



## Test Fixture Design - Matrix Fixture DUT Interface Board (DIB) Layout

Revised: 01/13/2011 - 10/01/2013

Topic(s): Fixture

Doc ID:DFES-8D3W59 (10 pages)

See Also [DUT Interface Board \(DIB\) Design Guide](#) for more design information and examples.

### **DIB Layout for the Matrix Top Plate**

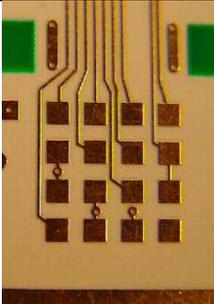
*There are five types of interfaces to the DIB in regard to the Matrix fixture.*

1. DC
2. Digital
3. RF - MCX dual - 6GHz
4. RF - SMA single DC - 10 GHz
5. MM wave DC - 40GHz

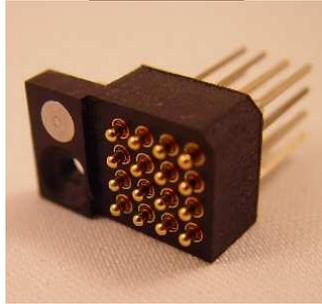
#### **1. DC Interface:**

The DC interface is basically comprised of a Delrin block with pogo connectors pressed into it. It is a 4X4 matrix with 0.100 pin centers.

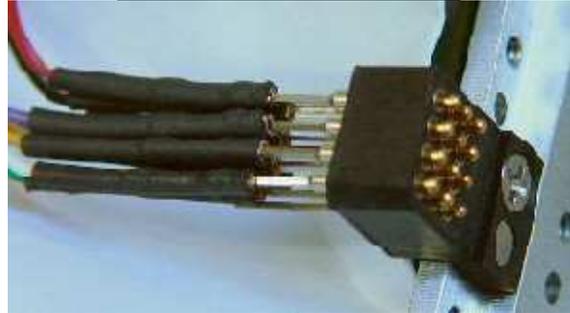
**DIB Pogo Landing**



**DC 16 Block**



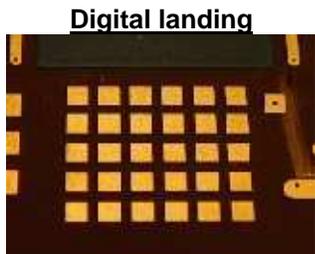
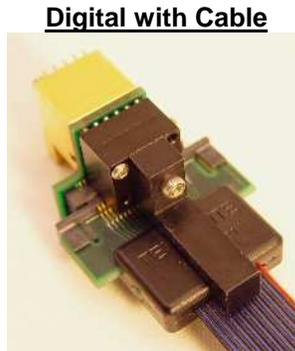
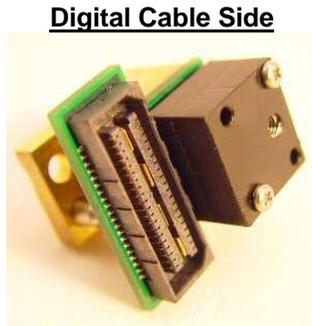
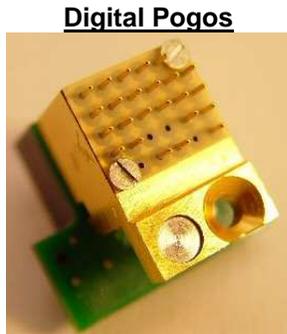
**Jumper Install DC 16 Block**



## 2. Digital Interface:

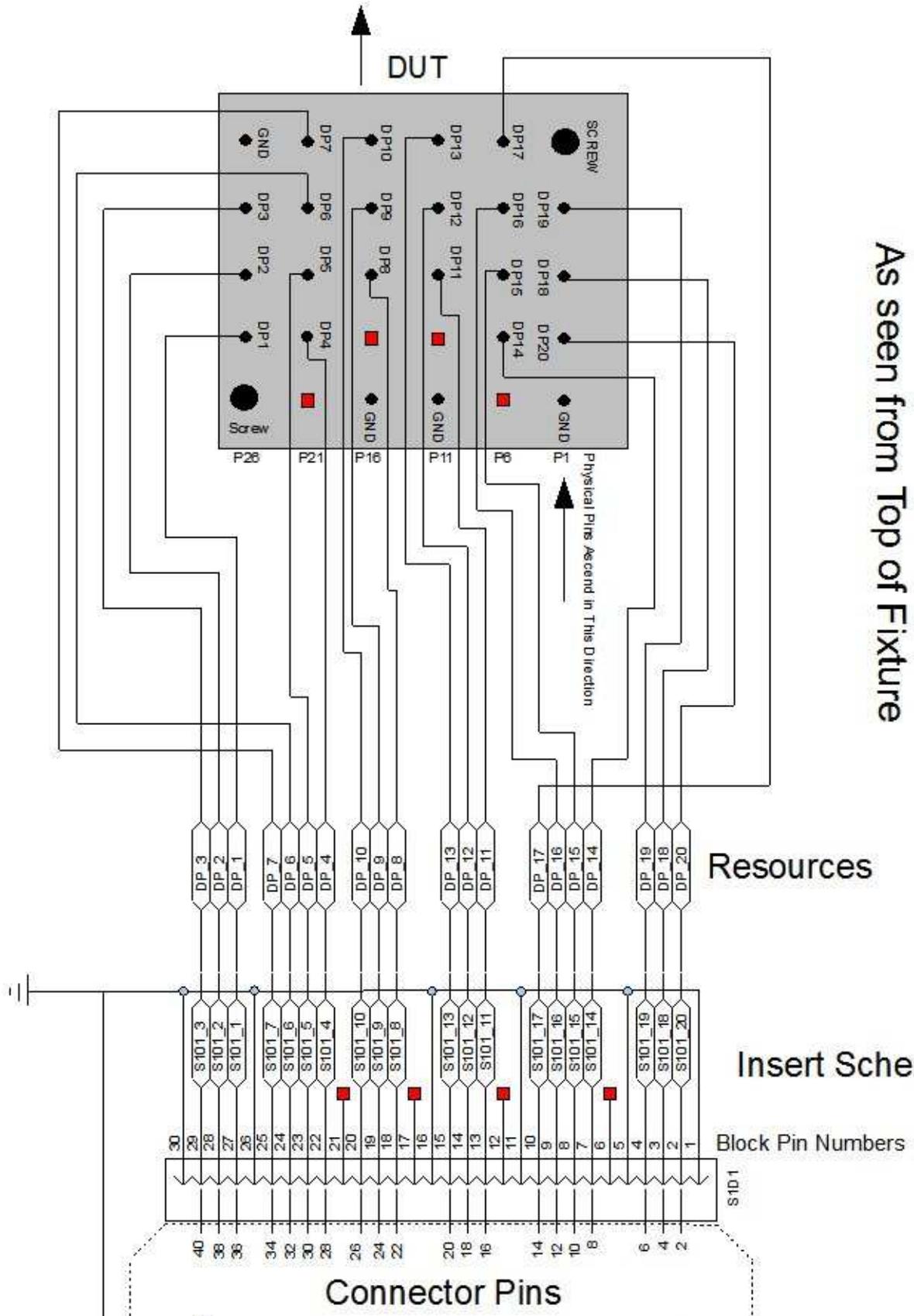
The fixture digital interface incorporates a controlled impedance for each of its contact pogo pins. The block is a 5X6 Matrix with the pogo pins soldered to a PCB back plane.

***NOTE: Digital blocks can not be placed side by side due to connector!!!***



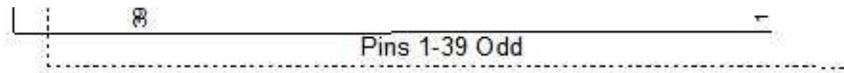
*(See Block Pin Out Below)*

### Physical Resource Locations



As seen from Top of Fixture

RINUL37/A Digital Block



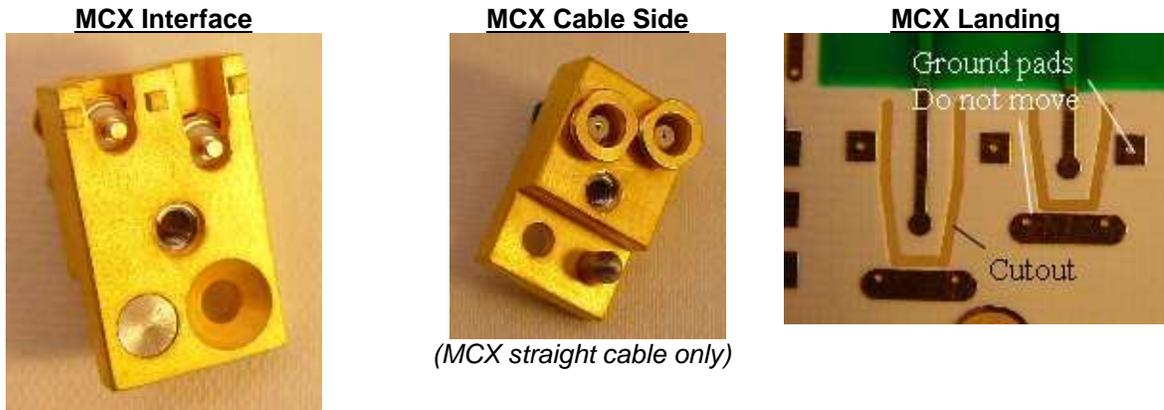
**Notes:**

1. ■ = Missing Pin / NC

### 3. RF Dual MCX - 6GHz:

This interface is composed of a single block with two MCX panel mount connectors side by side. It is intended to be for RF connections with a bandwidth up to 6GHz. The DIB interface has a cutout "tongue" that makes contact with the connector center conductor.

**NOTE:** 50 Ohm trace is intentionally placed at edge of launch center conductor nearest DUT to prevent parasitic stub affects at frequency.



### 4. RF Single SMA - 10GHz: RIK0117A

The SMA interface block is a mechanical assembly composed of a single press-in connector and brass mounting. The DIB interface has a cutout "tongue" that makes contact with the connector center conductor. Placement of the grounding pads and their related ground vias is critical. They have been optimized for best performance and their locations should not be adjusted from the gerber template locations.

**NOTE:** 50 Ohm trace is intentionally placed at edge of launch center conductor nearest DUT to prevent parasitic stub affects at frequency.

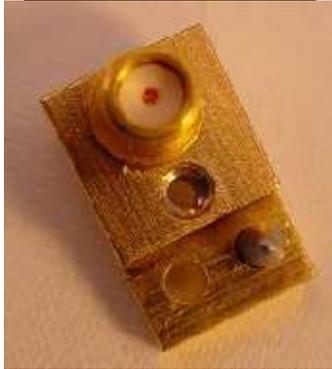


**5. RF Single SMA - 15GHz: RIK0212A**

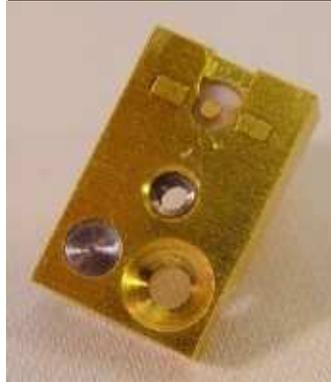
Consists of a single press in SMA adapter. It is designed for use on the Matrix top plate and is placeable at 0.5" pitch. It is intended to be for RF connections with a bandwidth up to 15 Ghz. The DIB interface has a cutout "tongue" that makes contact with the connector center conductor. Each of the ground pads have their own "tab" for connection.

**NOTE:** 50 Ohm trace is intentionally placed at edge of launch center conductor nearest DUT to prevent parasitic stub affects at frequency.

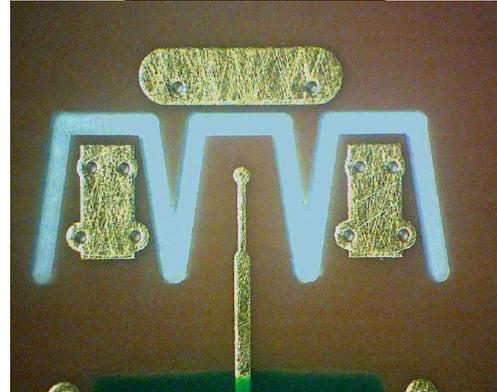
**15GHz SMA Cable Side**



**15GHz SMA Interface Side**

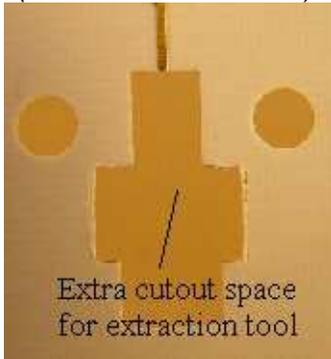


**15GHz SMA Landing**

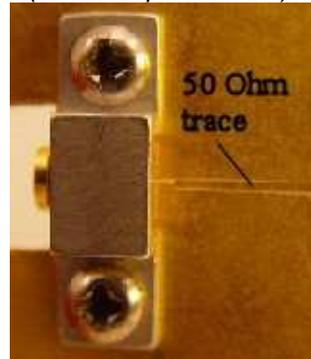


**6. RF Single MMPX - 40GHz: ( RIK0156A )**

**MMPX 20/40GHz Cutout**  
(Board Bottom to 20Ghz)



**MMPX 40GHz Installed**  
(Board Top to 40Ghz)



Trace is coplanar

**MMPX Extraction Tool**



92_MMPX-S50-0-1 PCB <b>Layout</b>	Questionnaire for PCB <b>Layout</b> Simulations to Huber+Suhner
 92_MMPX-S50-0-1 PCB layout.pdf	 <b>Questionnaire for Layout Simulations - new Jan 2010 AB.xls</b>

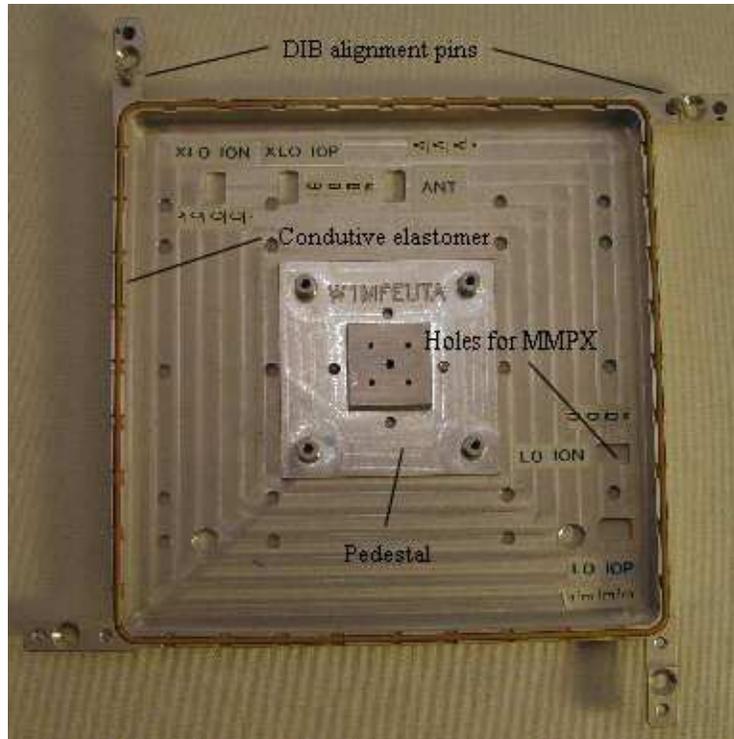
**Clamp Drawings:**



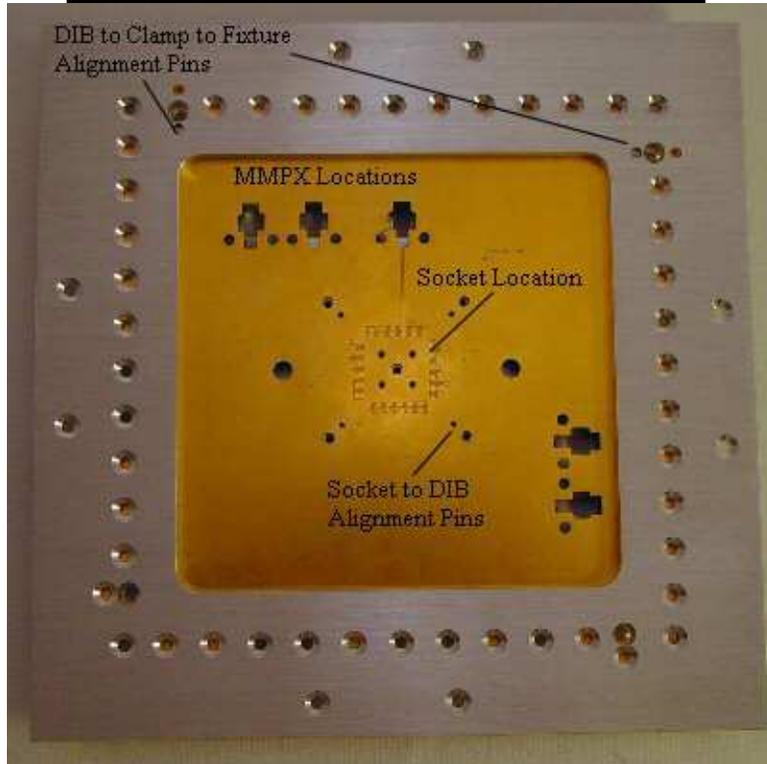
***Top Plate Assembly:***

The fixture top plate assembly includes the top plate, pedestal support, pedestal, DIB, and DIB clamp.

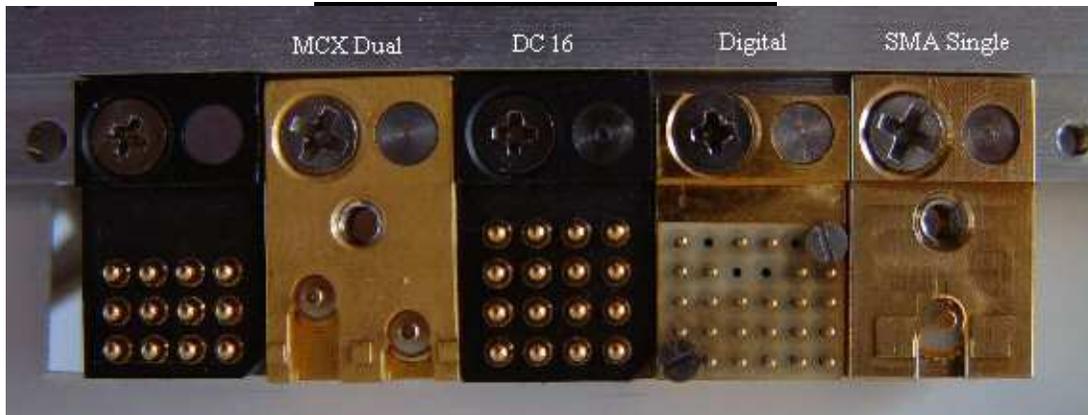
**Pedestal & Support**



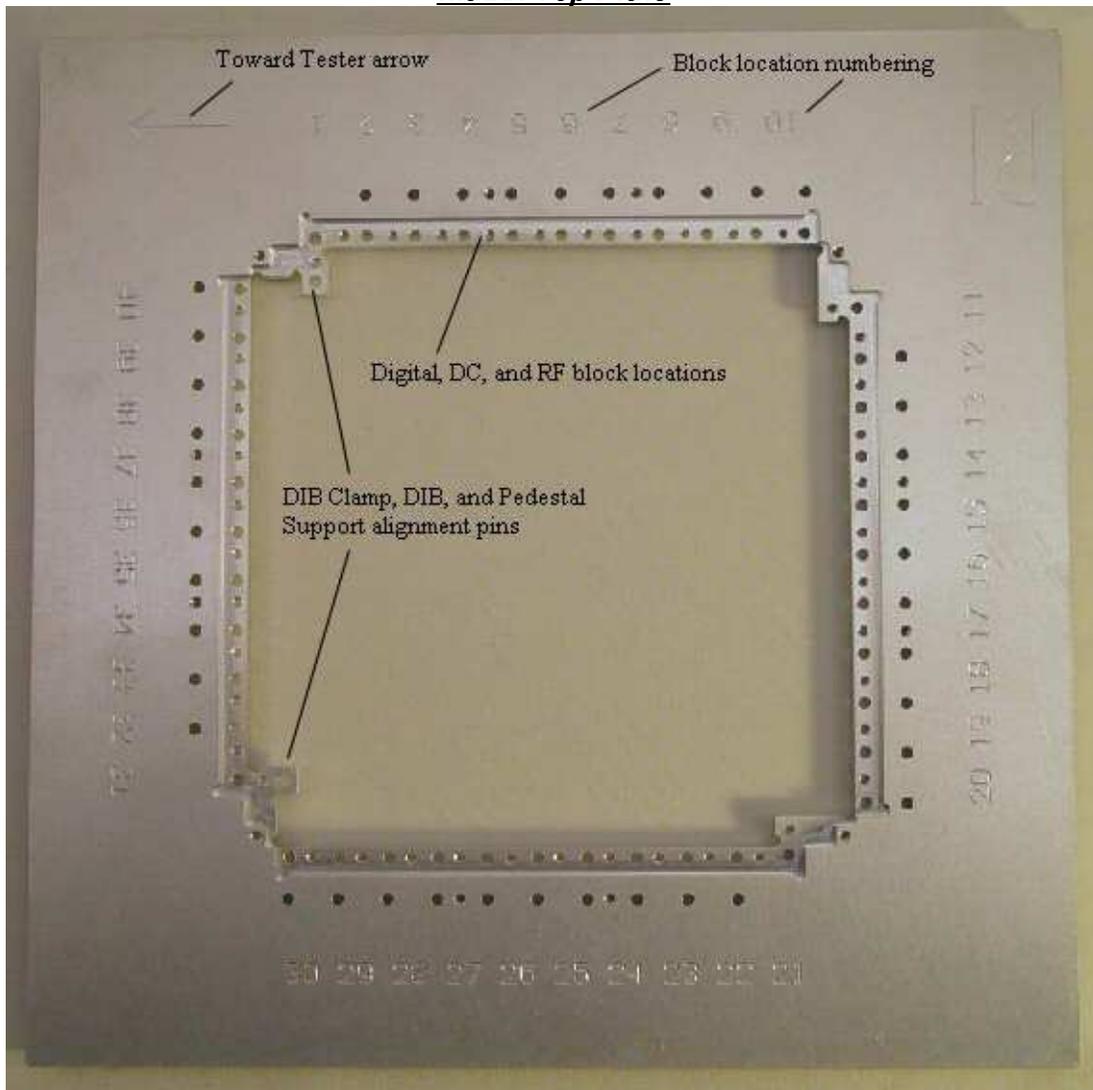
**Support / Pedestal / Dib / Clamp Sandwich**



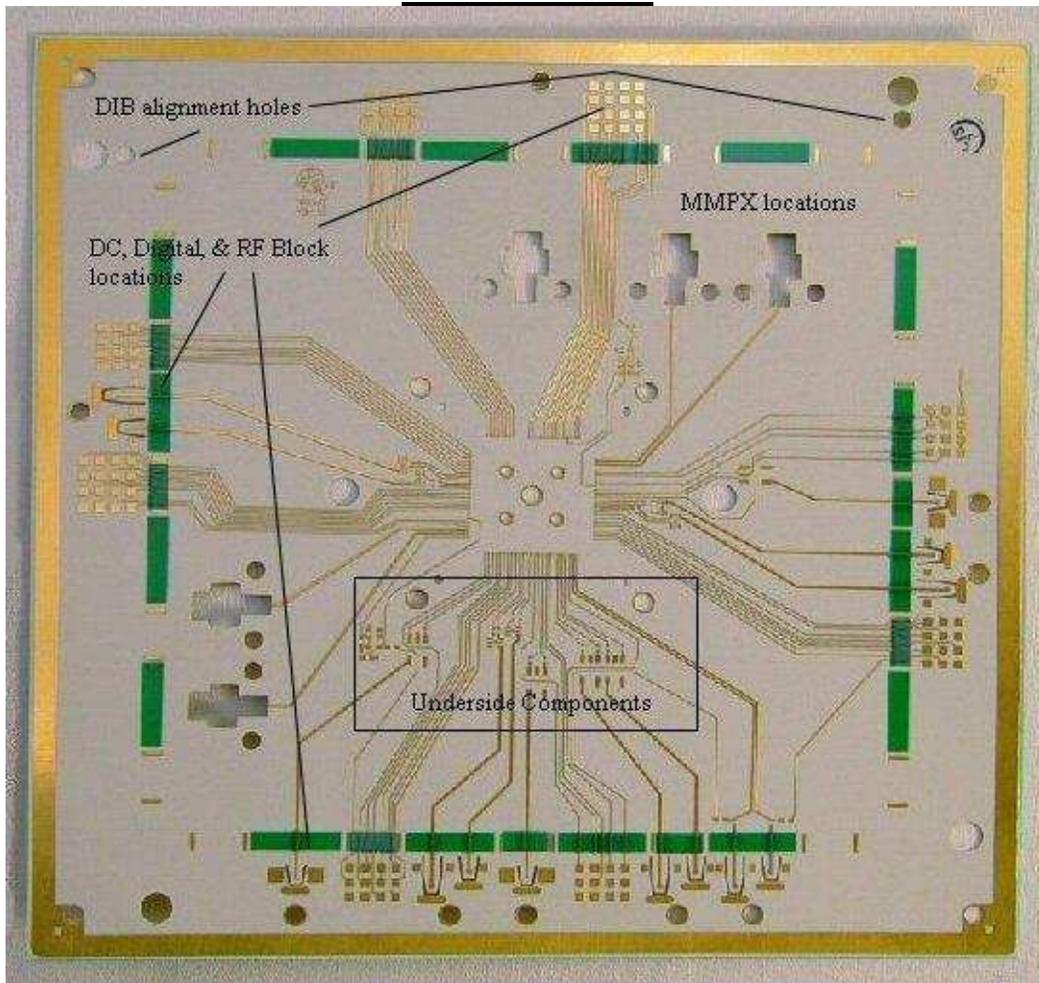
**Installed Blocks on 0.50" Pitch**



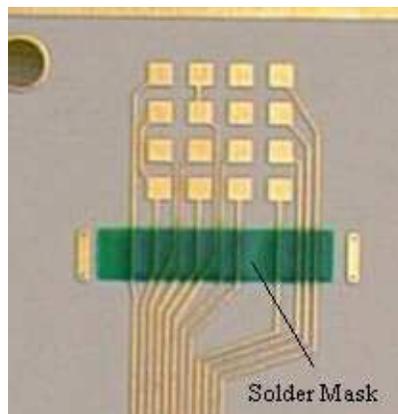
### Matrix Top Plate



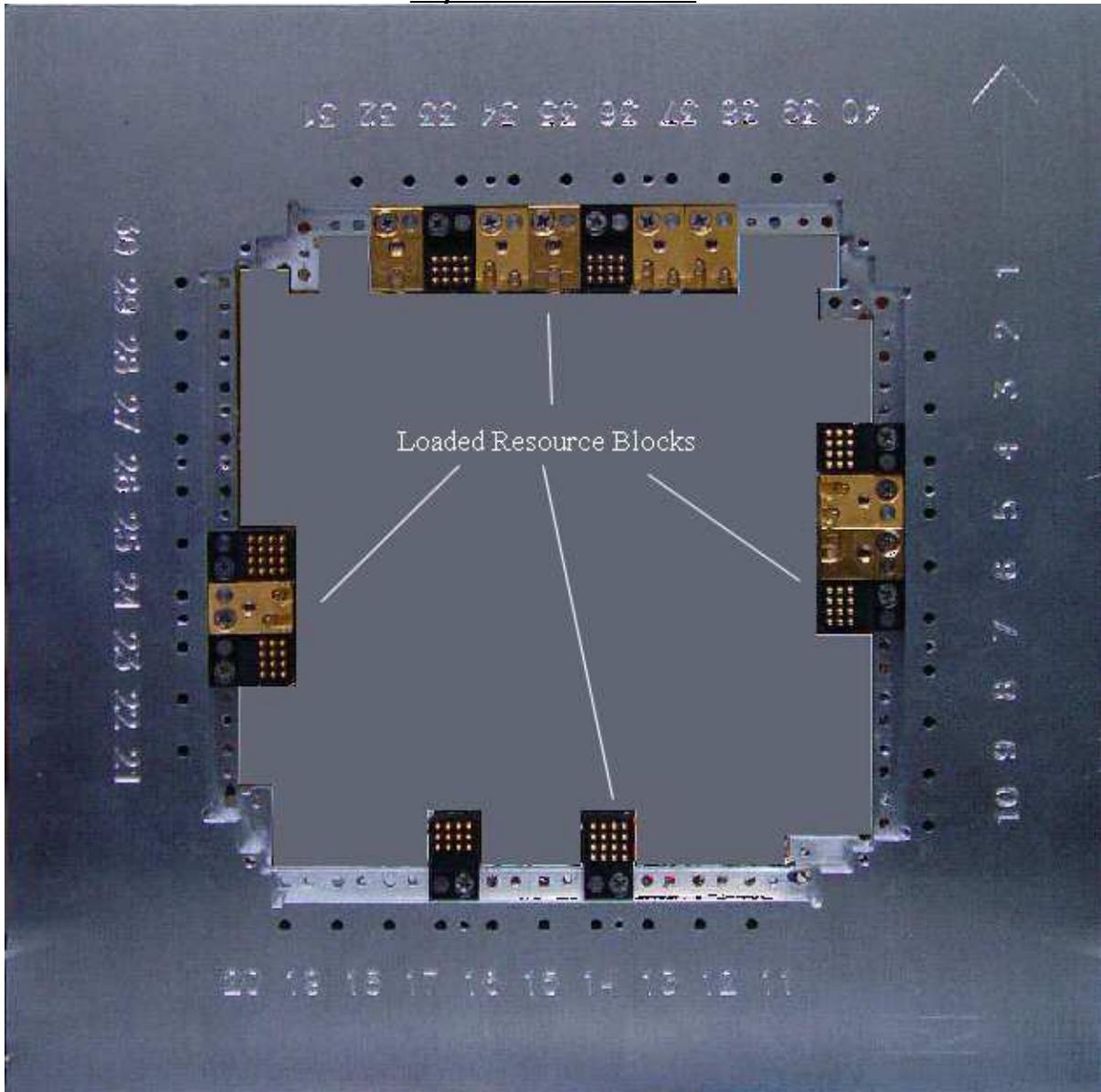
**DIB Bottom Side**



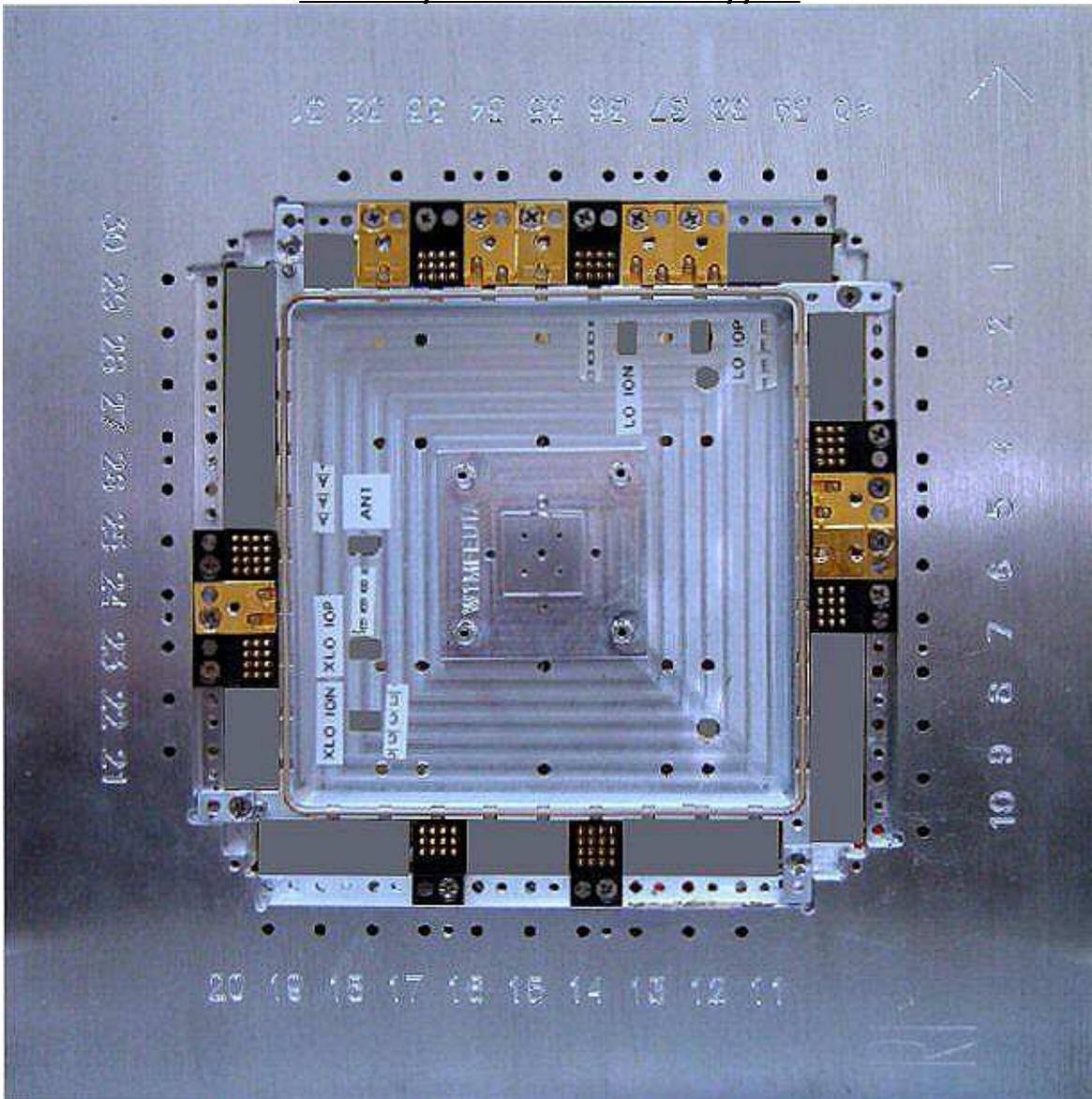
**Notes: Consider using double layer solder mask over DC lines to prevent shorting to pedestal support .**



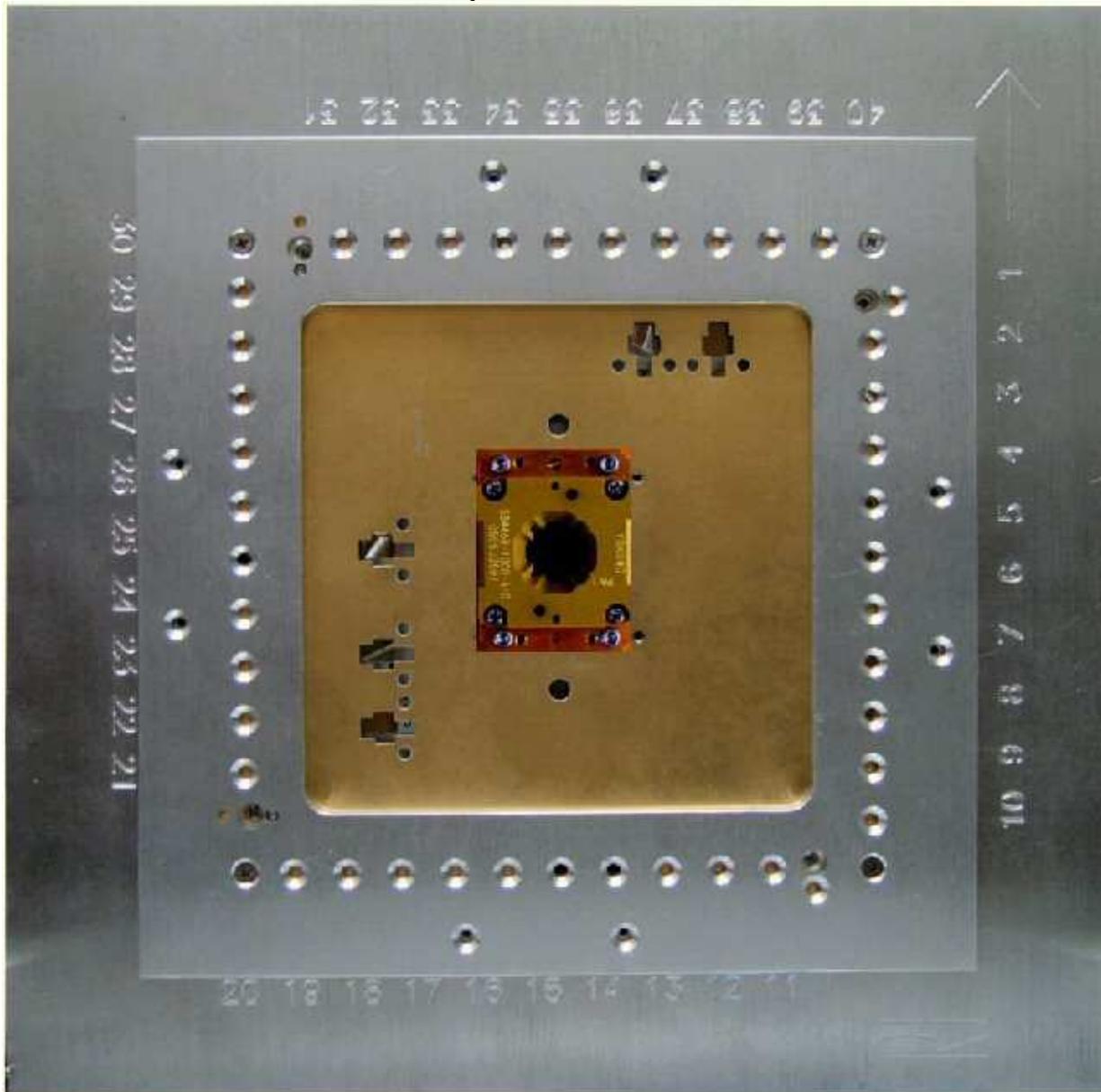
***Top Plate With Blocks***



***Matrix Top with Pedestal and Support***



***Matrix Top with DIB and Socket***



Example Gerber and DXF and Drill Files: (Accessible online @ <http://roos.com/docs/DFES-8D3W59?open> )



MMWExample.zip Y000B9A0.DRL



Matrix\_TopPlate\_DIB\_Design.pdf