

Molex, Inc.

Subject: Mini SAS 4x Test Vehicle overview

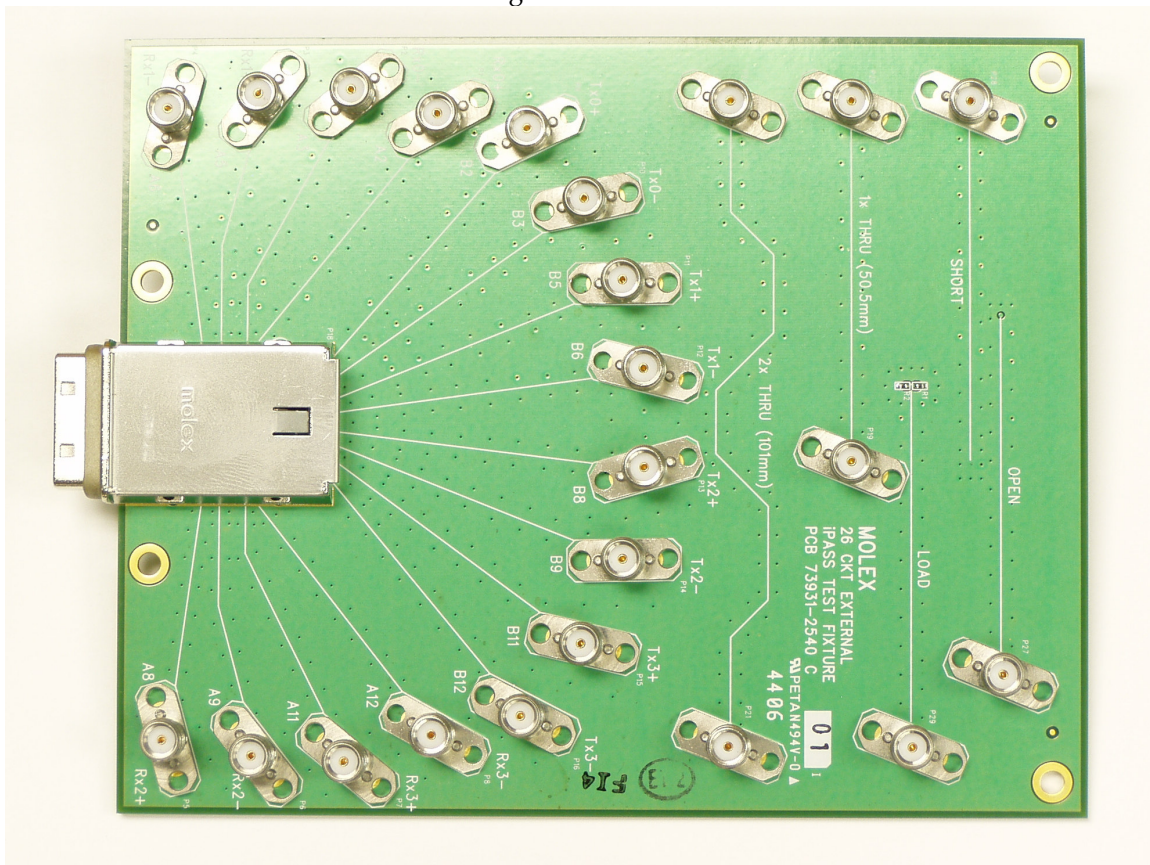
Objective:

Document the features and performance of the Molex PCIe x4 connector/cable assembly test vehicle (73931-2544).

Discussion:

The following sections discuss the use and performance of the Mini SAS 4x connector test vehicle. It includes :

- v General Layout Information
- v De-embedding structures, and intended use
- v Analysis Charts depicting the performance of the de-embedding structures.



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General Layout Information

The Mini SAS 4x connector/cable test vehicle (Molex part number 73931-2544) is a printed circuit board assembly designed and used for the purpose of interfacing SMA-based test equipment to Mini SAS cable assemblies. Included on it are etched signal traces which are routed from SMA connectors to the footprint of the 26-circuit Mini SAS receptacle. These traces consist of two segments, a stripline segment (on pcb layer 2, from the 10-mil diameter blind SMA launch via to the 10 mil connector-end via) of 50.5 mm in length and a nominal line width of 10.2 mils, and a microstrip segment (on pcb layer 1, from the connector-end via to the connector SMT attach) of 5 mm length and a nominal line width of 13.0 mils. The signal traces interface all differential signal pairs within the 4x cable assembly to SMAs.

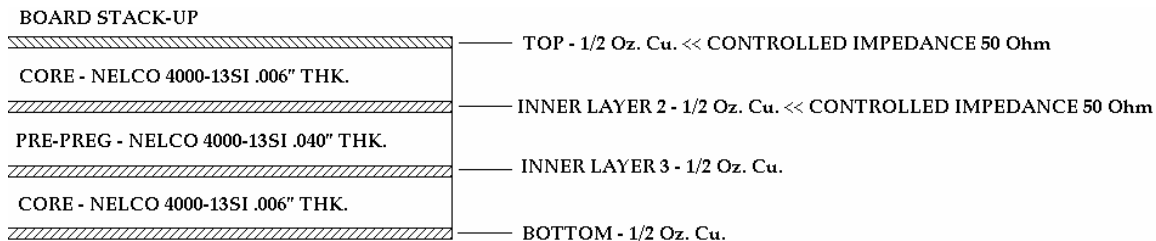
In addition, a set of stripline traces are included on the fixture for the purpose of de-embedding the trace loss effects from time-domain measurements. These include:

A) Open, short, load and '1x Thru' traces of 50.5 mm length, with the 1x thru having SMAs on both ends, and the others having SMAs on one end, and vias terminated to features corresponding to their names on the other;

B) 2x Thru trace, 101 mm in length, with an SMA on each end.

The de-embedding features are not intended for frequency-domain calibration, as the return loss effects of the load precludes its use above 800 MHz.

The PCB is fabricated from Nelco 4000-13SI material, with the stack and copper weights shown below.



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Through Cal Trace Performance

The below chart shows the insertion loss performance of a single 1x (50.5mm) trace as commonly constructed on the Mini SAS 4x Connector Test Vehicle.

