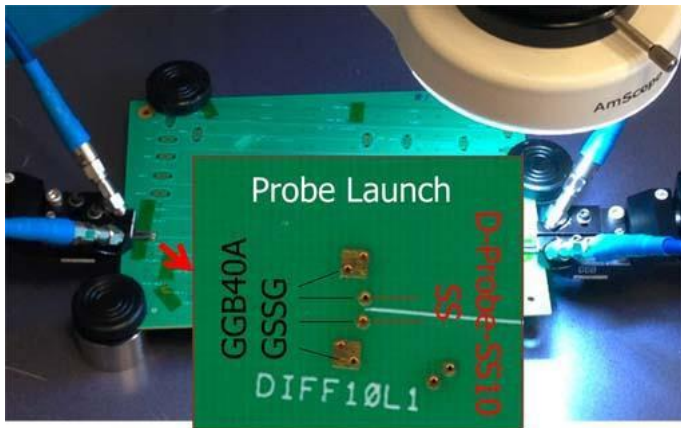


## 40 GHz D-Probe Part No.

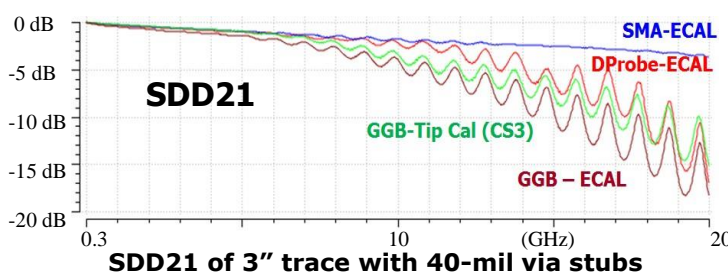
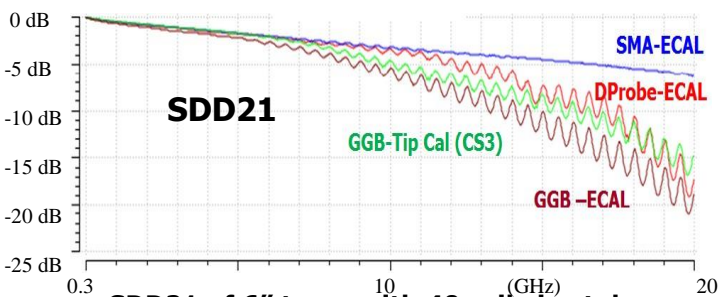
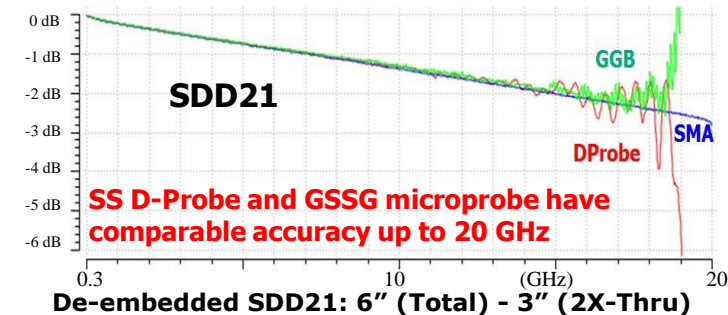
- **DP-SS-401503** – 40 GHz, 0.3 mm/12 mil pitch
- **DP-SS-401504** – 40 GHz, 0.4 mm/16 mil pitch
- **DP-SS-401505** – 40 GHz, 0.5 mm/20 mil pitch

## S-Parameter Measurement

With de-embedding tools, such as AITT-SFD, SS-only D-Probes and GSSG microprobes provide comparable accuracy. Measurement data of a Megtron-6 PCB with various differential striplines and via stubs are used for the comparison among the D-Probes, GGB40A-GSSG probes, and 26-GHz SMA connectors. Special probe launch is designed to allow both D-Probes and GGB microprobes to probe the identical traces.

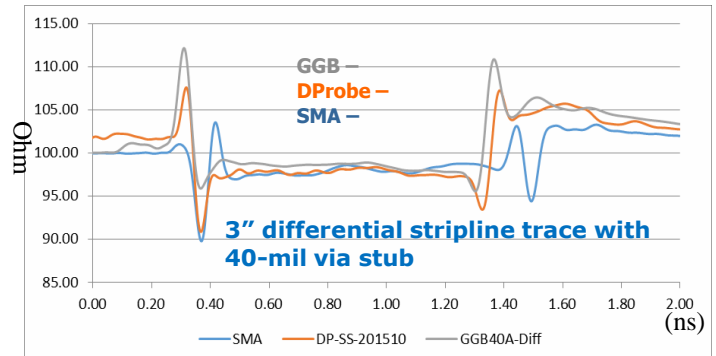


**PCB Transmission Line Measurements**



## TDR Measurement

D-Probe is also ideal for TDR measurements that are essential to the development of high-speed CPU, FPGA, and Flex printed circuit boards.

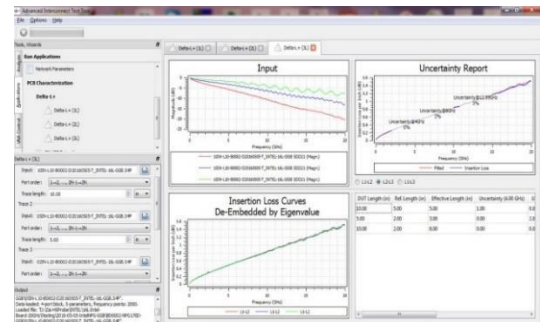


## Delta-L+ PCB Test Solution

This 40 GHz solution includes two DP-SS-401505DL handheld probes and AITT-DLP tool for Intel Delta-L+ PCB characterization methodology.



**DP-SS-401505DL Hand Probe for Delta-L+**



**AITT-DLP Delta-L+ Software Tool**

## Accessories

- DP-SS-201510DL (20 GHz Delta-L+ hand probe)
- AITT-DLP (Delta-L+ software tool)
- D-Probe Handle (DP-Hand01) for hand probing
- D-Probe Hand-probe kit (DP-Hand01-Kit)
- TP250 4D (xyzθ) Precision Positioner



D-Probe on TP250



DP-Hand01



DP-Hand01-Kit

## Excellent Repeatability of DP-SS-201510DL for Delta-L+ Probe Launch



L10	4 GHz	8 GHz	12.89 GHz
T1	0.402	0.691	1.029
T2	0.404	0.694	1.034
T3	0.403	0.693	1.038
T4	0.401	0.693	1.035
T5	0.404	0.698	1.045
T6	0.402	0.692	1.032
T7	0.404	0.694	1.036
T8	0.404	0.695	1.037
T9	0.404	0.696	1.037
T10	0.402	0.692	1.026
Average	0.403	0.694	1.035
Max	0.404	0.698	1.045
Min	0.401	0.691	1.026
Range	0.003	0.007	0.019
$\sigma$	0.001	0.002	0.005
Average+ $\sigma$	0.406	0.700	1.051

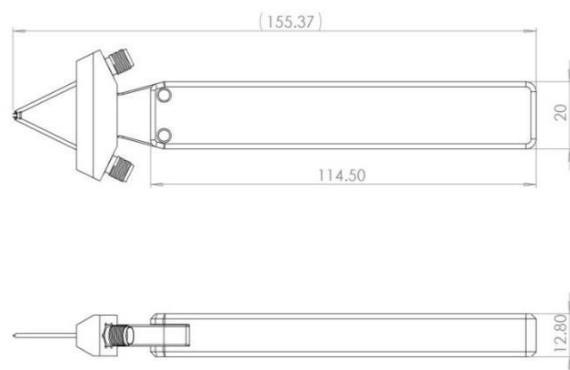
### Excellent Repeatability

DP-SS-201510DL handheld probe is specifically designed for Intel Delta-L+ methodology and has excellent repeatability due to its constant probe force and launch angle. The left table shows that 10 different tests are performed on the same differential trace. The standard deviation is less than 0.005 dB @ 12.89 GHz.

### About PacketMicro

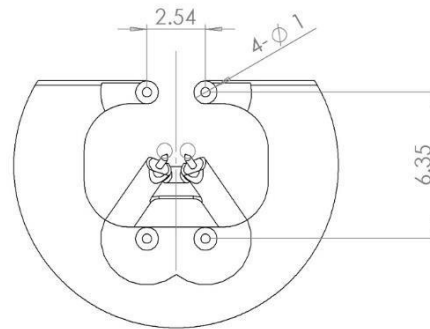
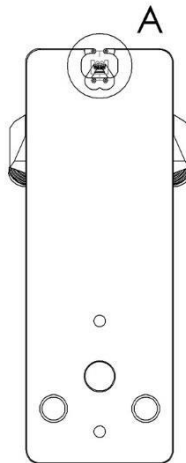
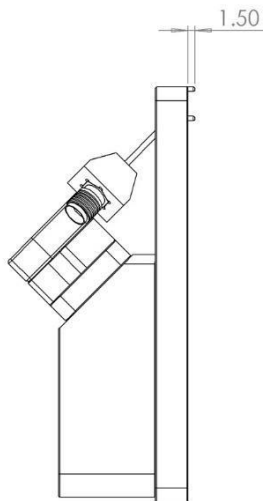
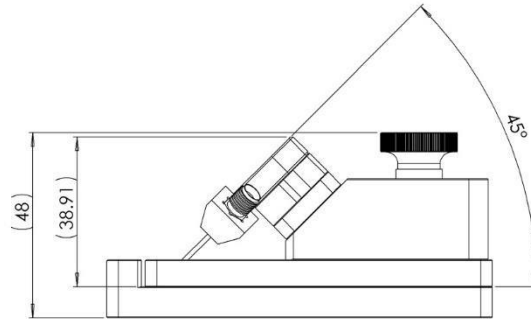
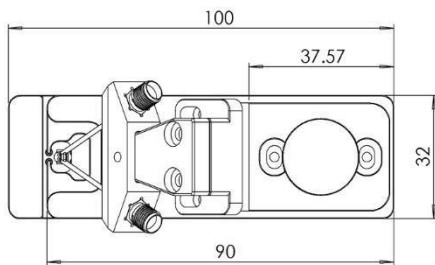
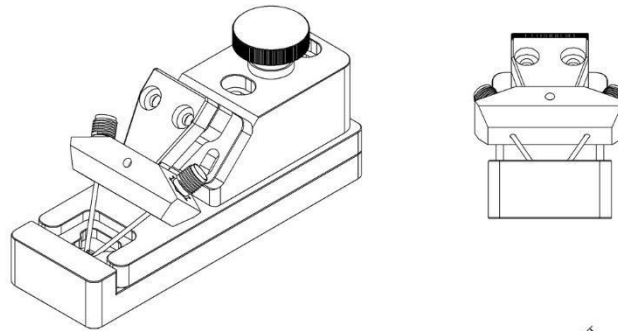
PacketMicro, based in Silicon Valley, provides a wide range of rugged gigahertz probes, probe positioners and stations, flexible RF cables, and microscopes for bench-top testing. PacketMicro customers include many Fortune 100 companies. For more information, please visit [www.packetmicro.com](http://www.packetmicro.com).

## DP-Hand01 Dimensions (mm)





## DP-SS-201510DL Dimensions (mm)



### Notes:

- DP-SS-201510DL handheld probe is specifically designed for Intel Delta-L+ methodology. User should refer to the Intel document for the detail probing pad footprint in PCB layout design.
- Any adjustment of the DP-SS-201510DL should be sent back to PacketMicro or its authorized distributors for services. Please do not remove the DProbe from its DP-hand02 fixture.