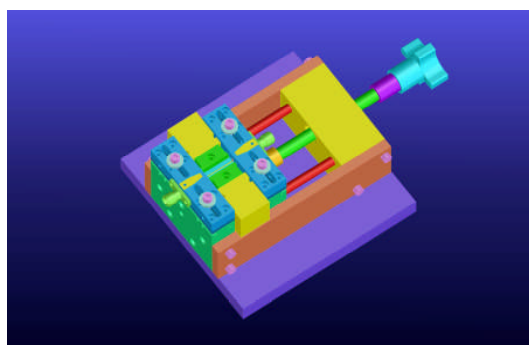


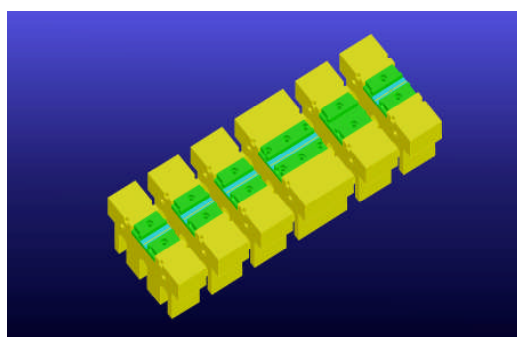


**Product Note: B6139394**

## **Calibration Reference Plane Position : Where It is and When to Change It**



ICM Test Fixture



TRL Calibration Standards

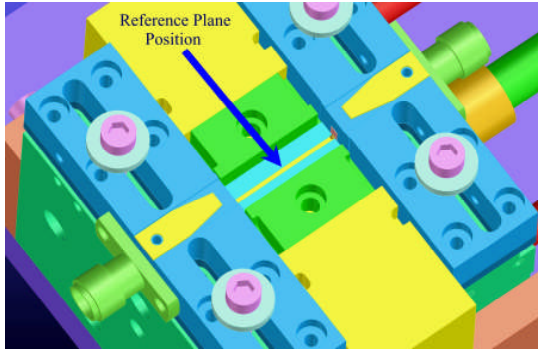
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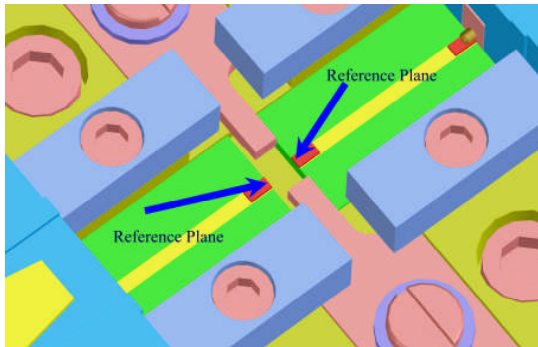


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## Reference Plane Position on Calibration Standards



During the TRL Calibration with a non-zero length THRU STANDARD, the reference plane is usually established at the center of the THRU STANDARD. This can be easily checked after the calibration by measuring the THRU STANDARD. Since the "INPUT" and the "OUTPUT" reference plane are at the same location, the measured insertion loss and phase will be zero.



To measure a component with microstrip launches, the length of the microstrip launch at the input and output side is one half the length of the THRU STANDARD. This positions the reference planes at the edges of the microstrip. The measured data represents what is inserted between the reference planes.



When a component is measured without the microstrip launch (which is normally one half of the THRU STANDARD), then the reference plane has to be shifted by applying a negative reference plane extension on the input and output of the network analyzer. This method allows correction for the phase but does not correct the insertion loss. The insertion loss correction can be estimated by measuring a calibration standard that is longer and then estimating the loss of the thru standard.

4/5/2005

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