Cassini RF ATE System
Basic Training Seminar

Fixture and Device Interface Design

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Cassini Basic Seminar Outline

- Operation and Troubleshooting

- System Administration and Maintenance

- Basic Test Plan Concepts

- Science of RF Measurement

- Device Definitions

- Example Applications Development

- **Test Fixture and Device Interface Design**

- Test Design & Best Practices Test Optimization

- Application User Guides

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Fixture Basic Functions / Features

- **What Do Fixtures Do**

- Layers of a Fixture

- Bottom Plate Resources

- Top Plate Assembly and Resources

- Fixture Modules Available

- Smart Carrier Programming

- Planning: Fixture Schematic

- Fixture Assembly

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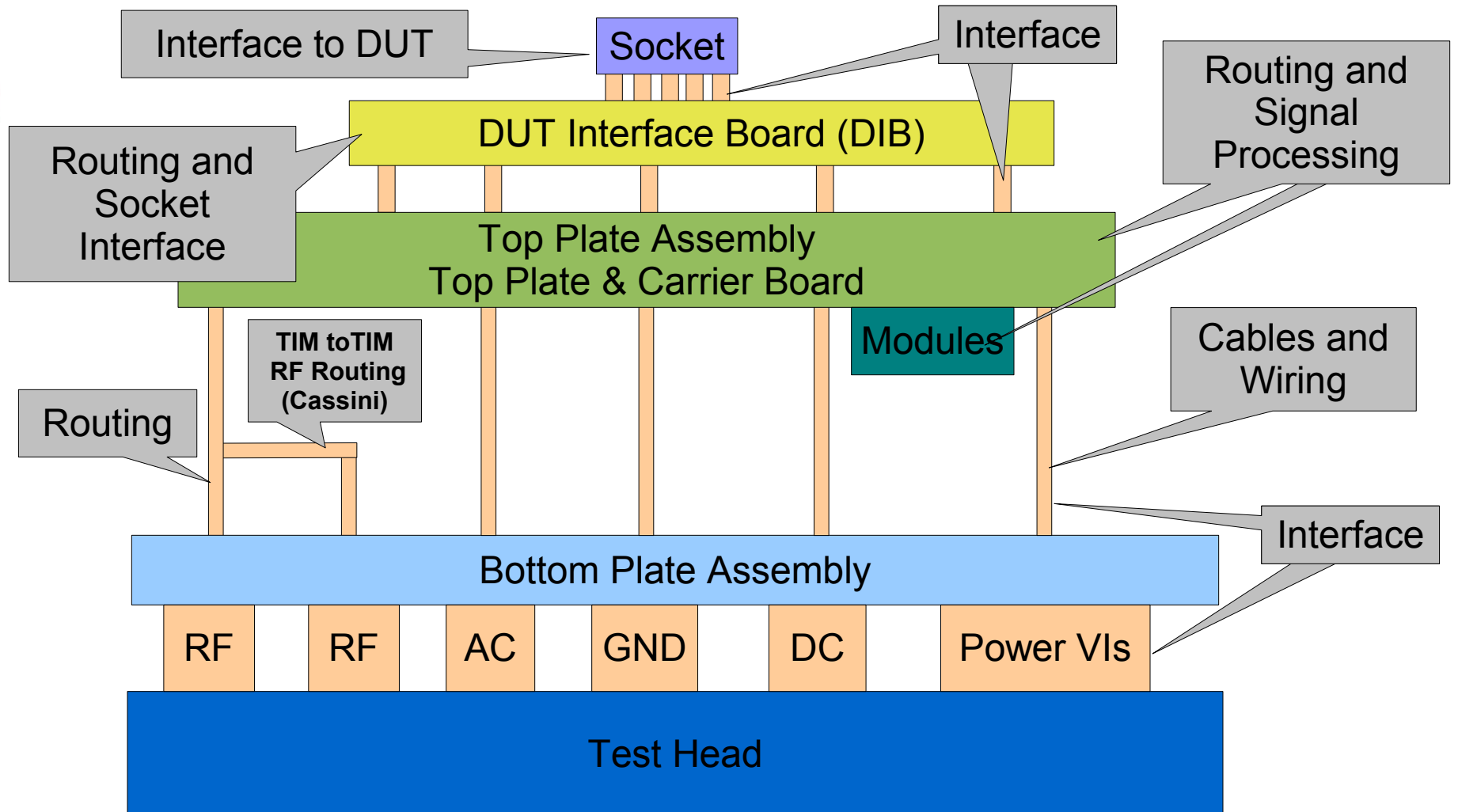
Fixture Basic Functions / Features

What does the fixture do?

- Allows for standard resource routing and switching from the test system to the Device Under Test (DUT). It also allows for specialized signal processing required for the DUT.
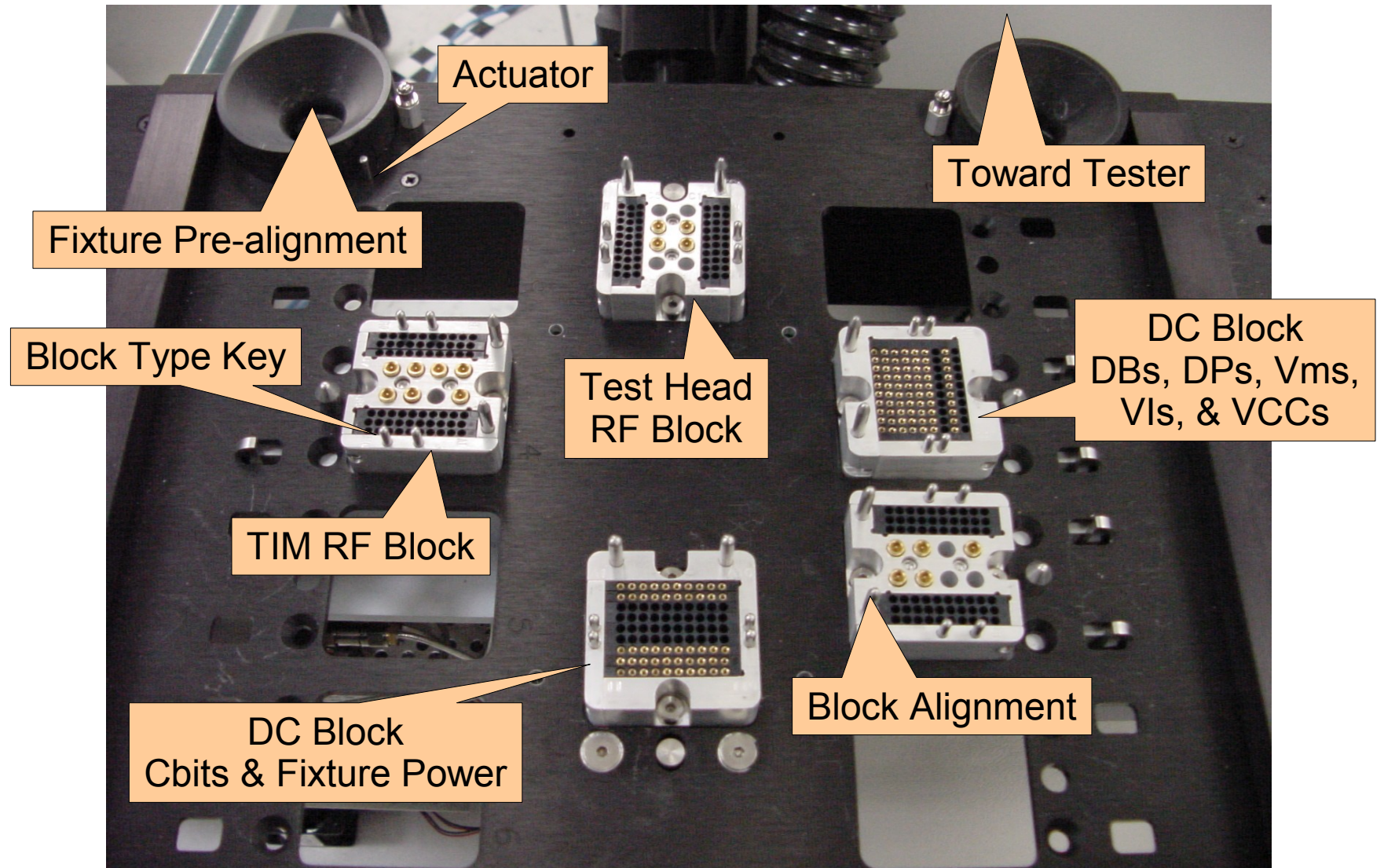
Required interfaces:

- RF, AC, and DC interfaces between the tester and fixture.

  Bottom Board Assembly

- RF, AC, and DC interfaces between itself and the DUT interface board.

  Top Board Assembly / Carrier Board

- Specialized signal processing for the DUT.

  Carrier Modules

- DUT Interface Board (DIB) and socket.

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Fixture Layers Graphical Representation

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Test Head Interface Cassini RF, AC, and DC

Actuator

Toward Tester

Fixture Pre-alignment

Block Type Key

DC Block
DBs, DPs, Vms, VIs, & VCCs

Test Head
RF Block

TIM RF Block

DC Block
Cbits & Fixture Power

Block Alignment

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Fixture Bottom RF Blocks Cassini

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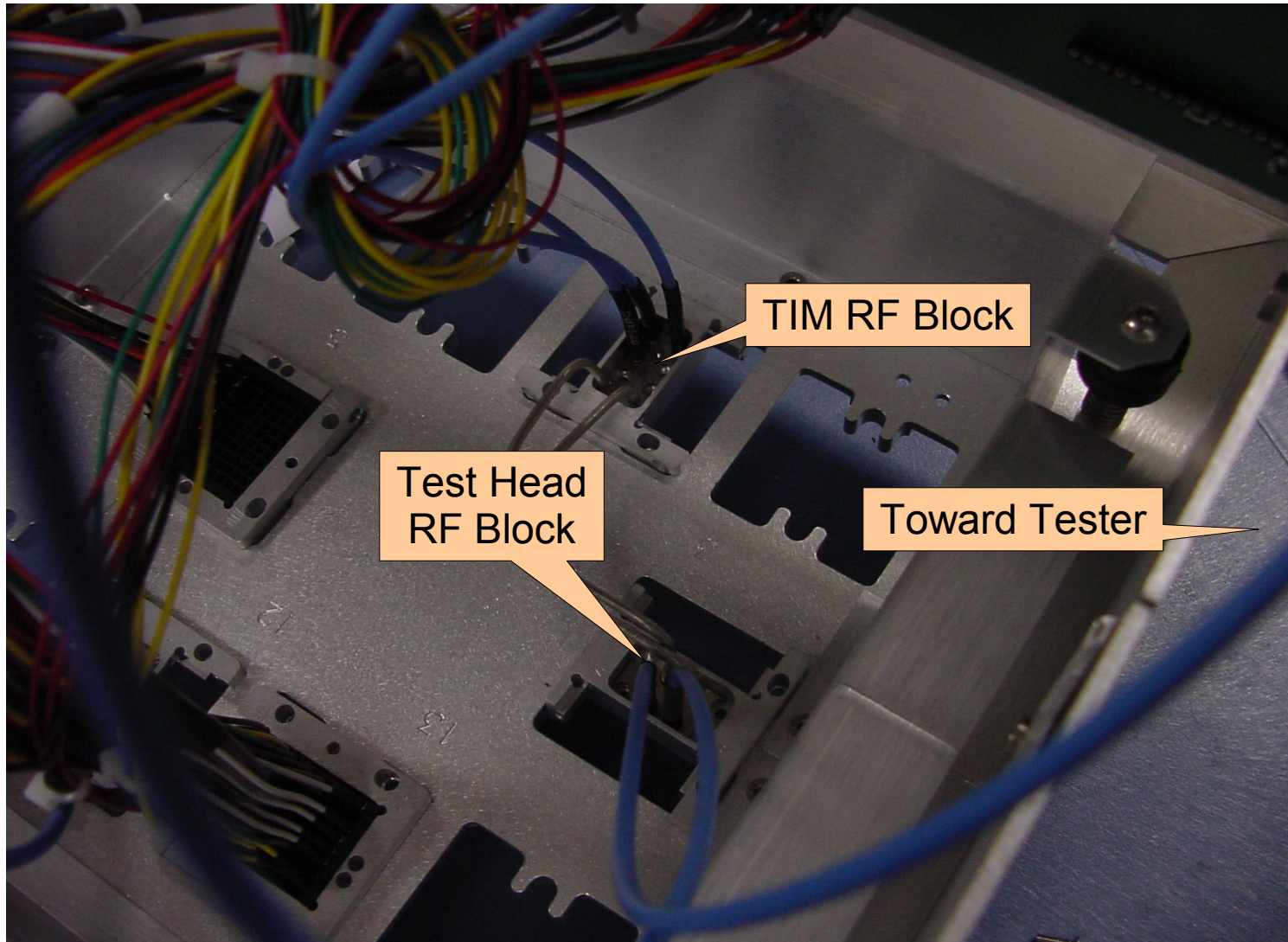
Fixture Bottom AC and DC Blocks Cassini

WF Block

DC Block
Cbits & Fixture Power

DC Block
DBs, DPs, Vms,
VIs, & VCCs

Toward Tester

Roos Instruments
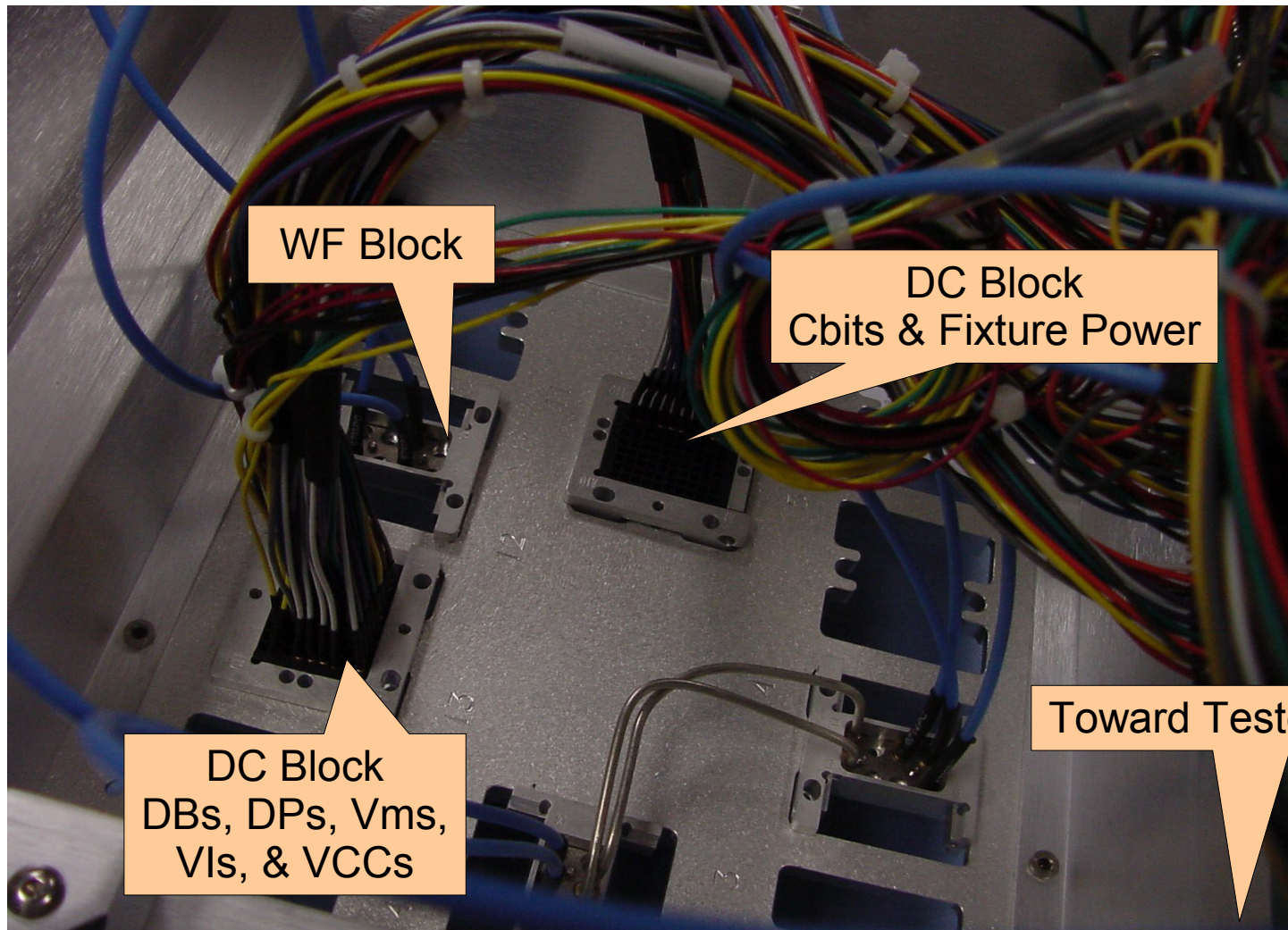
Fixture Bottom Resource Map Cassini

Fixture RF Block

RF7 RF6
RF3 RF2
--- Src3
RecHI SrcHI

Toward Tester

Fixture Power

Cbits

Test Head RF Block

Fixture Bottom Plate

Top View

Rec >2GHz Src1HI Src3HI
RF5 / 8 Src1Low
RF4 Rec<2GHz Src3Lo

DBs

VMs

WF Block

WF7 DIGIN2   WF6 DIGIN1
WF3 ARBOUT2   WF2 ARBOUT1
---   ---
---   WF8 SineGenOut

VCCs

DPs

VIs

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Fixture Layers Graphical Representation

Interface to DUT

Socket

Interface

Routing and Signal Processing

DUT Interface Board (DIB)

Routing and Socket Interface

Top Plate Assembly
Top Plate & Carrier Board

TIM toTIM
RF Routing
(Cassini)

Modules

Cables and Wiring

Routing

Bottom Plate Assembly

Interface

RF	RF	AC	GND	DC	Power VIs

Test Head

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Top Plate Assembly Features

Carrier Board

RF Launch

Pedestal Support

Modules

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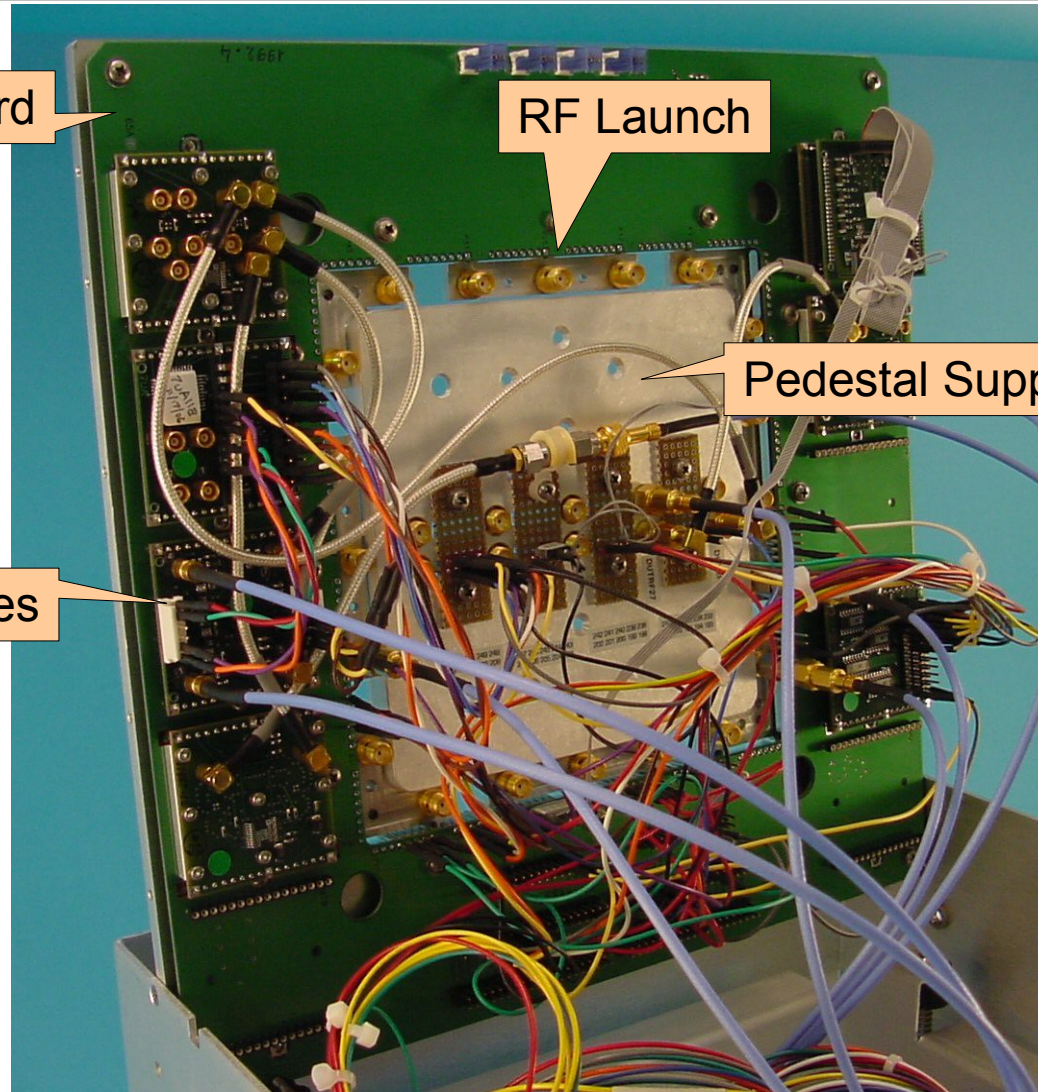
Pedestal Support Interior

Alignment Holes (2)

Pedestal Mounting Holes

Dry Air

Pogo boards

RF Launches (10)

Roos Instruments
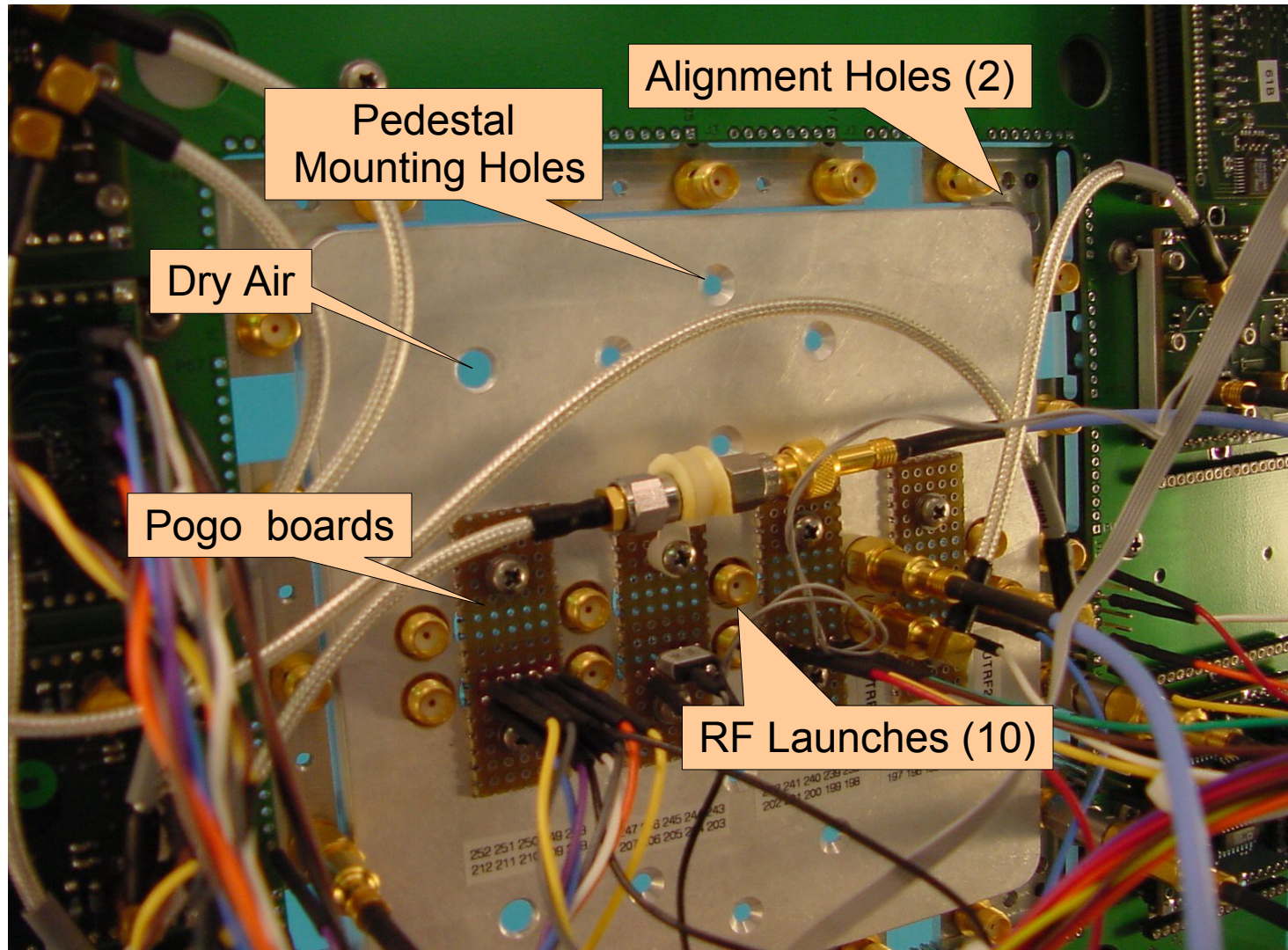
Carrier Board Basic Features

Interior Side Features

Module locations

40 Pin Header

Aux Header

Pogo Locations

RF Locations

Exterior Side Features

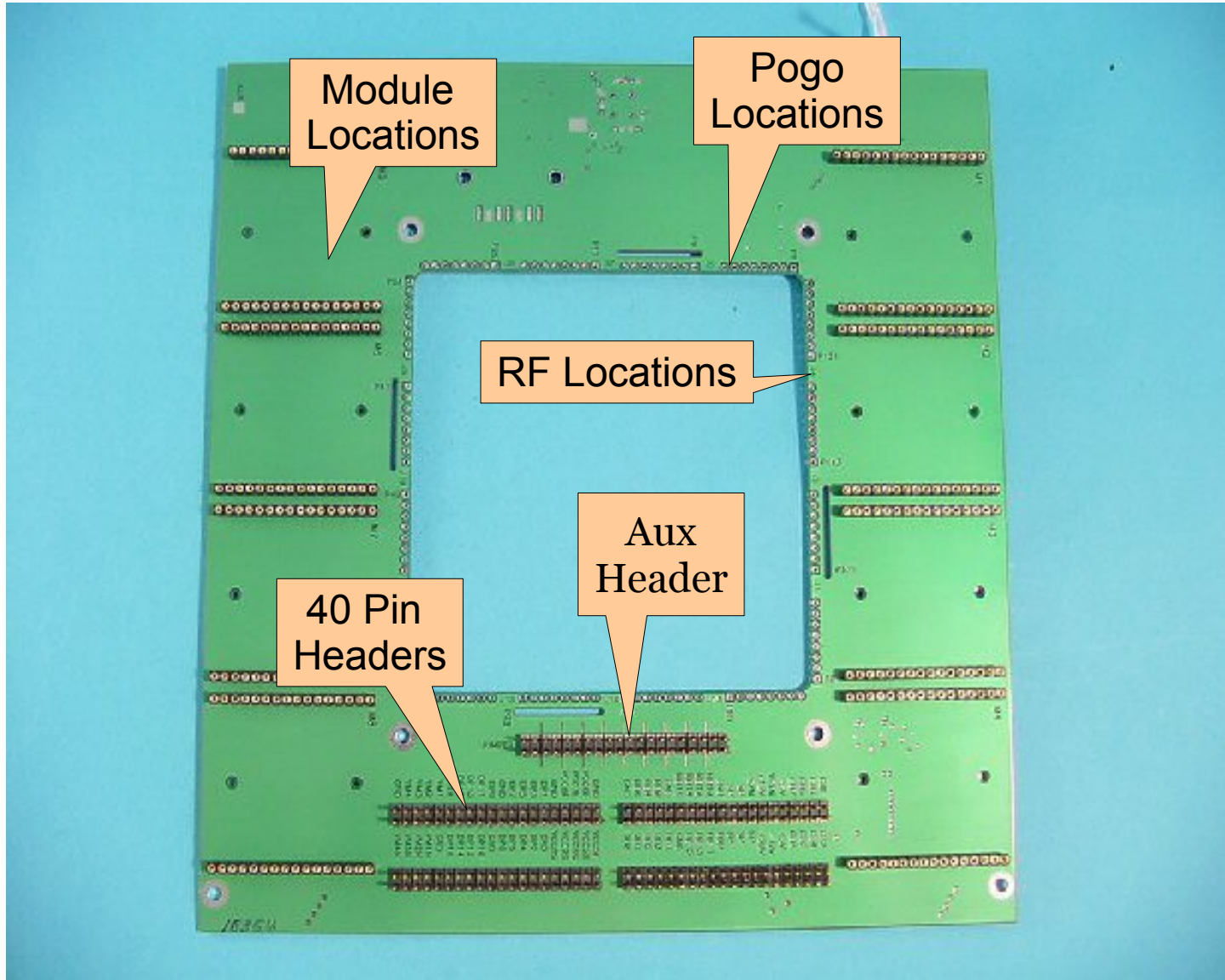Cbit Generation

Module Control
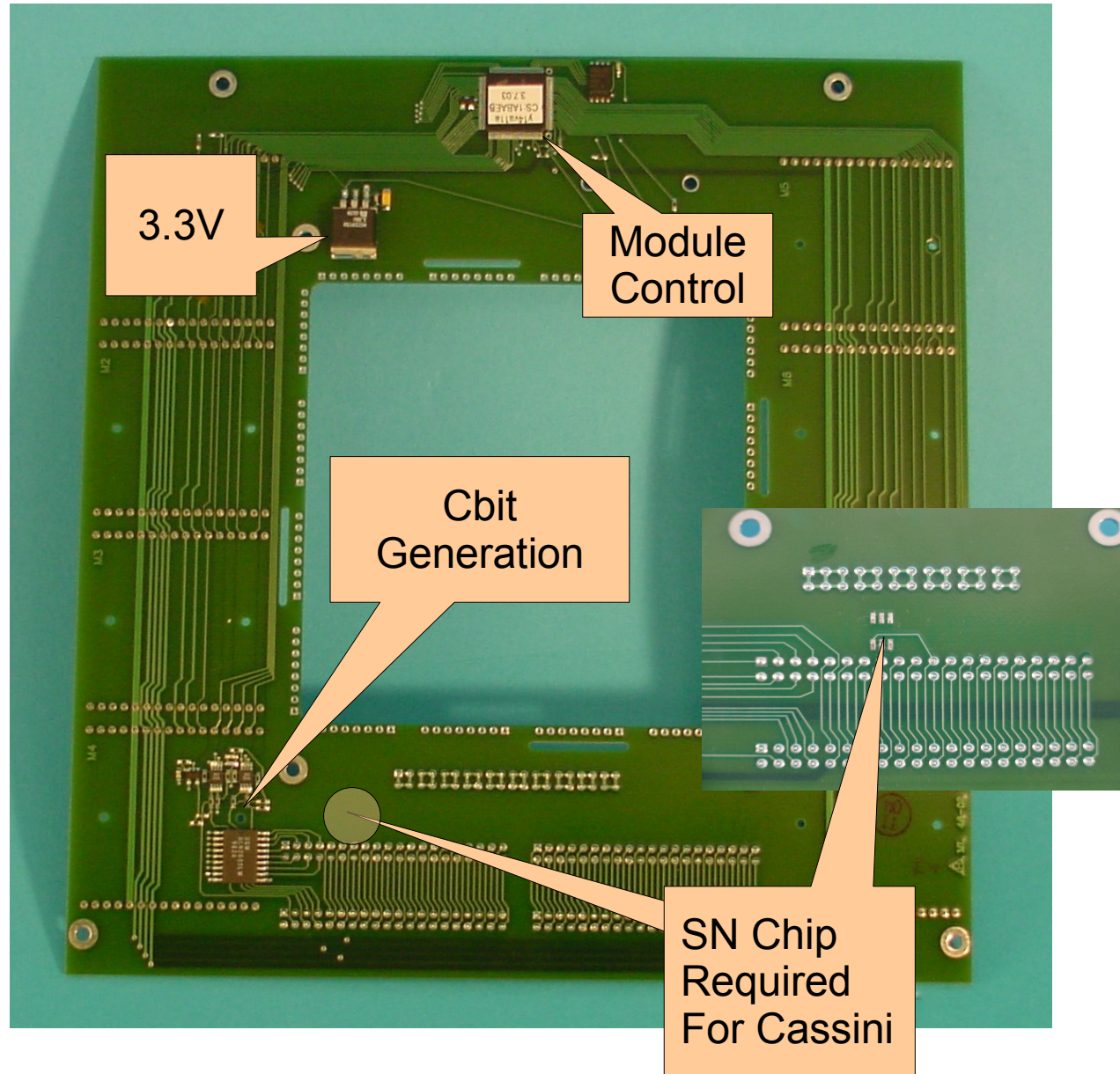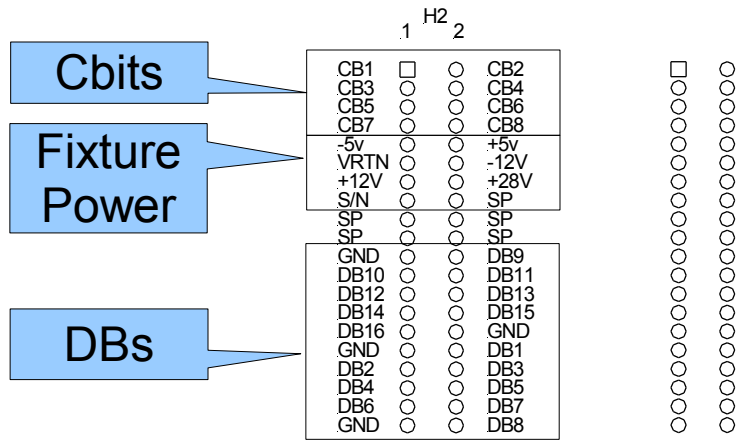
3.3V Regulator

SN Chip (Cassini)

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Interior Side Features

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Exterior Side Features

3.3V

Module Control

Cbit Generation

SN Chip Required For Cassini

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Carrier Board 40 Pin Headers

Board Interface Pin Designations

H2
1   2

Cbits

CB1	□ ○	CB2
CB3	○ ○	CB4
CB5	○ ○	CB6
CB7	○ ○	CB8

Fixture Power

-5v	○ ○	+5v
VRTN	○ ○	-12V
+12V	○ ○	+28V
S/N	○ ○	SP
SP	○ ○	SP
SP	○ ○	SP

DBs

GND	○ ○	DB9
DB10	○ ○	DB11
DB12	○ ○	DB13
DB14	○ ○	DB15
DB16	○ ○	GND
GND	○ ○	DB1
DB2	○ ○	DB3
DB4	○ ○	DB5
DB6	○ ○	DB7
GND	○ ○	DB8

Connector side mapping 1:1

EDGE OF BOARD

VCCs

GND	□ ○	VCC5F
VCC6F	○ ○	VCC5S
VCC7F	○ ○	VCC6S
VCC8F	○ ○	VCC7S
GND	○ ○	VCC8S

DPs

DP1	○ ○	GRD
DP3	○ ○	DP2
DP5	○ ○	DP4
DP7	○ ○	DP6
GND	○ ○	DP8
DP9	○ ○	GRD
DP11	○ ○	DP10
DP13	○ ○	DP12
DP15	○ ○	DP14
GND REF	○ ○	DP16

VMs

VM1	○ ○	GRD
VM2	○ ○	VM1N
VM3	○ ○	VM2N
VM4	○ ○	VM3N
GND	○ ○	VM4N

H1
39   40

Pin Designation Key:
CB	=	Control Bits
SP	=	Customer Specific/Undefined
GND	=	Ground
VRTN	=	Voltage Return
DB	=	Static Digital
VCC	=	Power Supply
DP	=	Device Power
GRD	=	Guard
GNDREF	=	Ground Reference
VMx	=	Voltage Measure x
VM1N	=	Differential Voltage Measure x

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Module Locations 20RF

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Module Voltages

From Carrier
40 Pin Header
(Test Head)

From Carrier
40 Pin Header
(Test Head)

From Carrier
3.3V Regulator

From Carrier
Module Control

RI Logo

1

16

+5V
+12V
-12V

+5V
-5V
3.3V

DS1
DS2
DS3
DS4

16

1

Note:
1. DS1-4 are not available on Passive carrier boards

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Fixture Layers Graphical Representation

Interface to DUT

Socket

Interface

Routing and Signal Processing

DUT Interface Board (DIB)

Routing and Socket Interface

Top Plate Assembly
Top Plate & Carrier Board

TIM toTIM RF Routing (Cassini)

Modules

Cables and Wiring

Routing

Bottom Plate Assembly

Interface

RF	RF	AC	GND	DC	Power VIs

Test Head

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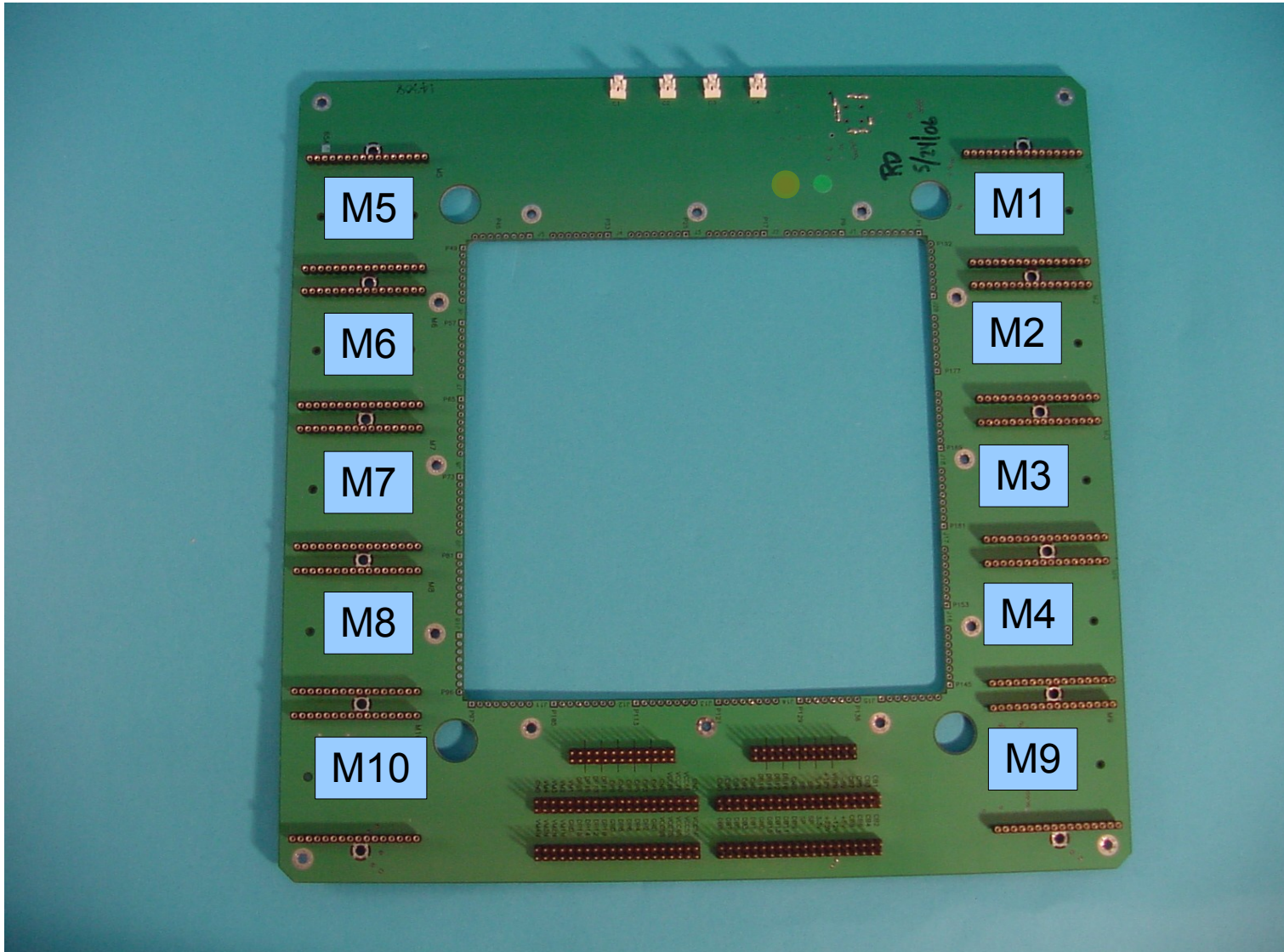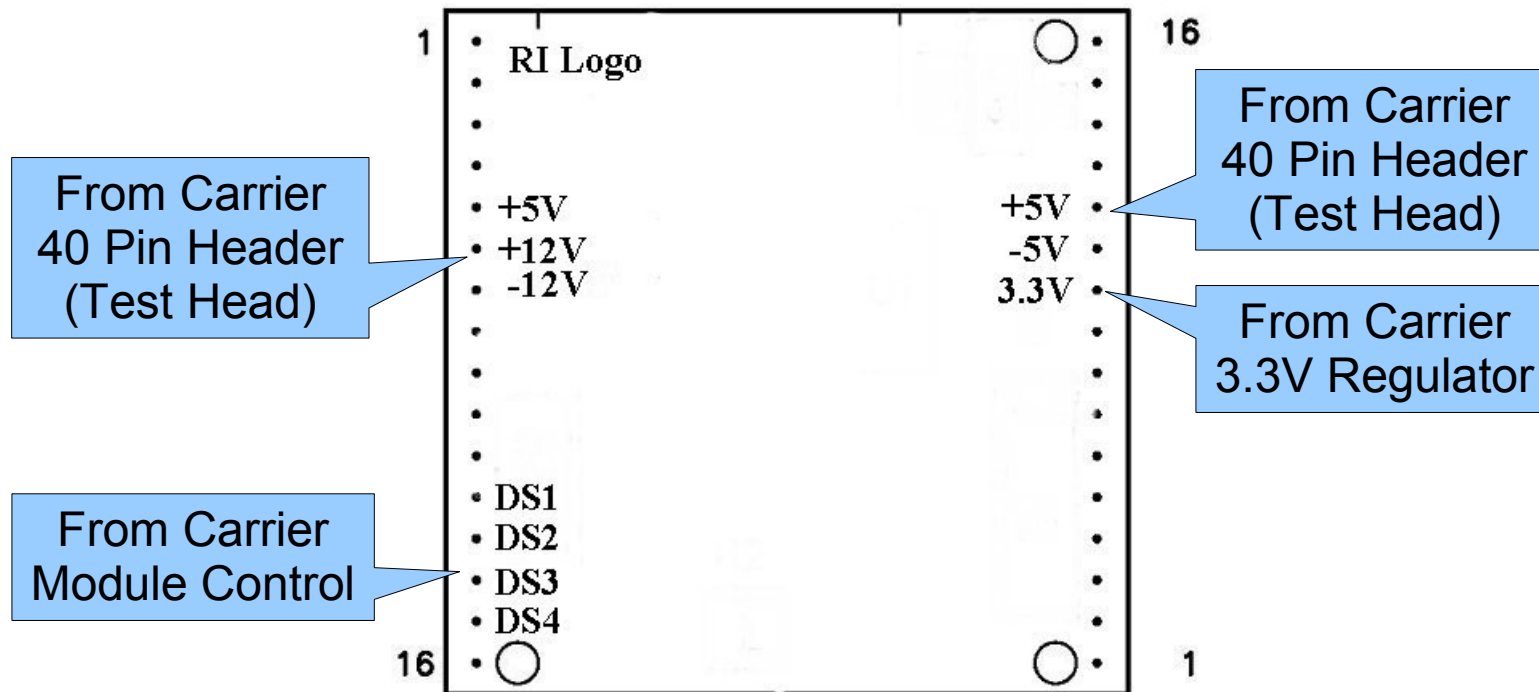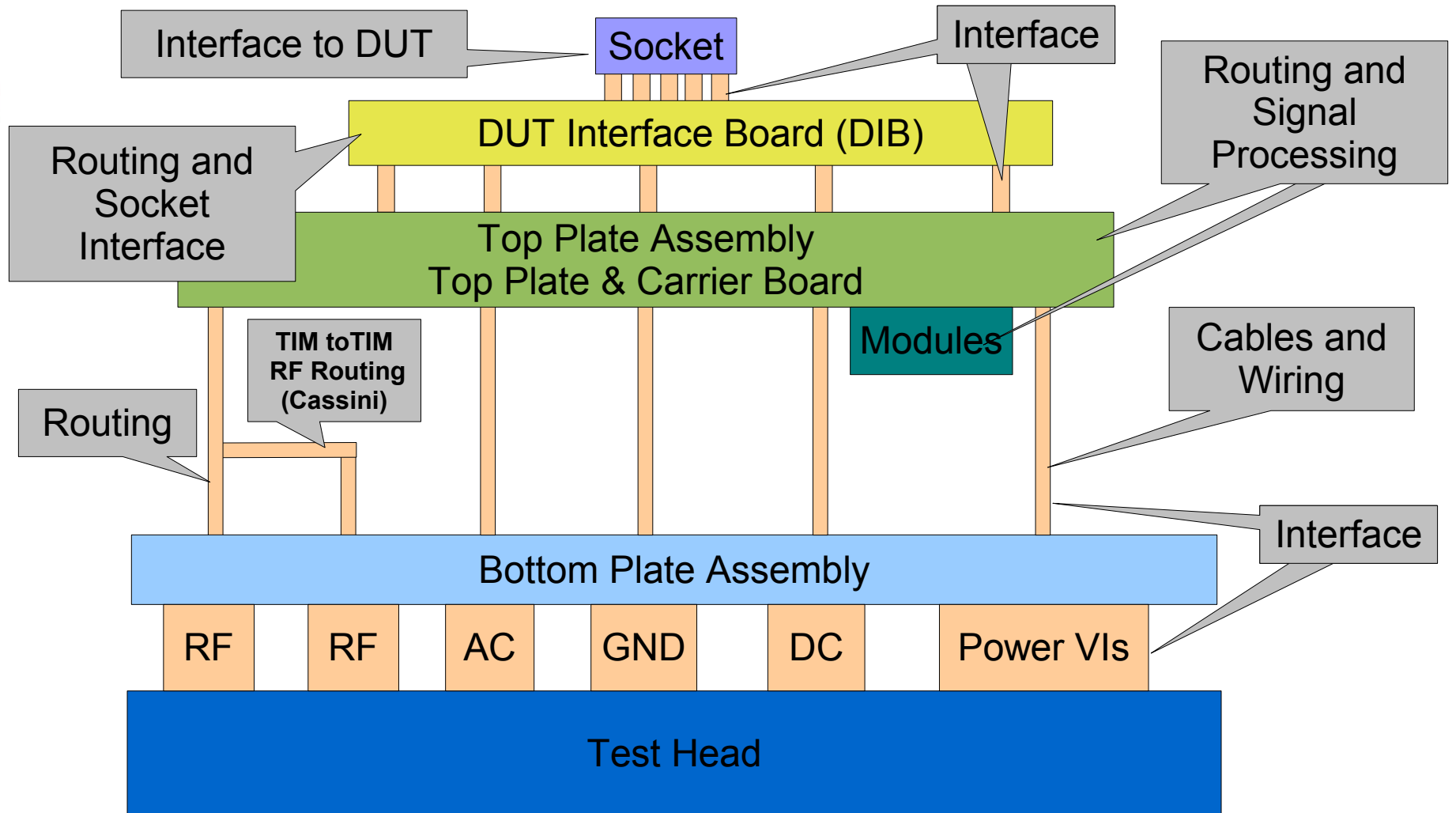
DIB Features (Bottom Side)

DIB Alignment Holes

RF Launch

Pogo Pads

Componant Areas

Socket Alignment Holes

Socket Mounting Holes

Solder Mask

DIB Clamp Through Holes

SN Chip

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DIB Features (TOP Side)

Pin 1 Location

Alignment Holes

RF Launch

Socket Interface

Site Labels

Socket Mounting Holes

Socket Alignment Holes

SN: 1XSTIC00

SN Label

Ground Plane

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Fixture Layers Graphical Representation

Interface to DUT

Socket

Interface

Routing and Signal Processing

DUT Interface Board (DIB)

Routing and Socket Interface

Top Plate Assembly
Top Plate & Carrier Board

Modules

Cables and Wiring

TIM toTIM RF Routing (Cassini)

Routing

Bottom Plate Assembly

Interface

| RF | RF | AC | GND | DC | Power VIs |

Test Head

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Fixture Basic Functions / Features

- What Do Fixtures Do
- Layers of a Fixture
- Bottom Plate Resources
- Top Plate Assembly and Resources
- **Fixture Modules Available**
- Smart Carrier Programming
- Planning: Fixture Schematic
- Fixture Assembly

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Why Modules?

Resource Customization, Extension, and Enhancement

- RF, AC, DC Switching
- Signal Attenuation
- Filtering
- Differential I/Q Signals and Offsets
- Frequency Division
- Voltage Buffering
- Etc....

Standard Modules Available From Roos Instruments

http://roos.com/docs/JLUT-64A253?Open

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Module Types

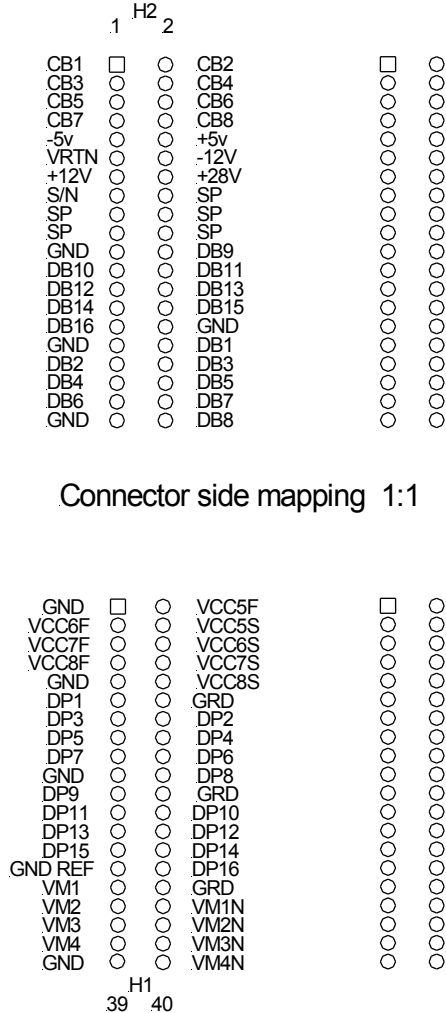## Module Types Based on Levels of Complexity and Control

- **Level 1** - Require simple static digital control lines.
  - OTC attenuators, switches, etc... requiring 1 - 8 Cbits
  - RI developed modules requiring 1 - 4 static control lines

- **Level 2** - Require more than simple static digital control but do not require fixture instrument buttons.
  - RI developed modules requiring more than 4 static control lines
  - Only one state or variable to control

- **Level 3** - Require fixture instrument buttons for control.
  - More that one variable to be controlled – ie. state and level commands together

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Level 1 Cbit Control Carrier 65A

Board Interface Pin Designations

H2
1   2

CB1	☐ ○	CB2
CB3	○ ○	CB4
CB5	○ ○	CB6
CB7	○ ○	CB8
-5v	○ ○	+5v
VRTN	○ ○	-12V
+12V	○ ○	+28V
S/N	○ ○	SP
SP	○ ○	SP
SP	○ ○	SP
GND	○ ○	DB9
DB10	○ ○	DB11
DB12	○ ○	DB13
DB14	○ ○	DB15
DB16	○ ○	GND
GND	○ ○	DB1
DB2	○ ○	DB3
DB4	○ ○	DB5
DB6	○ ○	DB7
GND	○ ○	DB8

Connector side mapping 1:1

GND	☐ ○	VCC5F
VCC6F	○ ○	VCC5S
VCC7F	○ ○	VCC6S
VCC8F	○ ○	VCC7S
GND	○ ○	VCC8S
DP1	○ ○	GRD
DP3	○ ○	DP2
DP5	○ ○	DP4
DP7	○ ○	DP6
GND	○ ○	DP8
DP9	○ ○	GRD
DP11	○ ○	DP10
DP13	○ ○	DP12
DP15	○ ○	DP14
GND REF	○ ○	DP16
VM1	○ ○	GRD
VM2	○ ○	VM1N
VM3	○ ○	VM2N
VM4	○ ○	VM3N
GND	○ ○	VM4N

H1
39   40

EDGE OF BOARD

ators, switches, relays, and
configured for module

e" is typed into the switch
File Editor (7100) or the
(Cassini).

Cbit2 high type C21 into
switch field.

Pin Designation Key:
CB   = Control Bits
SP   = Customer Specific/Undefined
GND   = Ground
VRTN   = Voltage Return
DB   = Static Digital
VCC   = Power Supply
DP   = Device Power
GRD   = Guard
GNDREF = Ground Reference
VMx   = Voltage Measure x
VM1N   = Differential Voltage Measure x

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Level 1 Module Control

Carrier Module

Carrier "M" location denotes position
M = S#

From Carrier Module Control
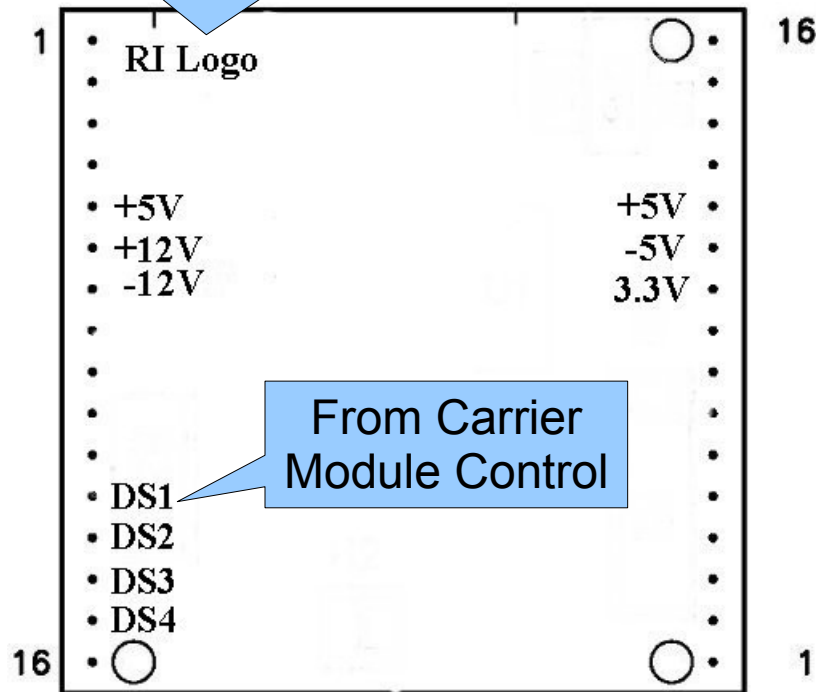
Note:
1. DS1-4 are not available on Passive carrier boards

Module Control String

1. Control provided through DS1 - DS4.

2. Format: "S# - state-state-state-state".
   # = module position

   Example: To drive the lines DS1 and DS3 high at module location M2 type S21X1X into the fixture file switch field.

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Level 1 Module Control Exercise

Write the code string required to place Cbit 3 high and Cbit 5 low. In the same string drive DS1,2, and 4 of the module at M3 high.

Where would the code string be typed?

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Answer to Level 1 Control Exercise

1. C31C50S311X1 or
   C50C31S311X1 or
   S311X1C31C50

2. In the fixture file switch field.

   Note that strings are not
   delineated and can be mixed.

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Module Types

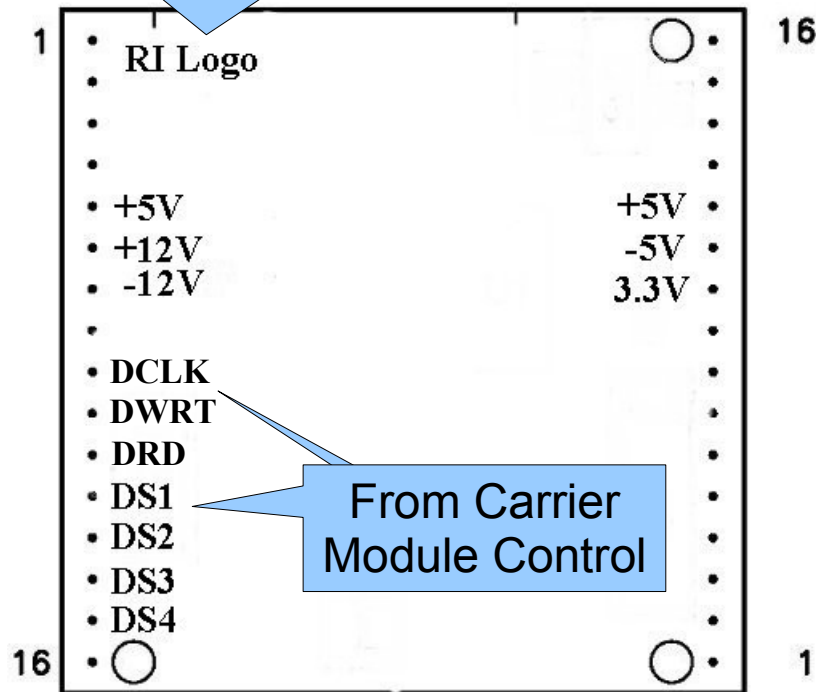## Module Types Based on Levels of Complexity and Control

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- **Level 2** - Require more than simple static digital control but do not require fixture instrument buttons.
    - RI developed modules requiring more than 4 static control lines
    - Only one state or variable to control

- **Level 3** - Require fixture instrument buttons for control.
    - More that one variable to be controlled – ie. state and level commands together

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Level 2 Module Control

Carrier Module

Carrier "M" location denotes position
M = A#

From Carrier
Module Control

Note:
1. DS1-4 are not available on Passive carrier boards

Module Control String

1. Control provided through DS1 - DS4, DWRT, DRD, and DCLK.

2. Carrier configuration step "Add Module" required in 7100. "Edit Modules" is used in the Fixture Definition on the Cassini.

3. No fixture control buttons required in test plan.

4. Format: "A#SW=XX" or "A#CX=Y".
   A# = module position
   SW=XX or CX=Y is module specific but still loaded into fixture switch field.

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Module Types

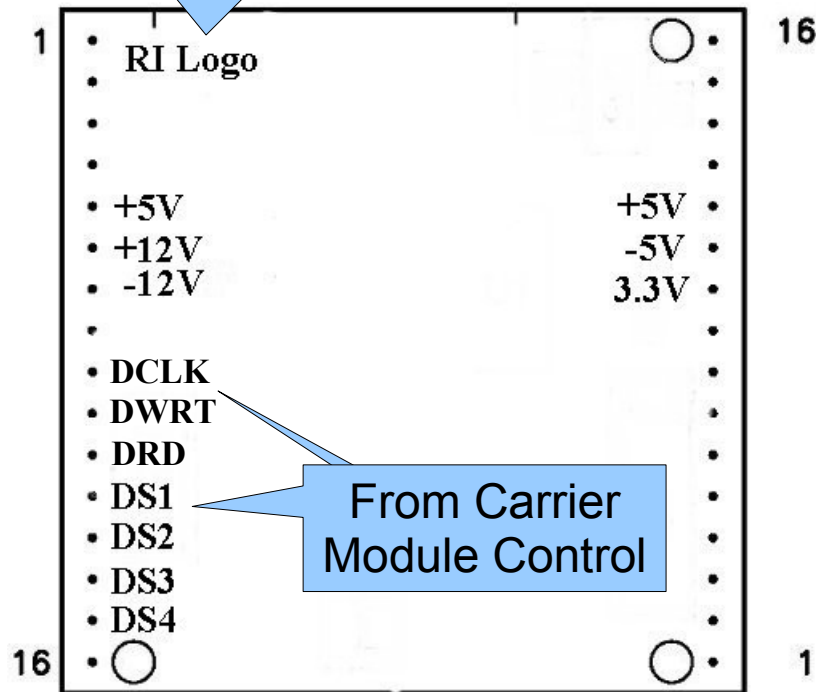## Module Types Based on Levels of Complexity and Control

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- **Level 3** - Require fixture instrument buttons for control.
    - More that one variable to be controlled – ie. state and level commands together

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Level 3 Module Control

Carrier Module

Carrier "M" location denotes position


```
1  •  RI Logo              O  •  16
   •                          •
   •                          •
   •                          •
   •  +5V              +5V  •
   •  +12V             -5V  •
   •  -12V             3.3V •
   •                          •
   •  DCLK                  •
   •  DWRT                  •
   •  DRD                   •
   •  DS1                   •
   •  DS2                   •
   •  DS3                   •
   •  DS4                   •
16 •  O                 O  •  1
```

From Carrier Module Control

Note:
1. DS1-4 are not available on Passive carrier boards

Module Control

1. Control provided through DS1 - DS4, DWRT, DRD, and DCLK.

2. Carrier configuration steps "Add Module" and "Add Instrument" required. This is done in the Fixture File Editor on the 7100 and in the Fixture Definition on the Cassini.

3. Fixture control buttons are required in test plan.

EX.
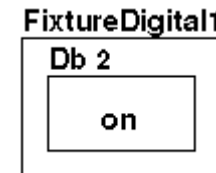
```
FixtureDigital1
Db 2
┌──────────┐
│   on     │
└──────────┘
```

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Fixture Basic Functions / Features

- What Do Fixtures Do

- Layers of a Fixture

- Bottom Plate Resources

- Top Plate Assembly and Resources

- Fixture Modules Available

- Smart Carrier Programming

- **Planning: Fixture Schematic**

- Fixture Assembly

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Fixture Functional Block Diagram

What is Required?

1. DUT pin outs: DUT Functional Block Diagram

2. DUT pin resource requirements - RF, AC, DC, or Digital:
   DIB Schematic

3. External Circuitry required for each DUT pin:
   Fixture Schematic

4. Tester, handler, and socket implementation

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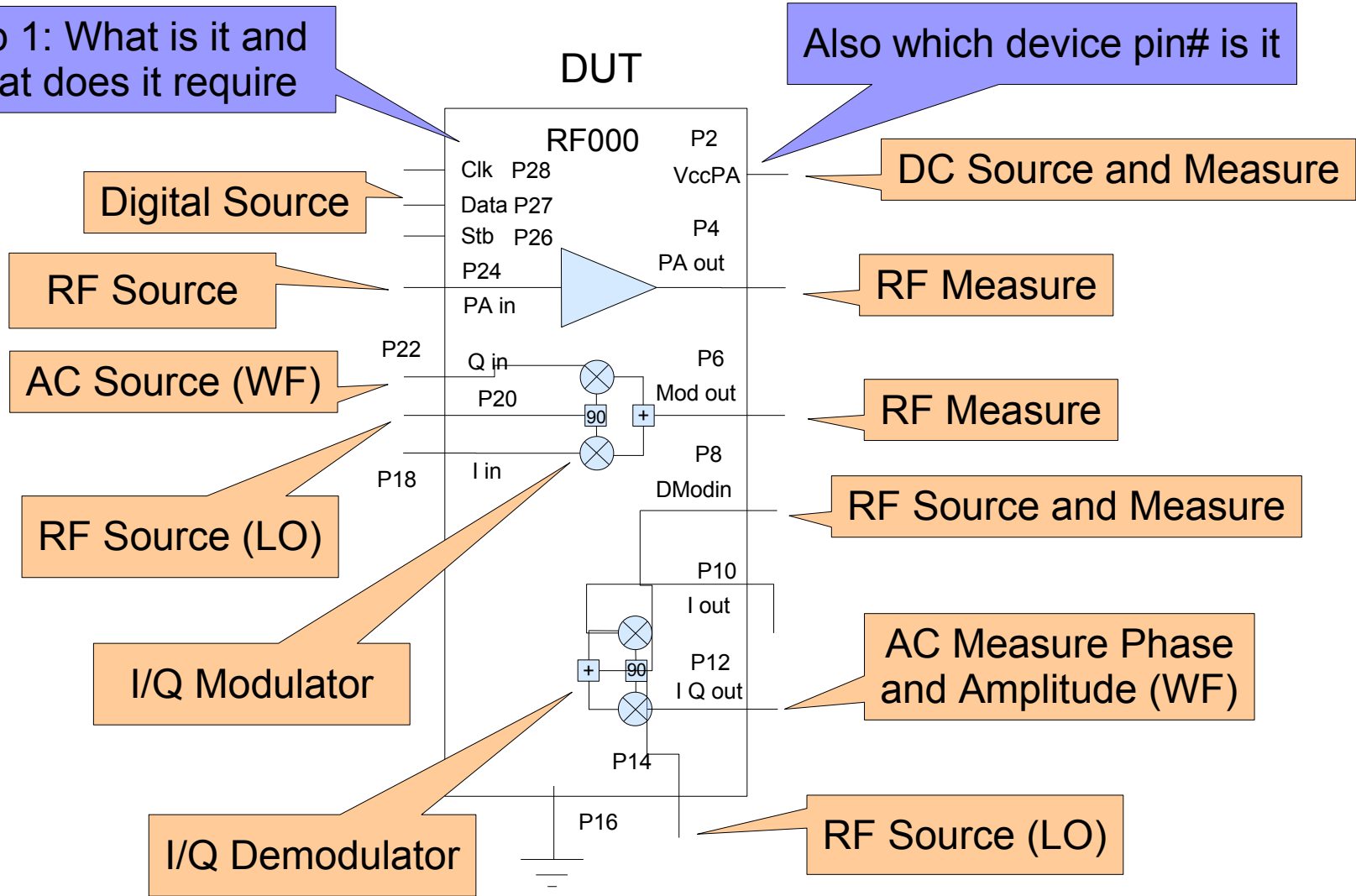
Creating the Fixture Schematic

Three Major Steps

1. DUT Functional Block Diagram

2. DIB Schematic

3. Fixture Schematic

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DUT Functional Block Diagram

Step 1: What is it and what does it require

Also which device pin# is it

DUT

RF000

Clk P28
Digital Source
Data P27
Stb P26

P24
RF Source
PA in

P2
VccPA — DC Source and Measure

P4
PA out — RF Measure

P22 Q in
AC Source (WF)
P20

P6
Mod out — RF Measure

RF Source (LO)
P18 I in

P8
DModin — RF Source and Measure

I/Q Modulator

P10
I out

P12
I Q out — AC Measure Phase and Amplitude (WF)

I/Q Demodulator

P14

P16 — RF Source (LO)

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Device Pin Names and Numbers

Pin Name	Pin Number	Function
Vcc PA	2	DC Power
PA Out	4	RF power output
Mod Out	6	Modulator RF Output
Dmod In	8	Demodulator RF Input
I Out	10	I Demodulator Output
Q Out	12	Q Demodulator Output
Dmod LO	14	Demodulator LO
GND	16	
I In	18	Modulator Input I
Mod LO	20	Modulator LO
Q In	22	Modulator Q in
PA In	24	Amp RF Input
Stb	26	Data Strobe
Data	27	Data Input
Clk	28	Data Clock

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Creating the Fixture Schematic

Three Major Steps

1. DUT Functional Block Diagram

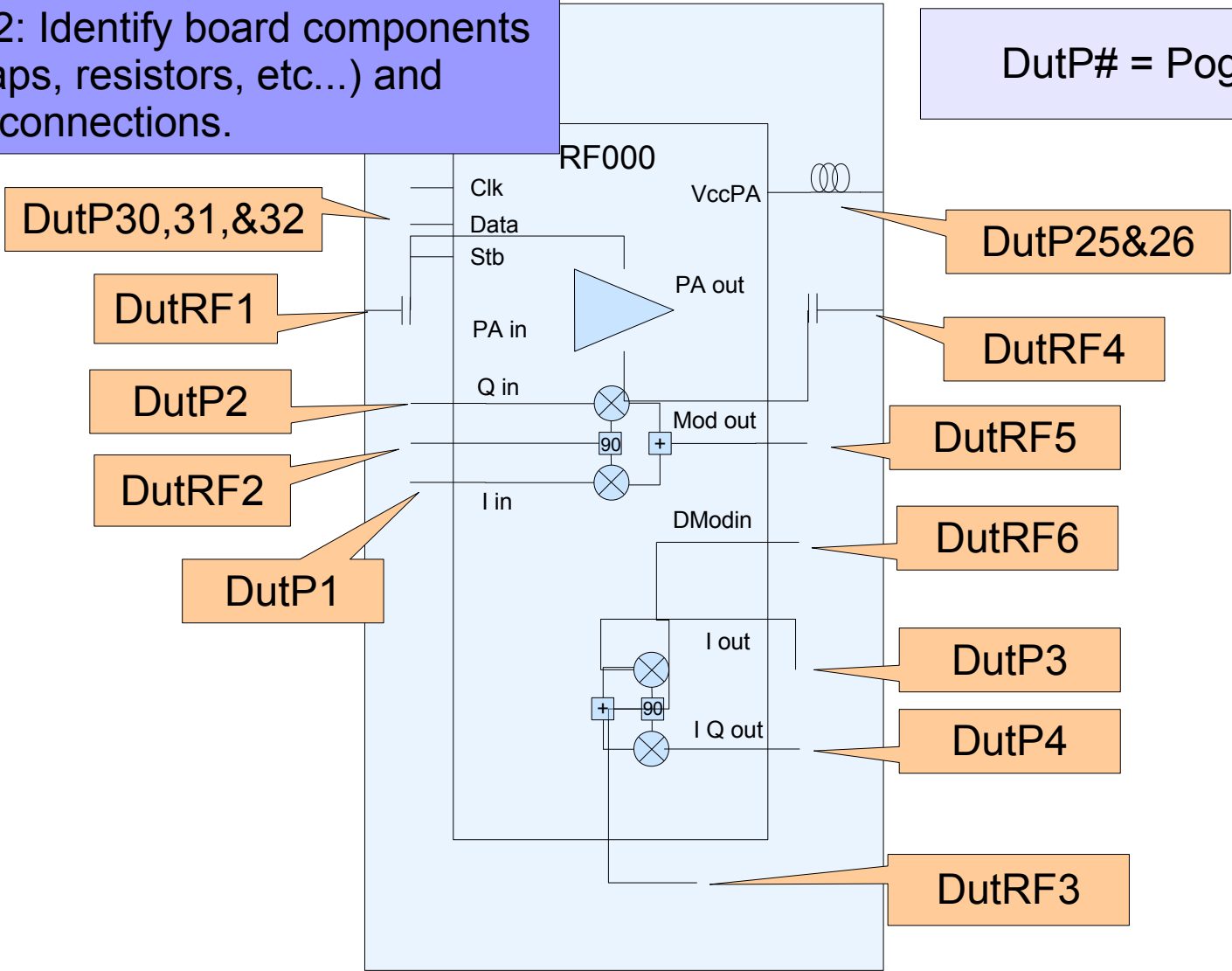2. DIB Schematic

3. Fixture Schematic

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Student DIB Block Diagram Step 2

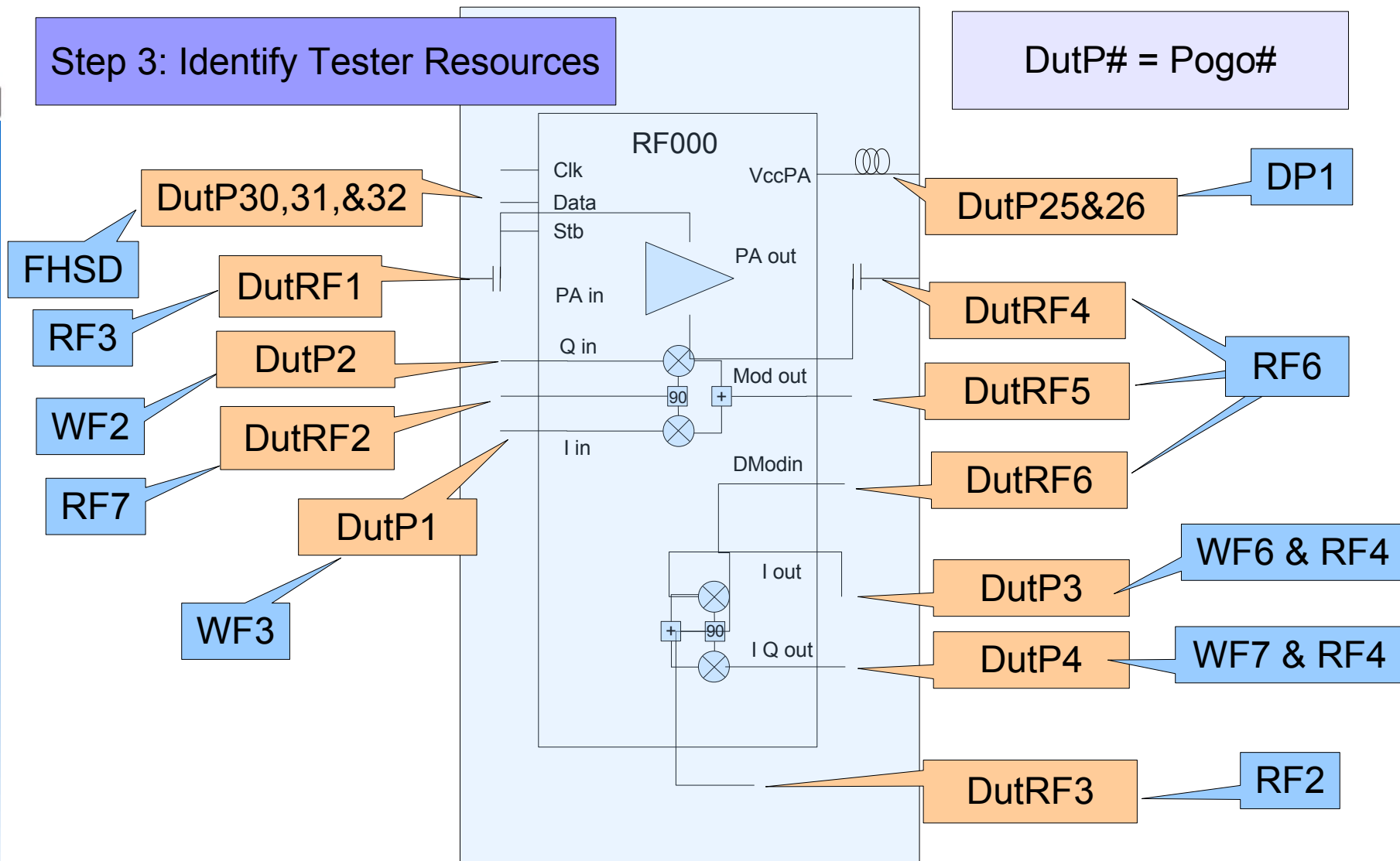Step 2: Identify board components (ie. caps, resistors, etc...) and edge connections.

DutP# = Pogo#

RF000

Clk
Data
Stb
PA in
Q in
I in

VccPA
PA out
Mod out
DModin
I out
I Q out

DutP30,31,&32
DutRF1
DutP2
DutRF2
DutP1

DutP25&26
DutRF4
DutRF5
DutRF6
DutP3
DutP4
DutRF3

90
+
+
90

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Student Fixture Block Diagram Step 3

DutP# = Pogo#

RF000

Clk

Data

Stb

VccPA

DutP25&26

DP1

DutP30,31,&32

FHSD

DutRF1

PA out

PA in

DutRF4

RF6

RF3

DutP2

Q in

DutRF5

WF2

Mod out

DutRF2

I in

DutRF6

RF7

DutP1

DModin

WF6 & RF4

I out

DutP3

WF3

+ 90

I Q out

DutP4

WF7 & RF4

DutRF3

RF2

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DIB Schematic Creation

Fixture Top Assembly.

Device Interface Board I/Os.

Fixture Carrier Board

   Type (Smart vs Passive)

   Single-site, Dual-site, or Multi-site.

Socket Type required for the DUT.

DUT to DIB resource route names

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Creating the Fixture Schematic

Three Major Steps

1. DUT Functional Block Diagram

2. DIB Schematic

3. Fixture Schematic

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Student Fixture Block Diagram Step 4
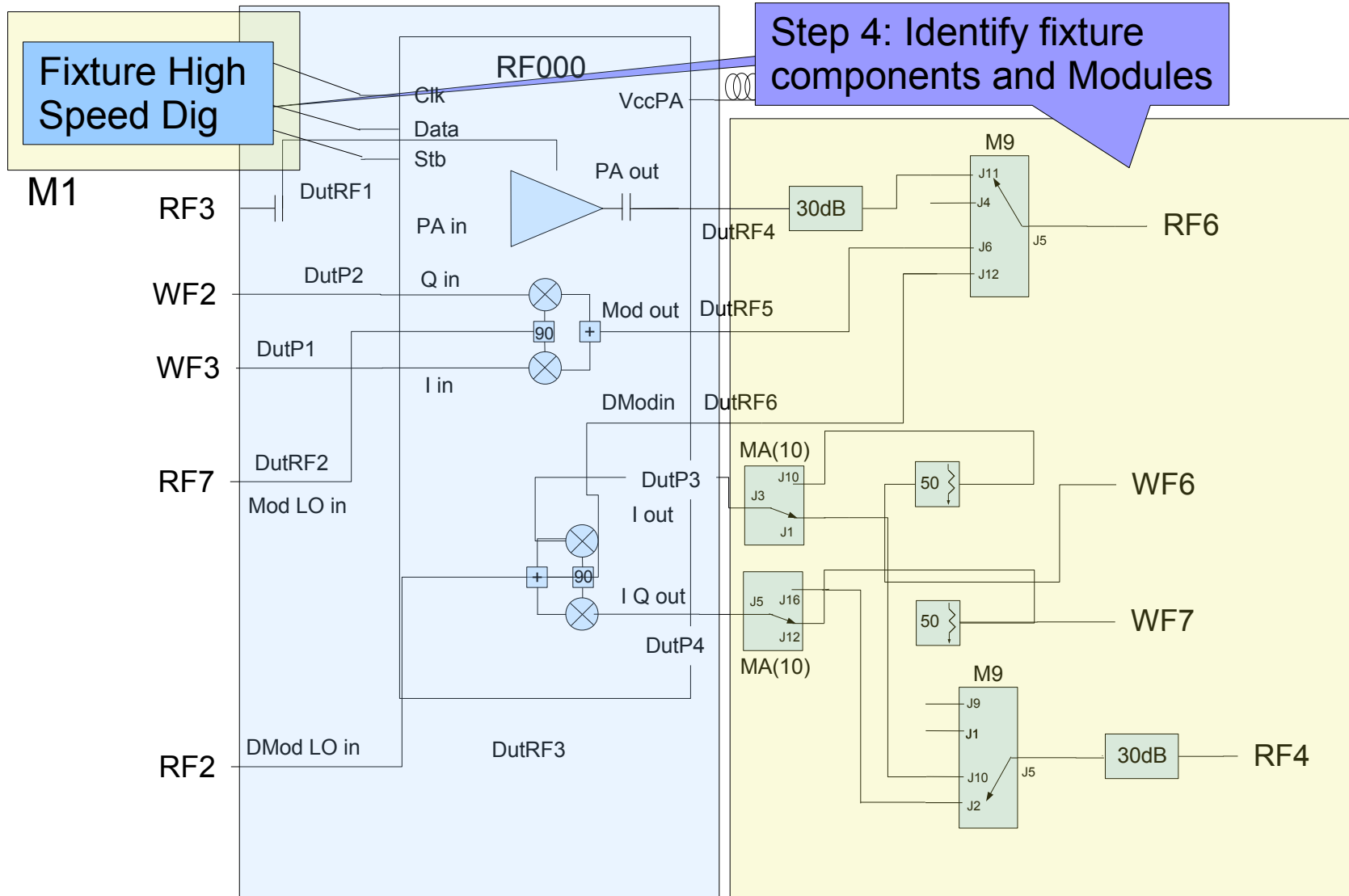
Step 4: Identify fixture components and Modules

Fixture High Speed Dig

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The Spreadsheet

Why A Spread Sheet?
Textually describes the fixture assembly for repeat builds.

Major Sections:
1. General information

2. Assembly notes

3. RF path descriptions

4. Module locations

5. Specific non pogo pin connections
   Module to Module
 Resource to Module
 Resource to DutRF

 6. Pogo pin connections

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Spreadsheet – General Info

General Information:

DUT BOARD	RF000
FIXTURE TYPE	RI7100 product = RF000
CARRIER TYPE	SuperSmart Y00065A1
DOCKING TYPE	Seiko – Epson Model XYZ

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Spreadsheet - Assembly Notes

Notes:

1) Bottom Plate: Pin 32 of header 1 needs
   clipped for compatibility with old test systems.
2) Resource Number is for factory internal use.
3) Documentation to be included:
   * Smart Carrier Module Truth Tables.
   * Smart Carrier Control Bit Programming.
   * Software Fixture
4) Baluns for DIB provided by customer.

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Spreadsheet - RF Paths

RF Routing and Control:

CARRIER BOARD PIN ID	SOFTWARE FIXTURE ID	RESOURCE	DUT PIN NAME	NOTES / CBIT SETTINGS
J1	DutRF1	RF3	PA In	

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RF Routing and Control:

CARRIER BOARD PIN ID	SOFTWARE FIXTURE ID	RESOURCE	DUT PIN NAME	NOTES / CBIT SETTINGS

To be filled out in class

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Student Fixture Block Diagram

Fixture High Speed Dig

M1

RF000

Clk
Data
Stb
PA in
Q in
I in
DModin
DutP3
I out
I Q out
DutP4
Mod LO in
DMod LO in

VccPA
PA out
Mod out
DutRF4
DutRF5
DutRF6

DutRF1
DutP2
DutP1
DutRF2
DutRF3

RF3
WF2
WF3
RF7
RF2

Record pin name as well

Take each RF/AC path and record its DIB pin and attached resource. Can also include control strings.

M9
J11
J4
J6
J12
J5
30dB
RF6

MA(10)
J10
J3
J1
50
WF6

J5 J16
J12
50
WF7
MA(10)

M9
J9
J1
J10
J2
J5
30dB
RF4

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Spreadsheet - RF/AC Paths RF000

RF Routing and Control:

CARRIER BOARD PIN ID	SOFTWARE FIXTURE ID	RESOURCE	DUT PIN NAME	NOTES / CBIT SETTINGS
J1	DutRF1	RF3	PA In	
J3	DutRF3	RF2	Dmod LO In	
J2	DutRF2	RF7	Mod LO In	
J6	DutRF6	RF6	Dmod In	S911XX
J5	DutRF5	RF6	Mod Out	S901XX
J4	DutRF4	RF6	PA Out	S910XX
Pogo 1	DutP1	WF3	I In	
Pogo 2	DutP2	WF2	Q In	
Pogo 3	DutP3	WF6	I Out	SAXX11
Pogo 4	DutP4	WF7	Q Out	SA11XX
Pogo 3	DutP3	RF4	I Out	S9XX01SAXX11
Pogo 4	DutP4	RF4	Q Out	S9XX00SA01XX

Note: Modules are in positions 9 & 10

All level 1 control

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Student Fixture Block Diagram

Fixture High Speed Dig
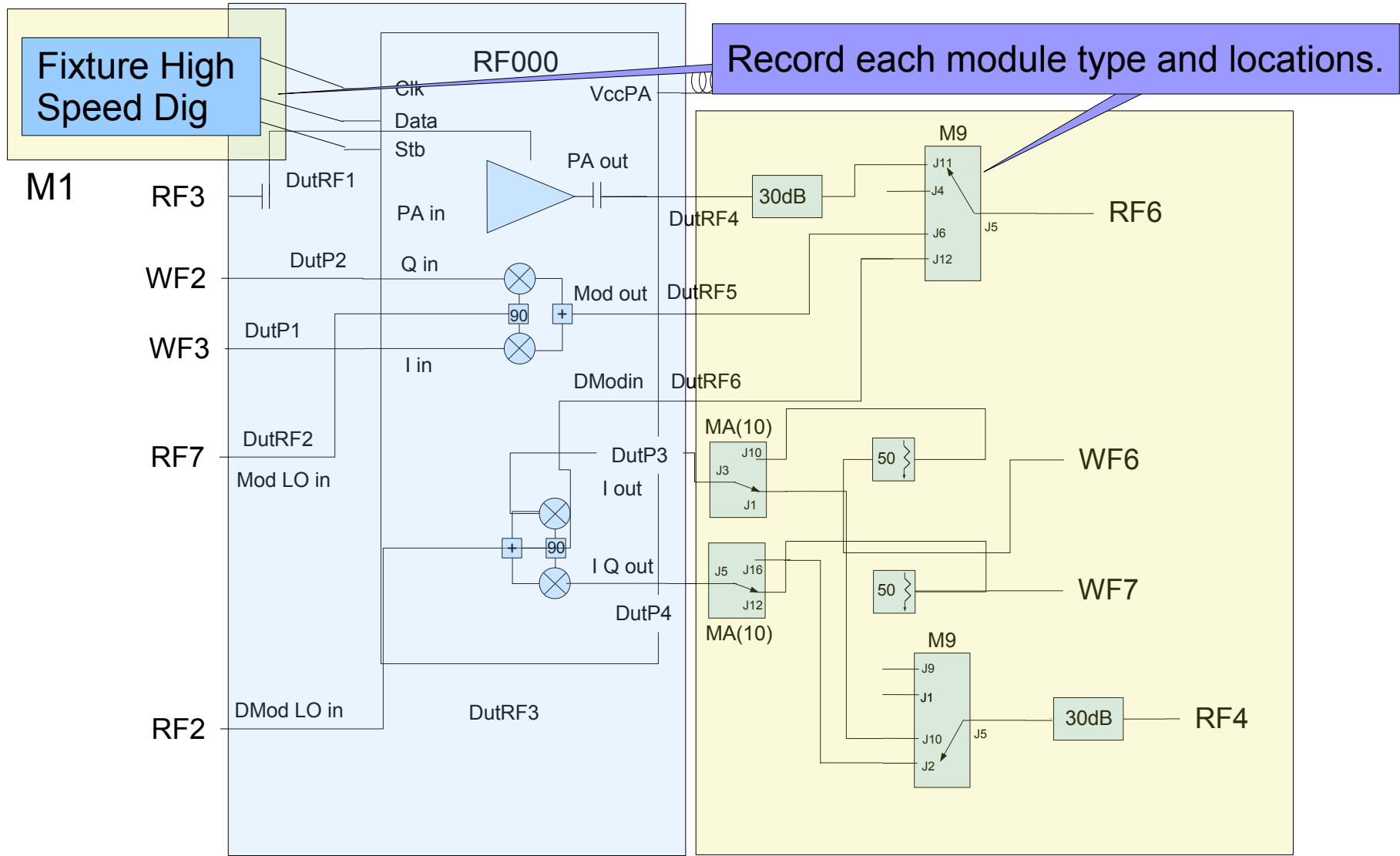
Record each module type and locations.

M1

RF000

Clk
Data
Stb

VccPA

M9

J11
J4
J6
J12

J5

30dB

RF6

RF3 — DutRF1

PA out

PA in

DutRF4

WF2 — DutP2 — Q in

Mod out DutRF5

WF3 — DutP1

90 +

I in

DModin DutRF6

RF7 — DutRF2

MA(10)

J10
J3
J1

50

WF6

Mod LO in

DutP3

I out

90 +

I Q out

J5 J16
J12

50

WF7

DutP4

MA(10)

M9

J9
J1
J10
J2

J5

30dB

RF4

RF2 — DMod LO in

DutRF3

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Spreadsheet – Module Locations RF000

Module and Instrument Locations

Module Type	RIK#	Board Fab# Inst. Stack#	Instrument Name	Carrier Position
SP2T	RIK0026B	Y00036C1	-------	M9
SP4T	RIK0056B	Y0004TC1	-------	M10
SP4T	RIK0056B	Y0004TC1	-------	M3
HSD	RIK0017A	Y0002JB1 Y0004NC1 Stack = Y200061B	RI7431B	M1

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Student Fixture Block Diagram

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Other Connections

Non-Pogo AC/DC and Specific RF Connections:

Other From	To	Wire Length	Wire Color	Notes/Dut Pin Name

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Student Fixture Block Diagram

Fixture High Speed Dig

M1

RF000

Clk
Data
Stb

DutRF1

PA out
PA in

DutP2   Q in

DutP1

I in

Mod out   DutRF5

DModin   DutRF6

DutP3

I out

I Q out

DutRF2
Mod LO in

RF7

RF3

Example Path

Example Path

DMod LO in   DutRF3

RF2

VccPA

Record specific resource and cable type to each node in path.

M9
J11
J4
J5
J6
J12

30dB

DutRF4

RF6

MA(10)
J10
J3
J1

50

WF6

MA(10)
J5   J16
J12

50

WF7

M9
J9
J1
J10   J5
J2

30dB

RF4

Example Path

DutP4

Spreadsheet – Non Pogo Connections

Non-Pogo AC/DC and Specific RF Connections:

Other From	To	Wire Length	Wire Color	Notes/Dut Pin Name
RF3	DutRF1 J1	15"		SSIS-MCX Qflex
RF7	DutRF3 J3	15"		SSIS-MCX Qflex
RF4	30dB pad			SSIS – SMAF Qflex
30dB pad	SP4T at M9 J5	5"		SMAF-MCX Qflex
SP4T at M9 J2	SPDT at M10 J16	5"		MCX-MCX Qflex
SPDT at M10 J5	DutP2	5"		SMAM-SMAM Qflex

Example paths

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Student Fixture Block Diagram

Fixture High Speed Dig

RF000

Take each DC/Dig and record its attached resource.
Can also include control strings.

M1

RF3

Clk   DutP20   DutP10
Data   DutP21   VccPA
Stb   DutP22

DutP10
VccPA

DutRF1

PA out

30dB

J11
J4
J6   J5
J12

RF6

PA in

WF2   DutP4   Q in

DutRF4

WF3   DutP1

90   +   Mod out   DutRF5

I in

DModin   DutRF6

RF7   DutRF3

MA(10)

J10
J3
J1

50

WF6

Mod LO in

DutP3

I out

+   90   I Q out

J5   J16
J12

50

WF7

DutP2

MA(10)

M9

J9
J1

J10   J5
J2

30dB   RF4

RF2   DMod LO in   DutRF2

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Spreadsheet - Pogo Connections

Pogo Resource Allocation and Notes:

Pogo Pin	Resource	Wire Length	Wire Color	Dut Pin	Notes/Dut Pin Name
10	DP1	12"	RED		VCC PA
20	HSD at M1 P3	12"	GRY		From HS Harness Clock
21	HSD at M1 P4	12"	GRY		From HS Harness Data
22	HSD at M1 P5	12"	GRY		From HS Harness Strb

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Fixture Basic Functions / Features

- What Do Fixtures Do

- Layers of a Fixture

- Bottom Plate Resources

- Top Plate Assembly and Resources

- Fixture Modules Available

- Smart Carrier Programming

- Planning: Fixture Schematic

- **Fixture Assembly**

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Bottom Plate - Actuator and Legs

Install the fixture actuators and the fixture legs to the bottom of the fixture plate.

Actuator

Leg

Actuator

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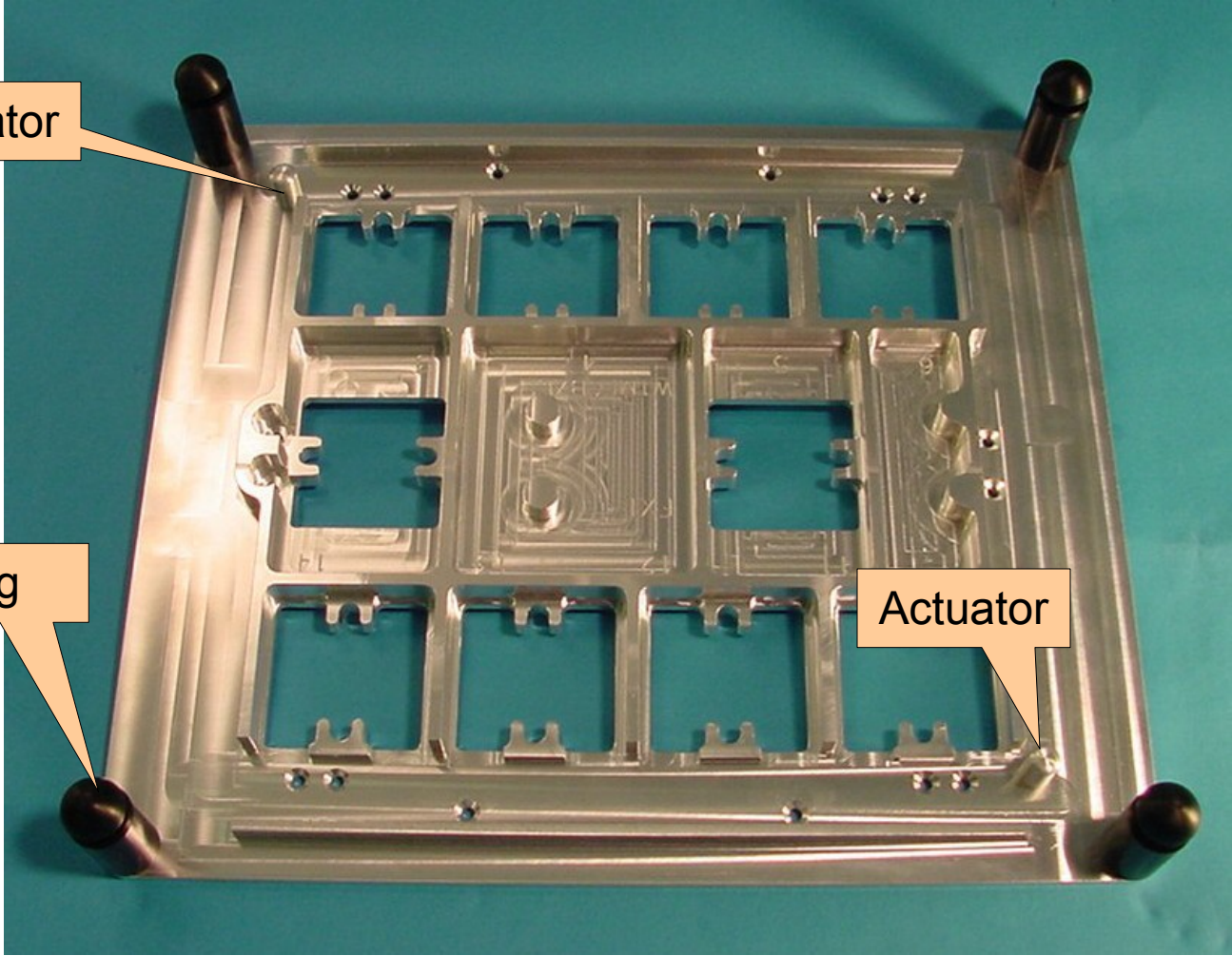
Assembling the RF Block Hardware

RF Cables (pre-bent) 2 ea.

4-40 Truss 4 ea.

Brackets 2 ea.

RF Blocks 2 ea.

2-56 Flat Head 4 ea.

Roos Instruments
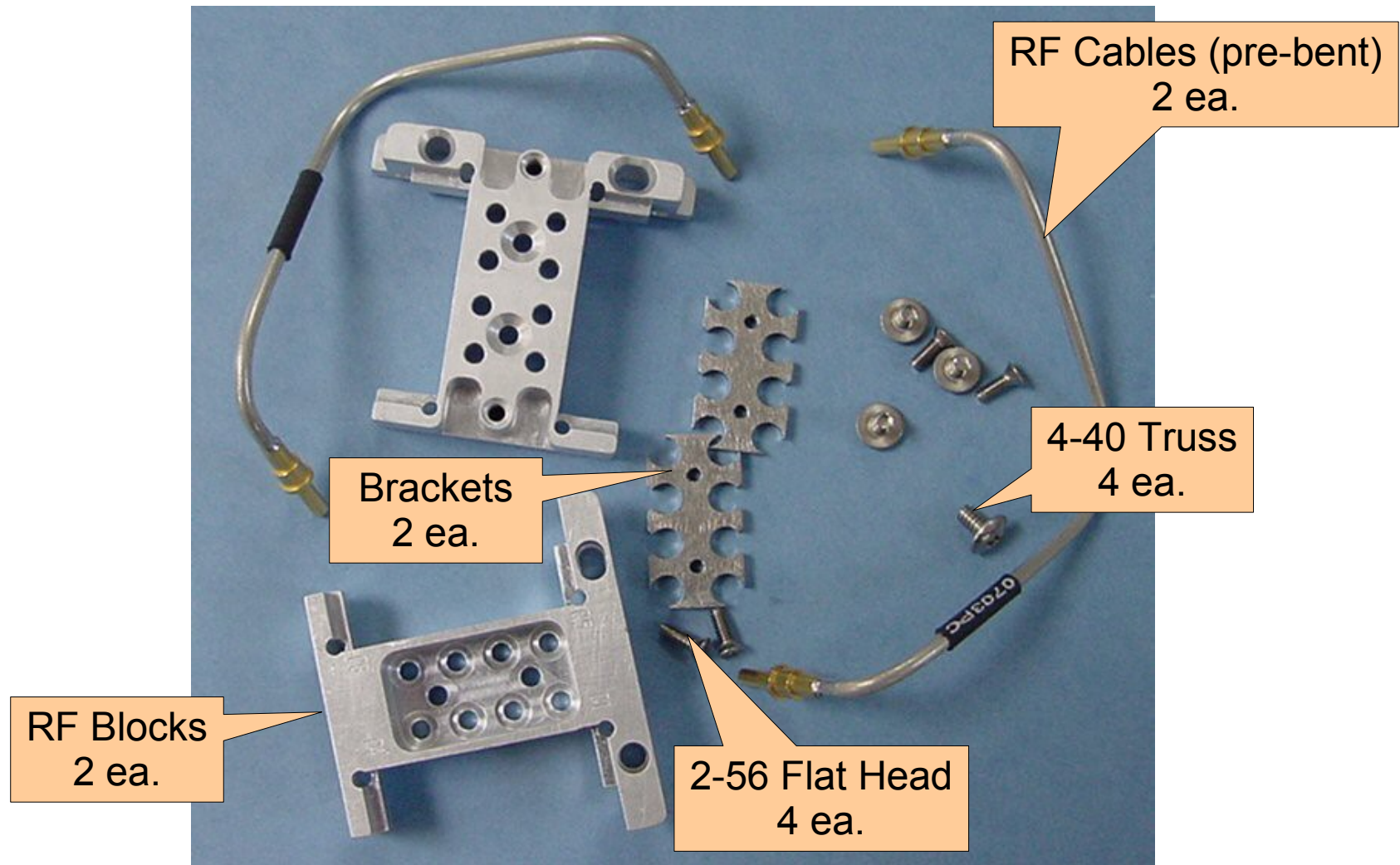
Addional Hardware

4 ea. MCX-#12 Cables

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Installing RF2, 3, 6, and 7 Cables

Insert four #12 to MCX X 18" cables into one of the brackets as shown.

Start here then slide

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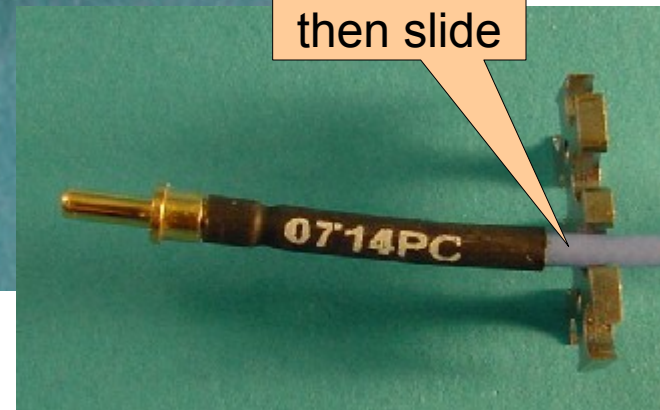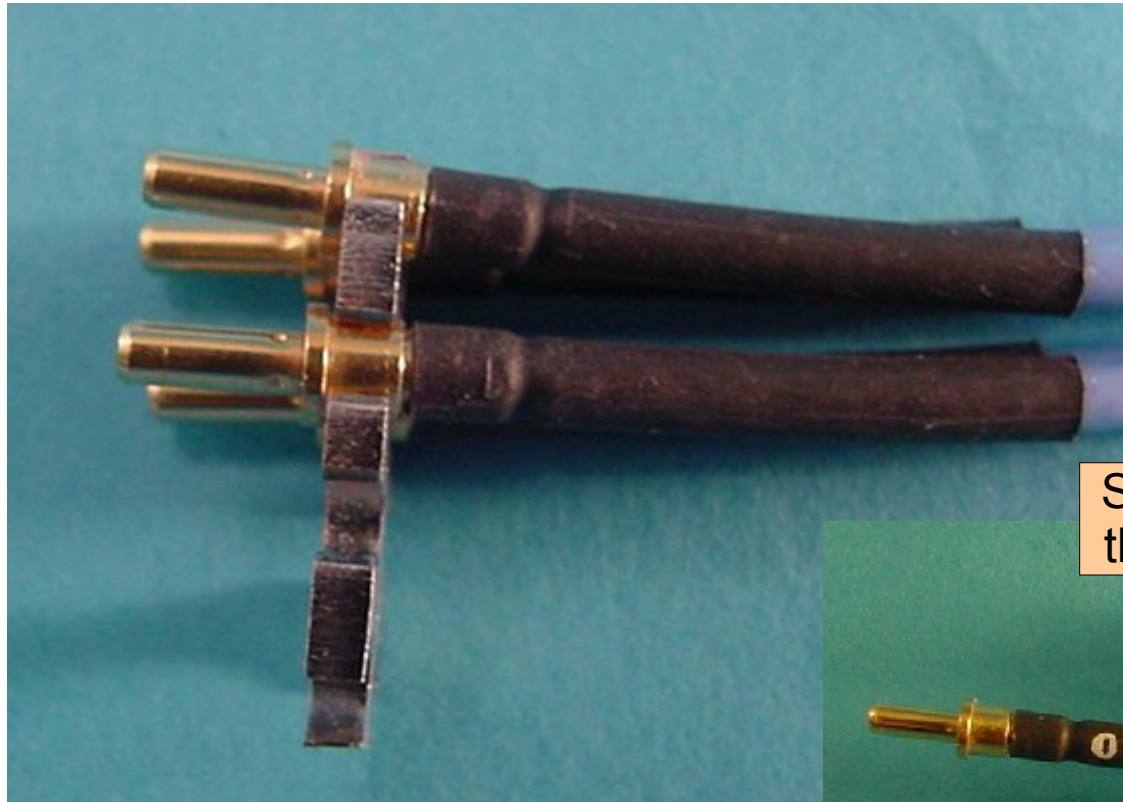
Installing RF2, 3, 6, and 7 Cables

- Place the ends of the semi-rigid cables into the bracket. Put the tallest one in location C5 of the block.

- Work the connectors into their respective holes.

- Bottom out the bracket into the RF block

- Secure the bracket with 2-56 screws. When doing this apply a **SMALL** amount of Loctite to the threads.

C5 Location

Tallest Cable

LOCTITE
222MS

THREADLOCKER
FIJADOR DE ROSCAS

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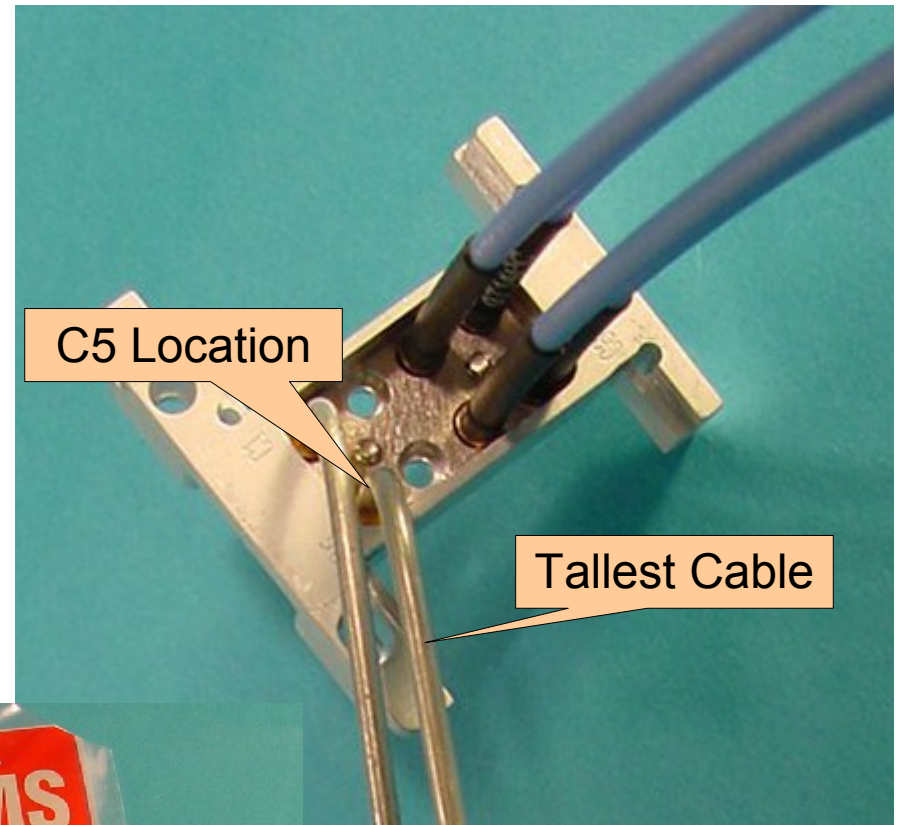
Installing Source Hi and Receive Hi Cables

- Place the other ends of the semi-rigid cables into a second bracket. Put the tallest one in location C6 of the block and the shortest into C7.

- Work the connectors into their respective holes.

- Bottom out the bracket into the RF block

- Secure the bracket with 2-56 screws. When doing this apply a **SMALL** amount of Locktite to the threads. Make sure not to get any lock-tite on the RF connectors.

C7 Location

Tallest Cable

C6 Location
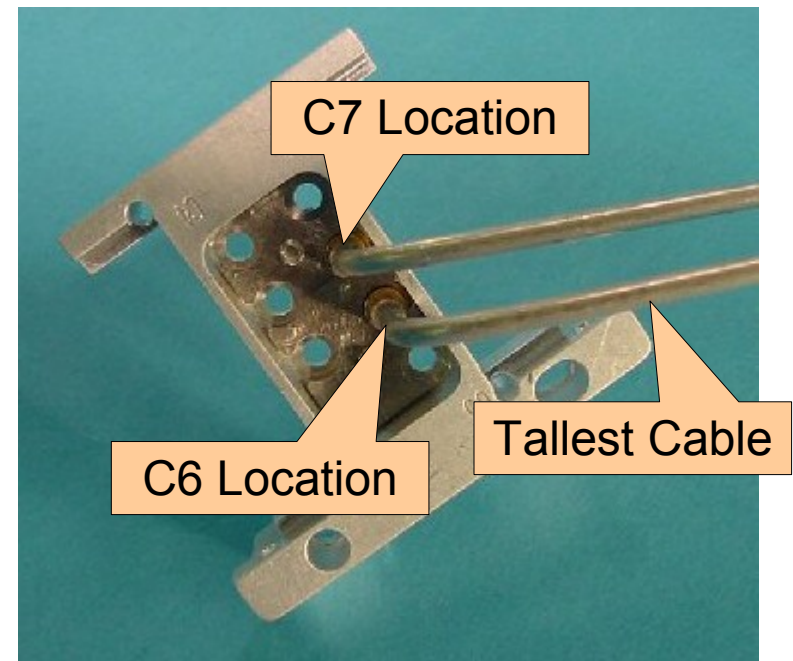
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Complete RF Block with Cables
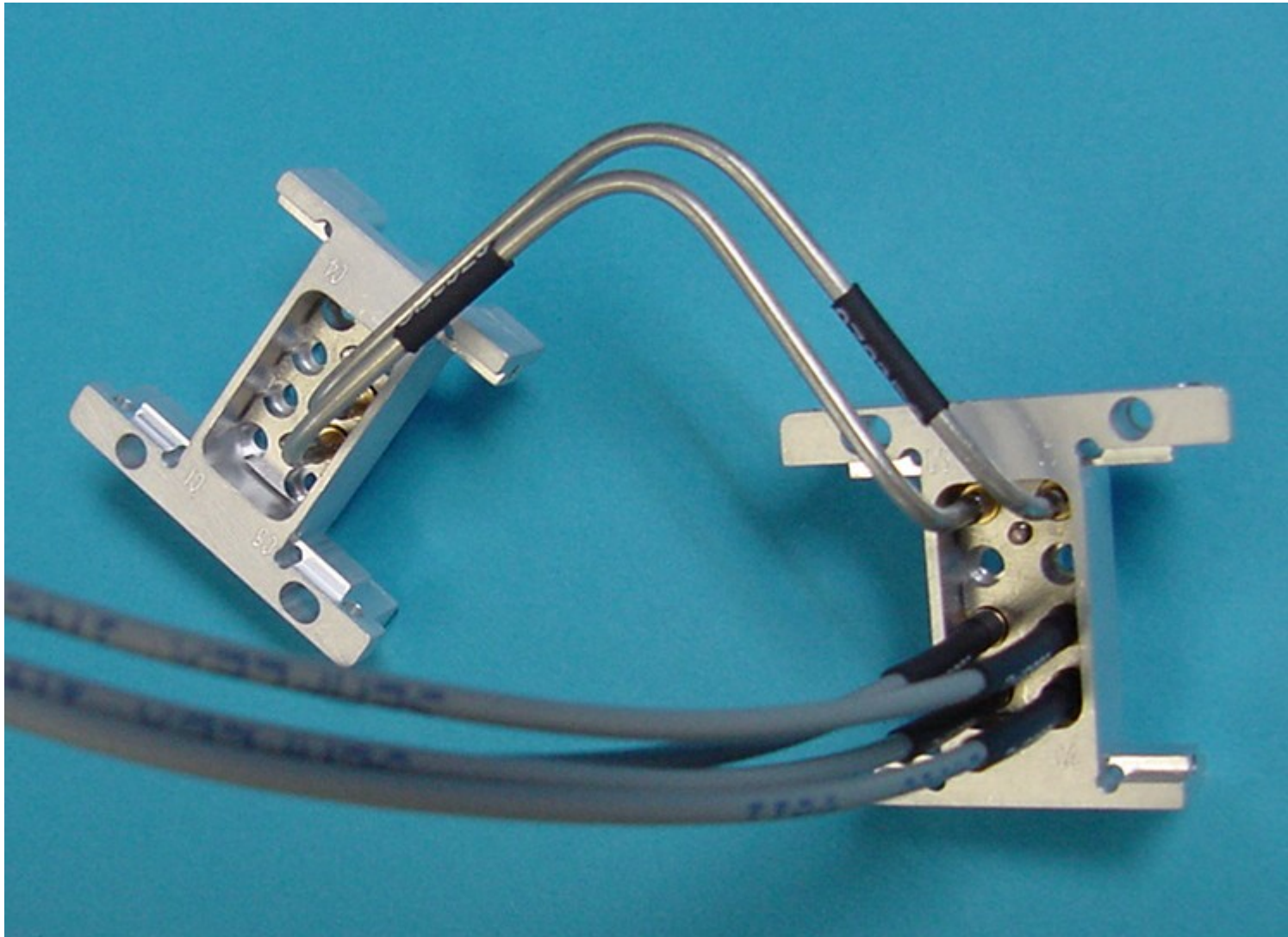
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Install RF Block into Bottom Plate

Place the completed RF block as shown onto the bottom plate.

Roos Instruments
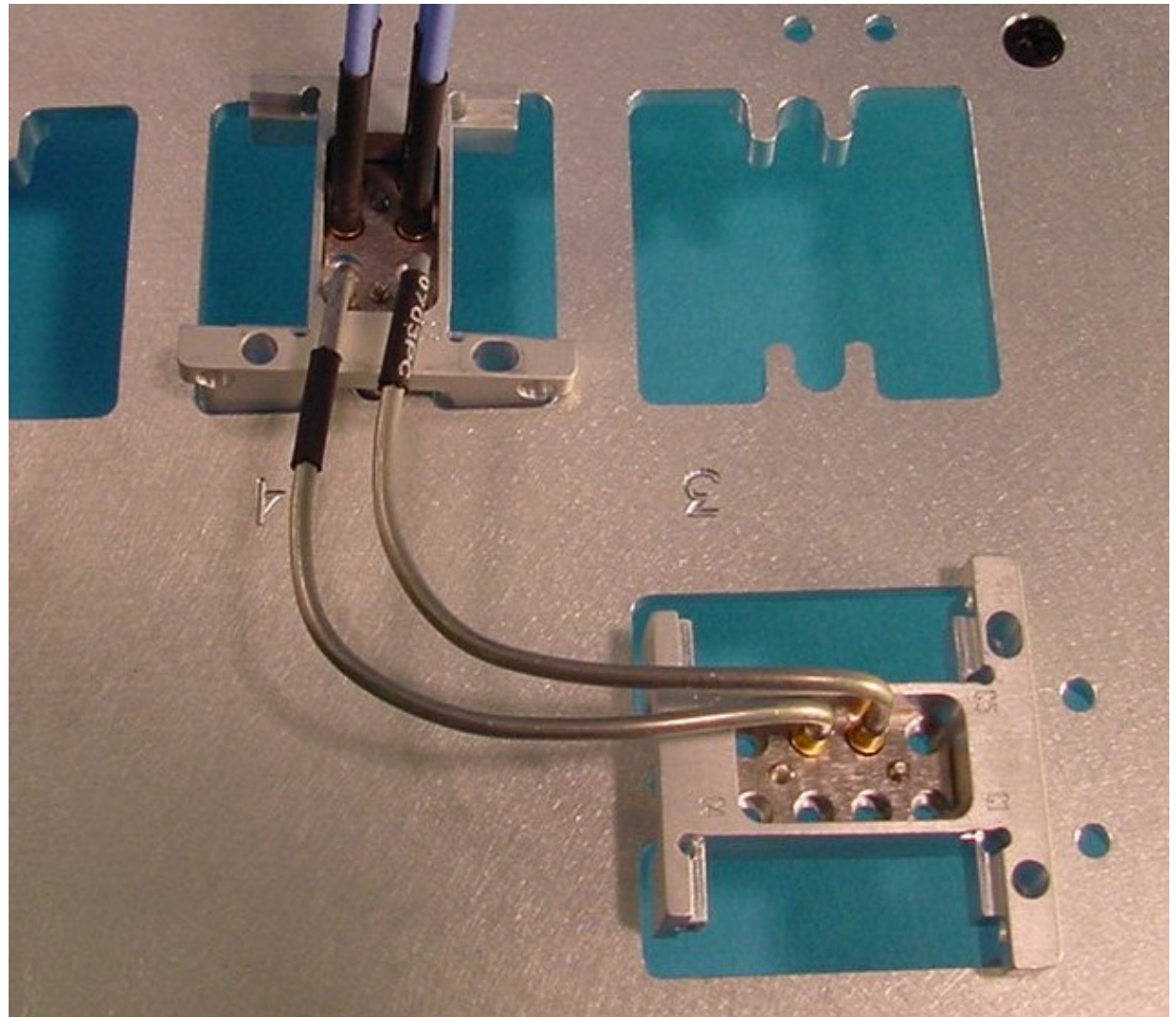
RF Block Installation Finished

Install 4-40 Truss screws with a **SMALL** amount of Locktite (4 plcs).

Install Truss Screw
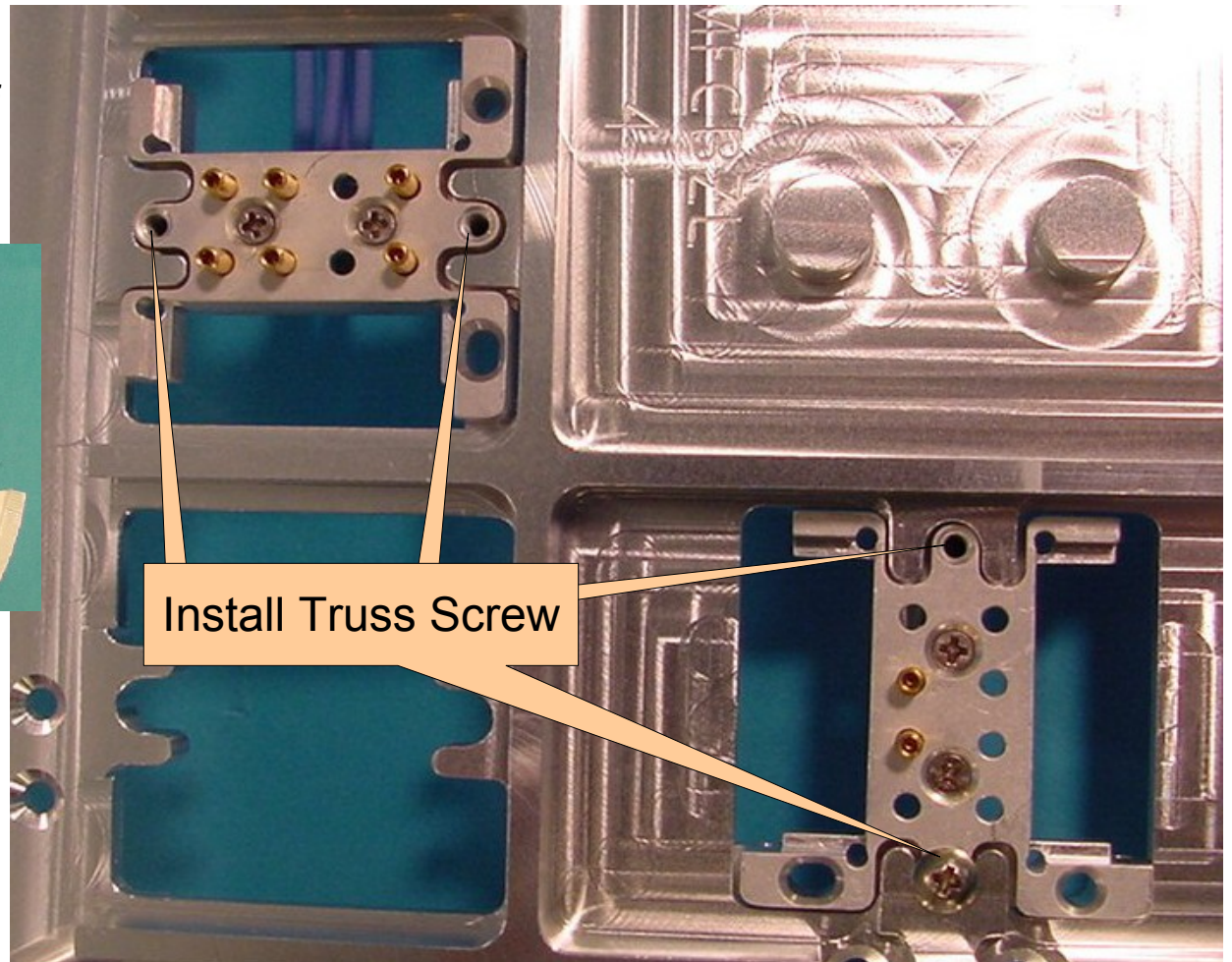
WF Block Install (Optional)

Using the same techniques and hardware types as above install 5ea MCX-#12 cables into an RF block. Fill positions C1, C2, C4 C5, and C6.

Roos Instruments
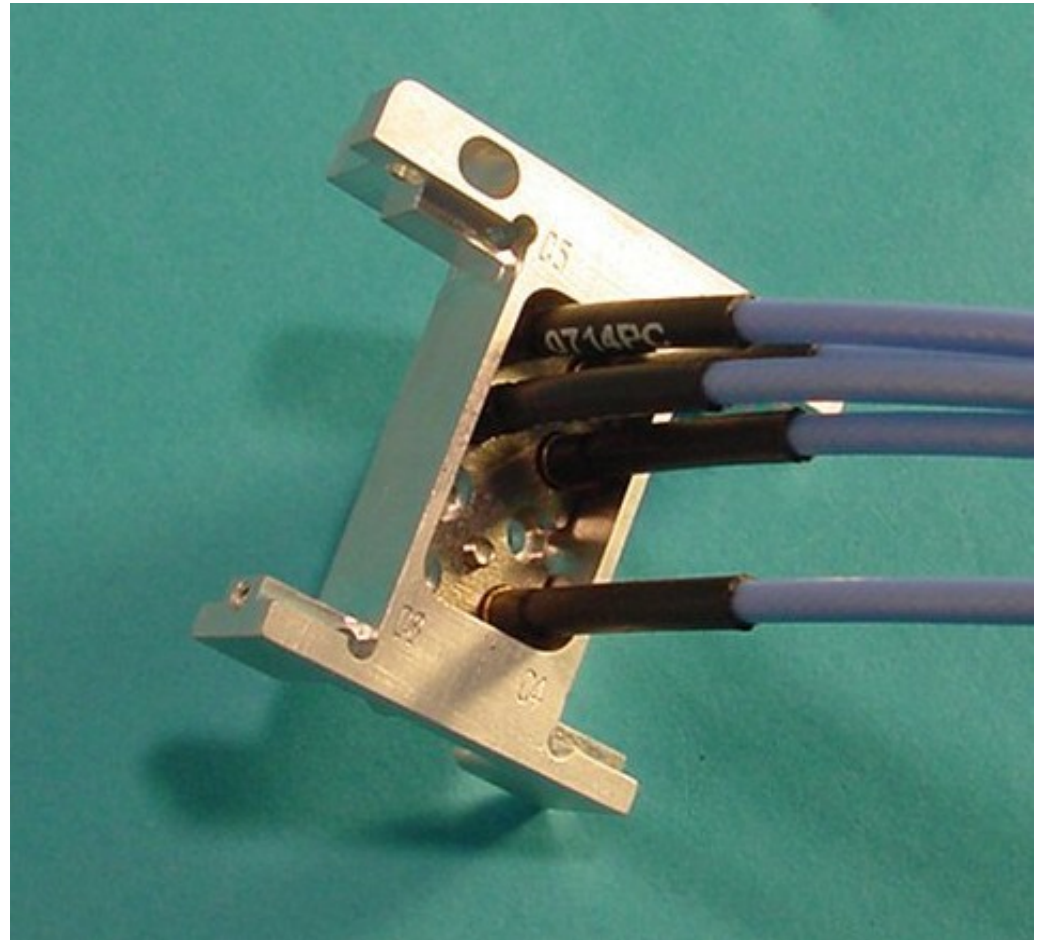
Install WF Block onto Bottom Plate

Put the assembled WF block into the #12 position on the bottom plate. Remember to install the truss screws into the other side of the block. Use only a **SMALL** amount of Locktite.

Roos Instruments
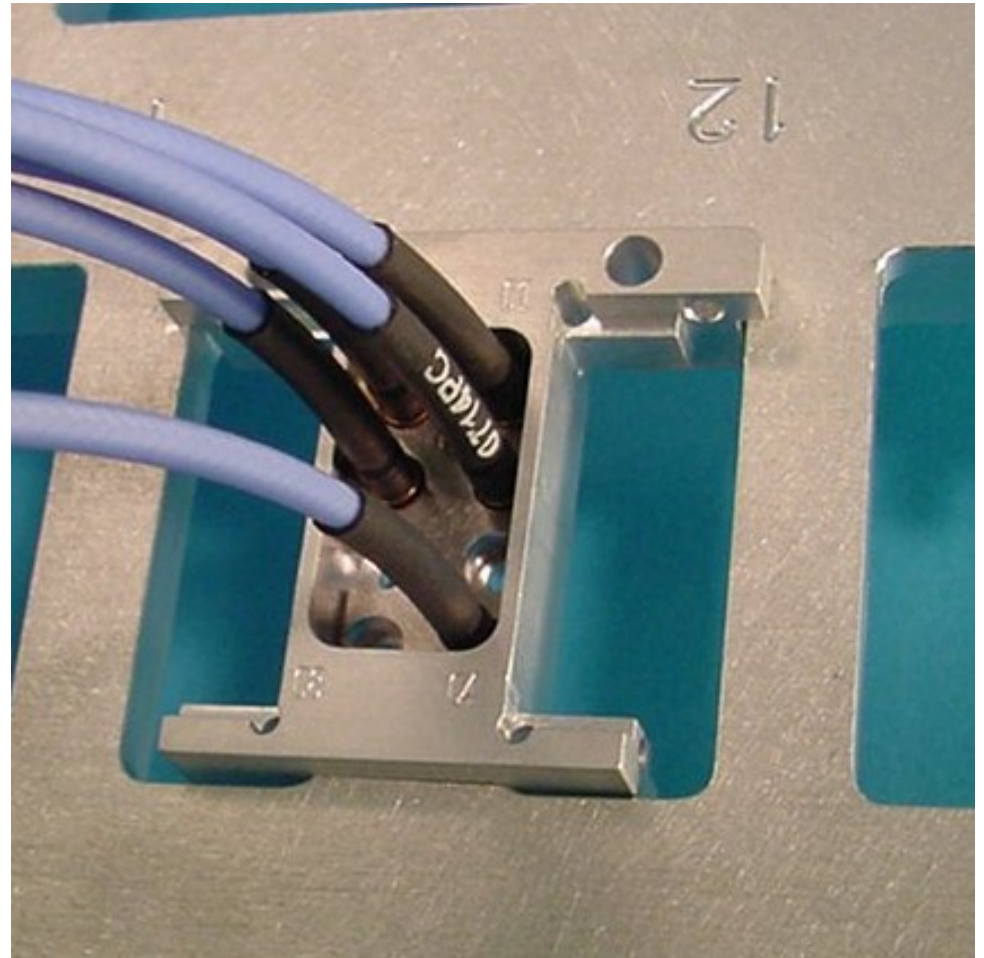
DC Harness Installation
12 and 20/30 Style Carriers

Roos Instruments
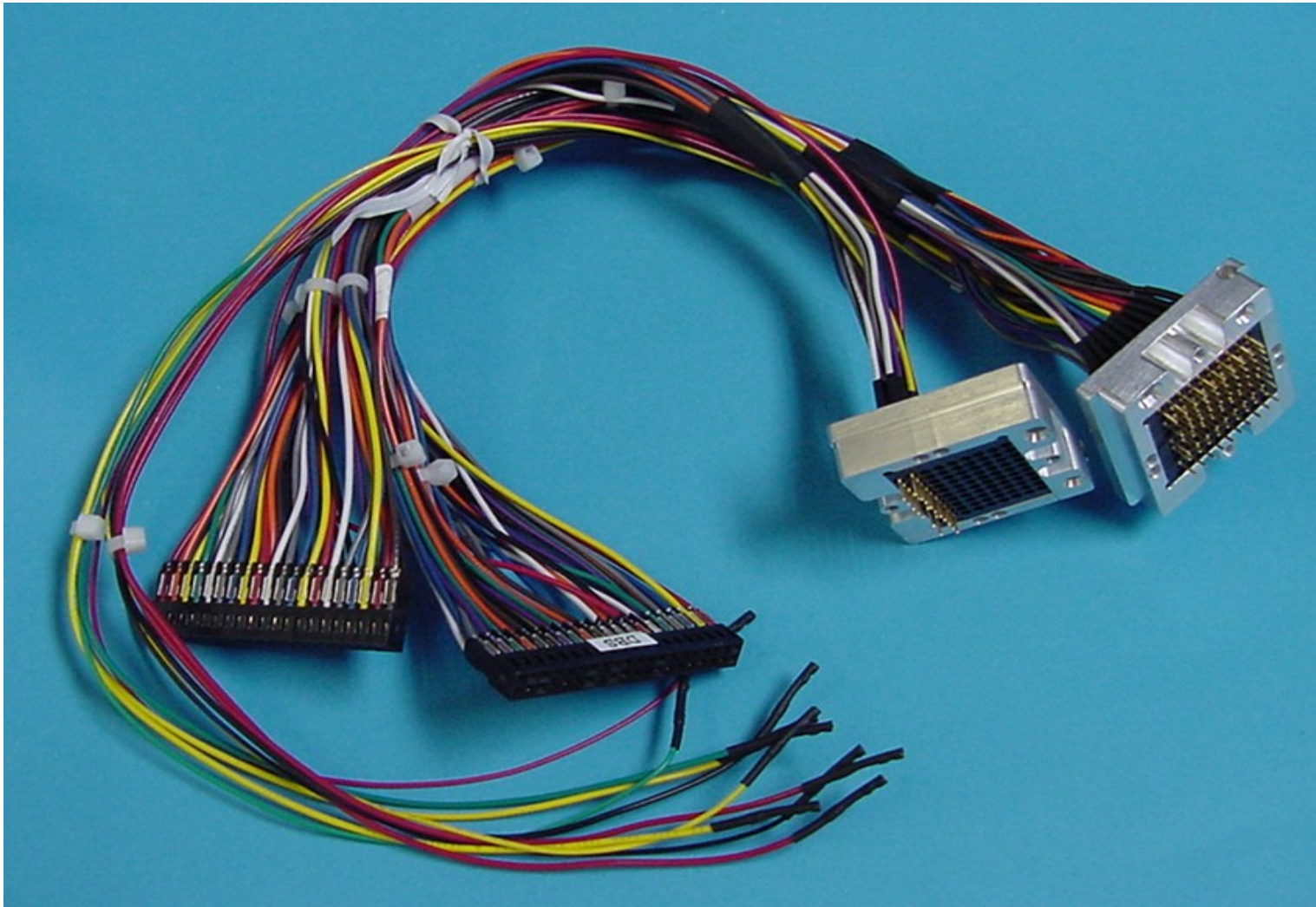
Installing DB – DP Block
12 and 20/30 Style Carriers

Install the DB – DP portion of the DC block into position 13. Remember to install the truss screws into the other side of the block. Use only a **SMALL** amount of Locktite.

Roos Instruments
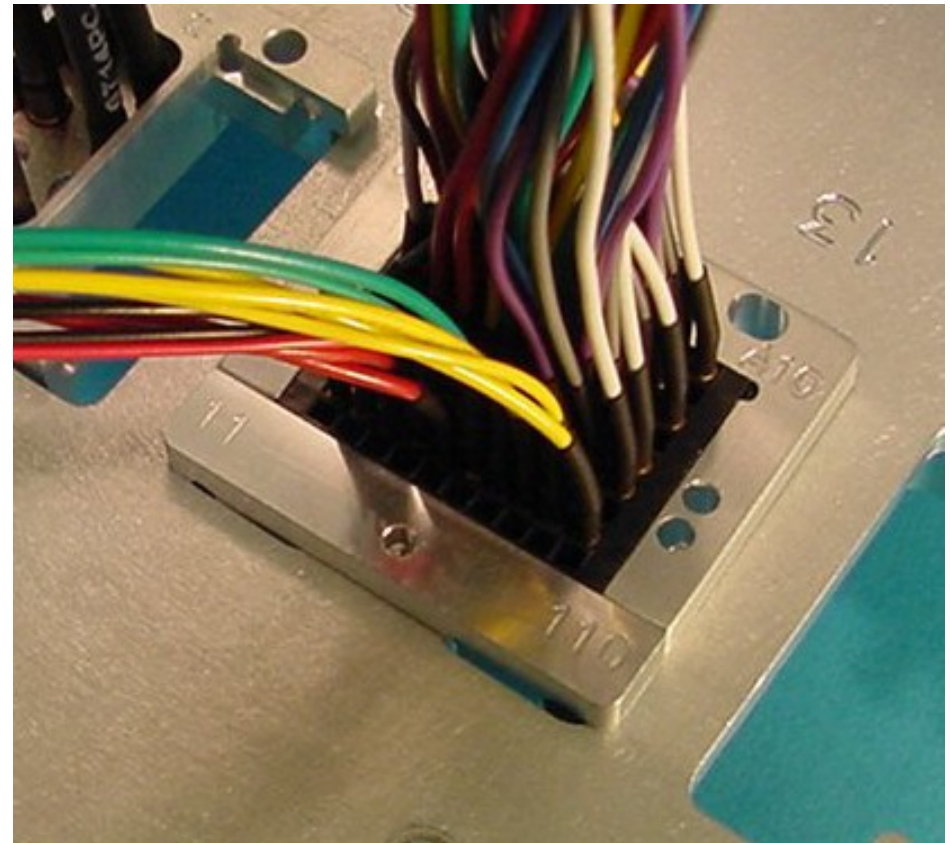
Installing Cbits – Fixture Power 12 and 20/30 Style Carriers

Install the Cbits – Fixture Power portion of the DC block into position. Remember to install the truss screws into the other side of the block. Use only a **SMALL** amount of Locktite.
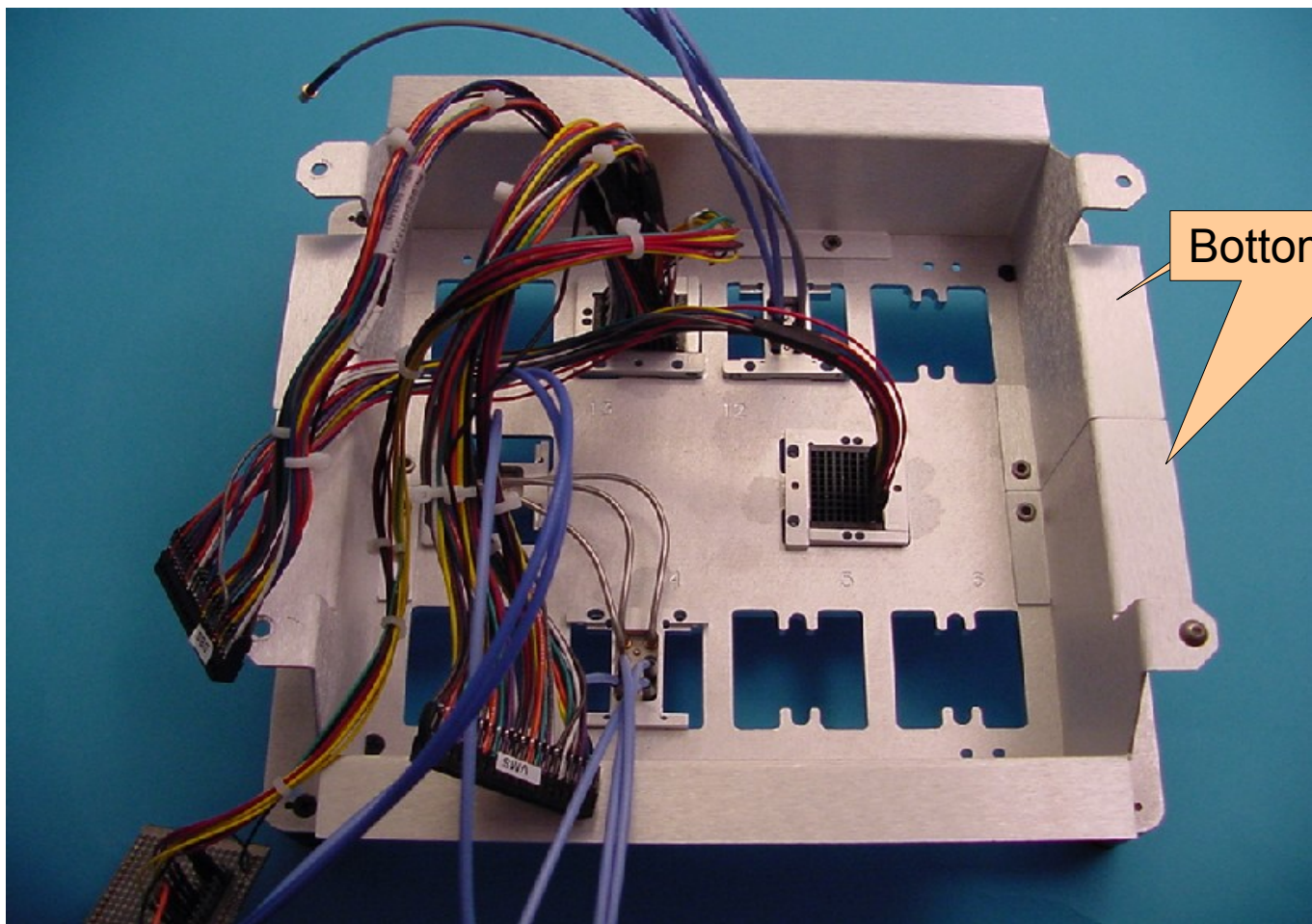

Roos Instruments
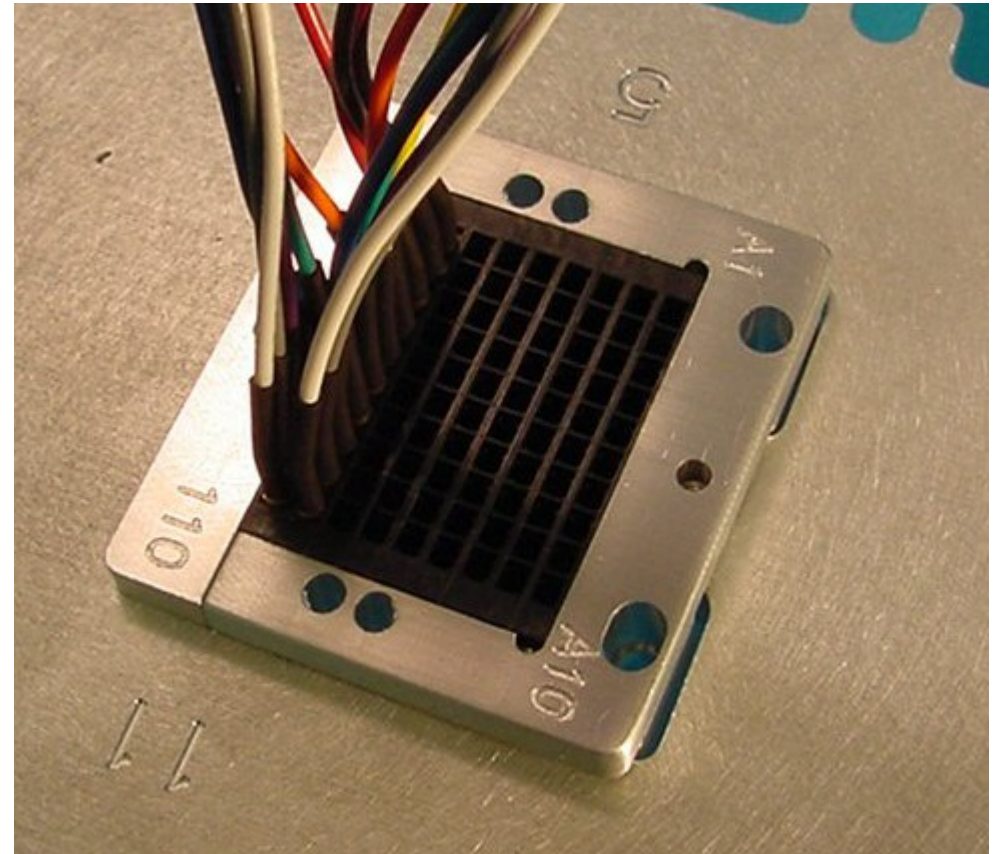
Adding Side Covers

Add the spring loaded sandwich mounts to each of the upper side covers.

Side Cover

Sandwich Mount

Spring

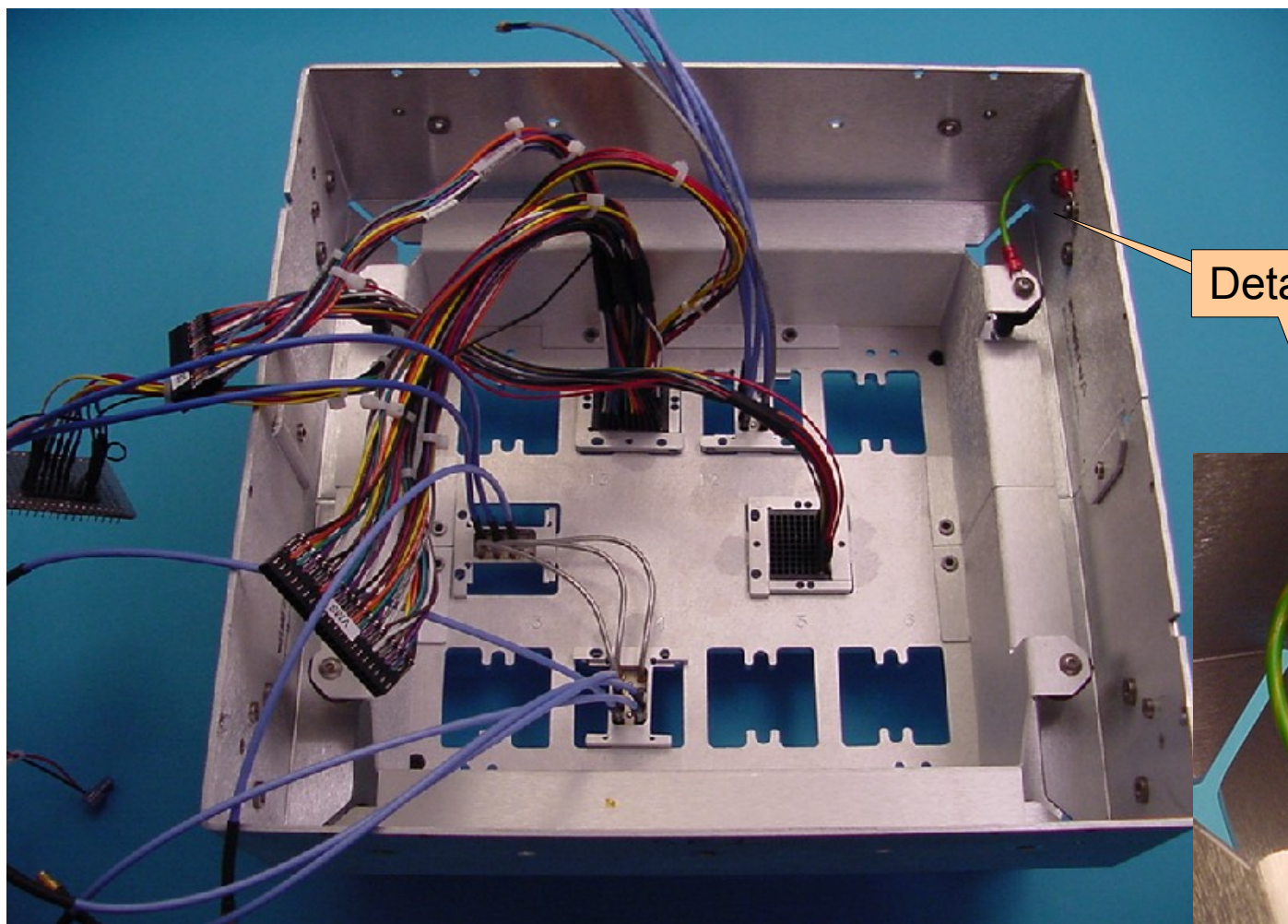Shoulder Screw

Roos Instruments
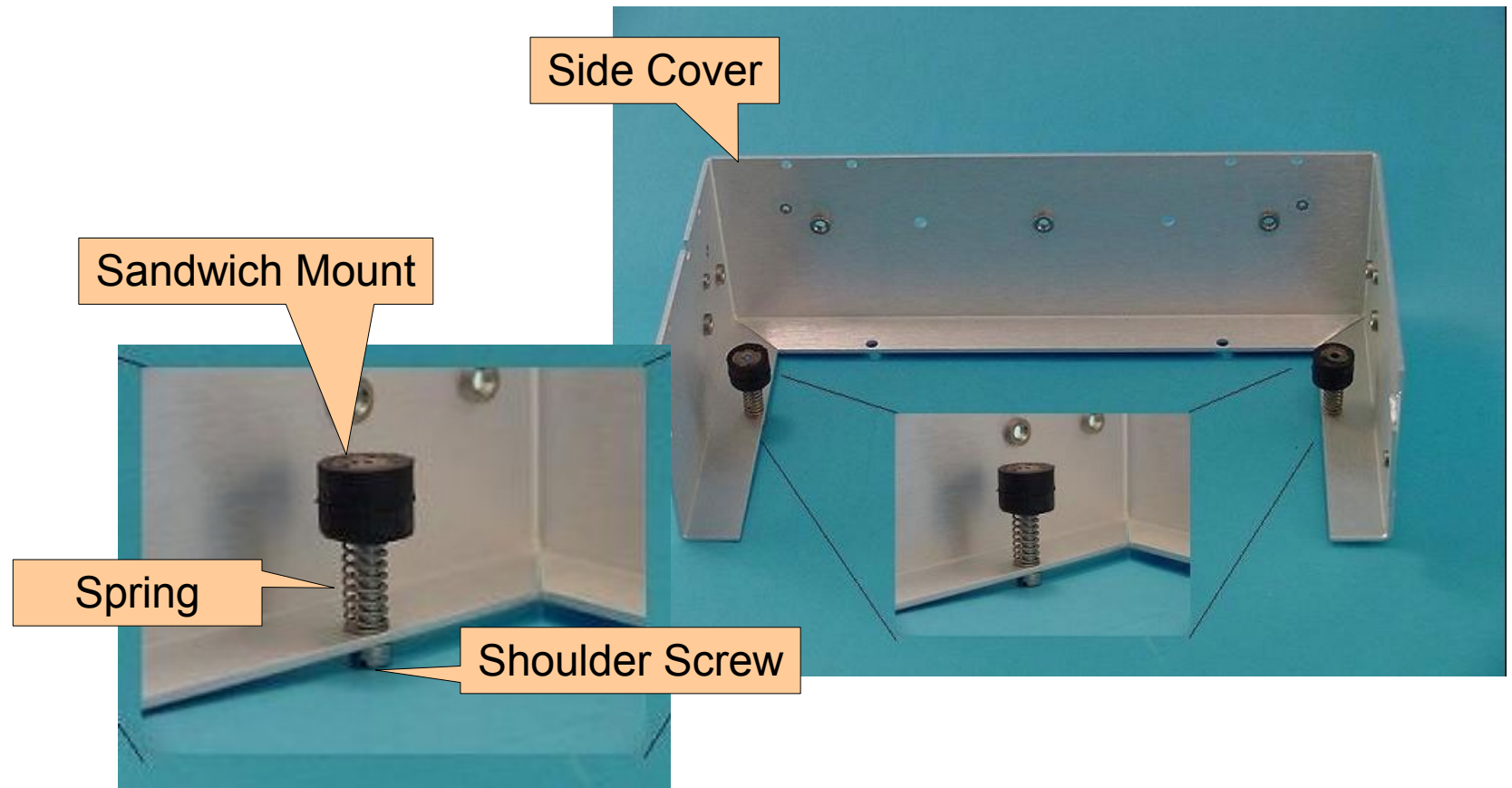
Install bottom side plates.

Bottom Side Plates

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Add Fixture Sides

Add upper side covers to the bottom assembly and install ground strap.

Detail

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