

# Austin User Group Meeting ICT Update



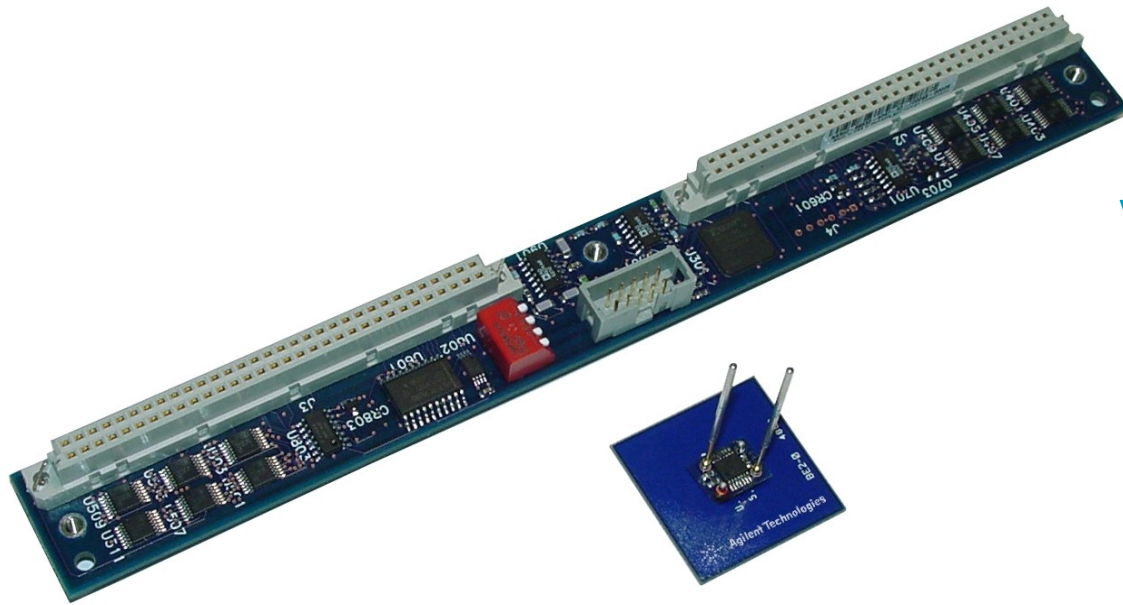
January 2008

# In-Circuit Test Agenda

- **New Technology**
- **Software Revision 7.0 (i3070) Overview**
- **Software Revision 7.1 Overview**
- **Future Releases**



# Agilent Medalist i3070



VTEP v2.0

=

iVTEP







+

NPM



Agilent Technologies

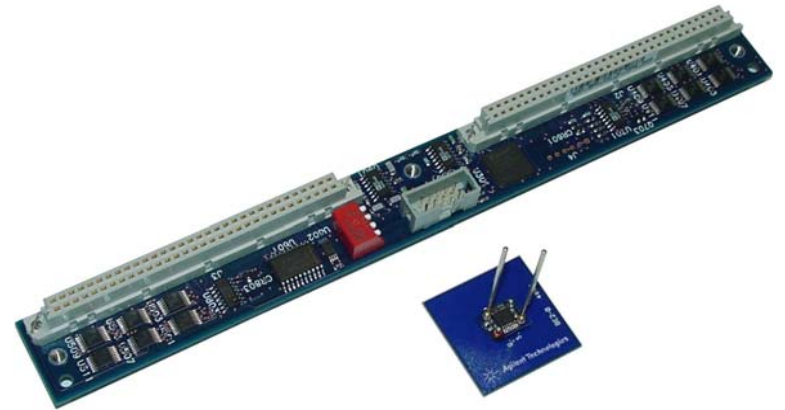
# VTEP v2.0

	Devices (ICs)	Connectors	Sockets
VTEP			
iVTEP – ultra low signal pins			
NPM – power and grounds			7.1 

# VTEP v2.0 Hardware & Software

## Hardware

Original VTEP hardware



## Software

i3070 software (ver7.0)

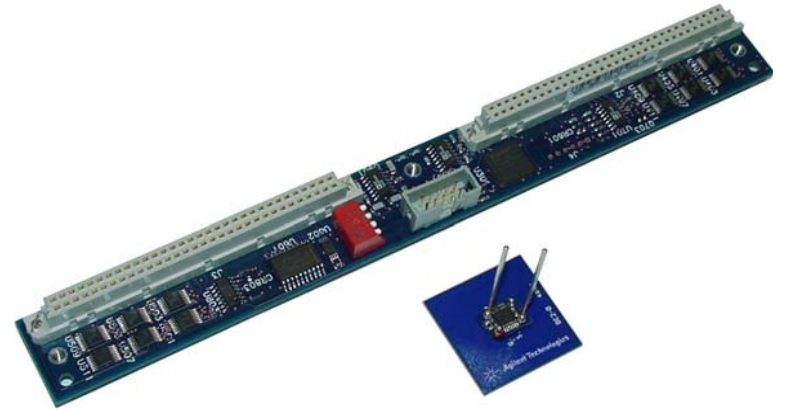
FREE\* (no license needed)



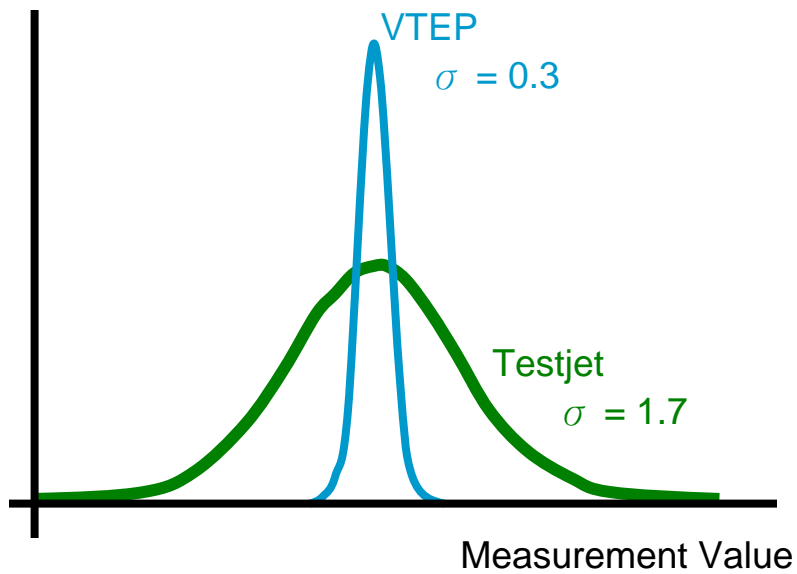
\* Available to all those on SUS contract

# VTEP

4X more sensitive  
(from 20fF to 5fF)

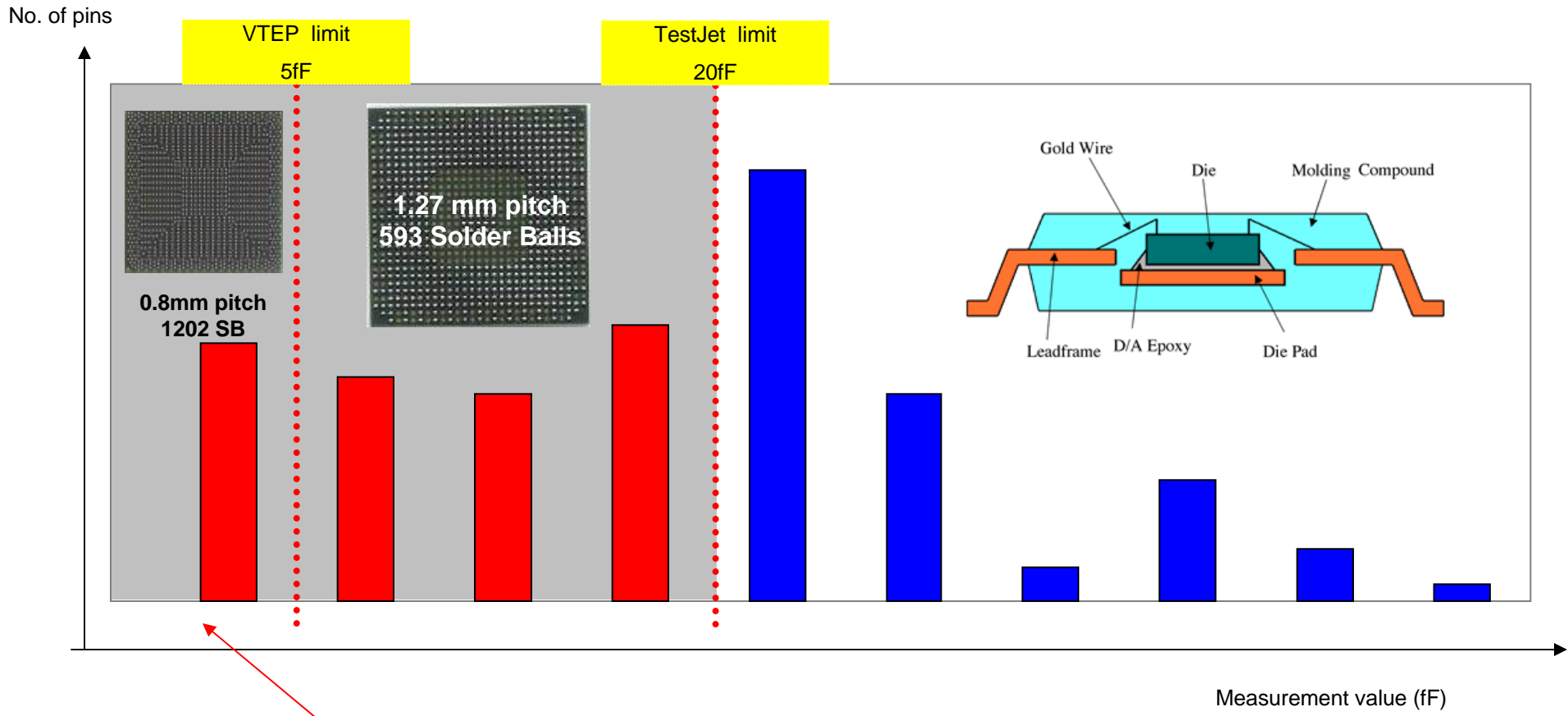


No. of  
measurements



5X better in standard deviation

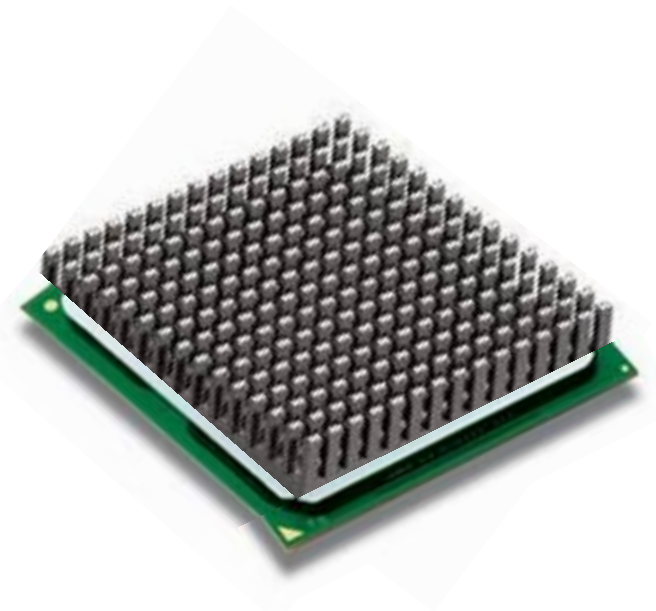
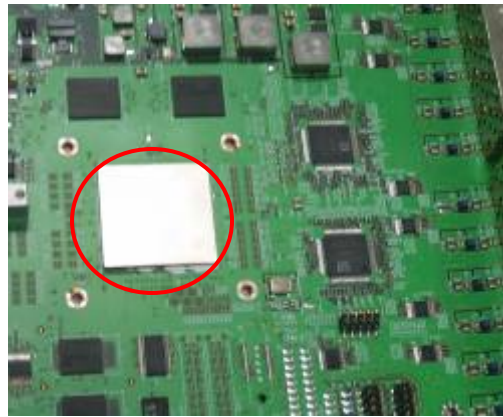
# iVTEP



iVTEP focuses on pins beyond the low limit of VTEP

# iVTEP target device

- Even works for ICs with heatspreaders and heatsinks





# What happens when BGA is open?

- BGA opens are small capacitors ( $C_o$ )

- Ideally,  $C_o = eA/d$  where:

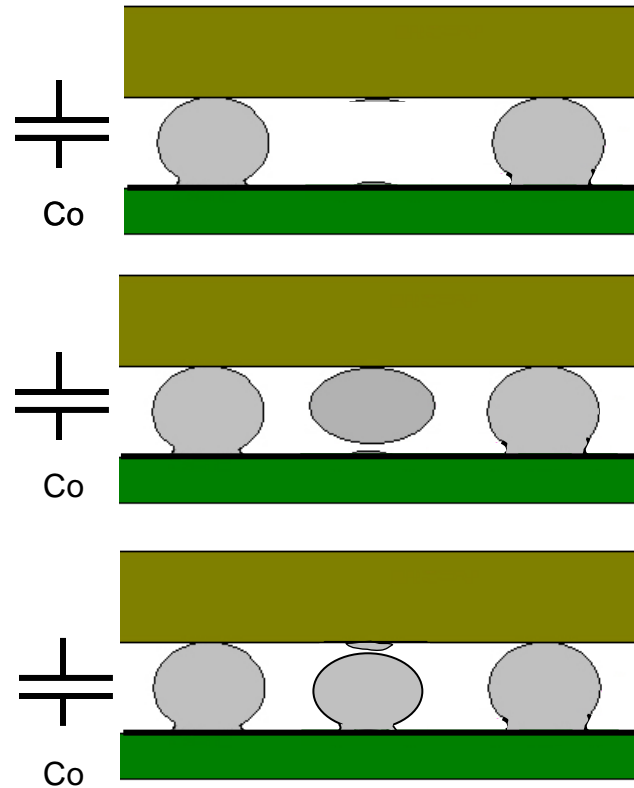
“e” = 8.84 fF/mm

“A” = area of pad/ball ( $\text{mm}^2$ )

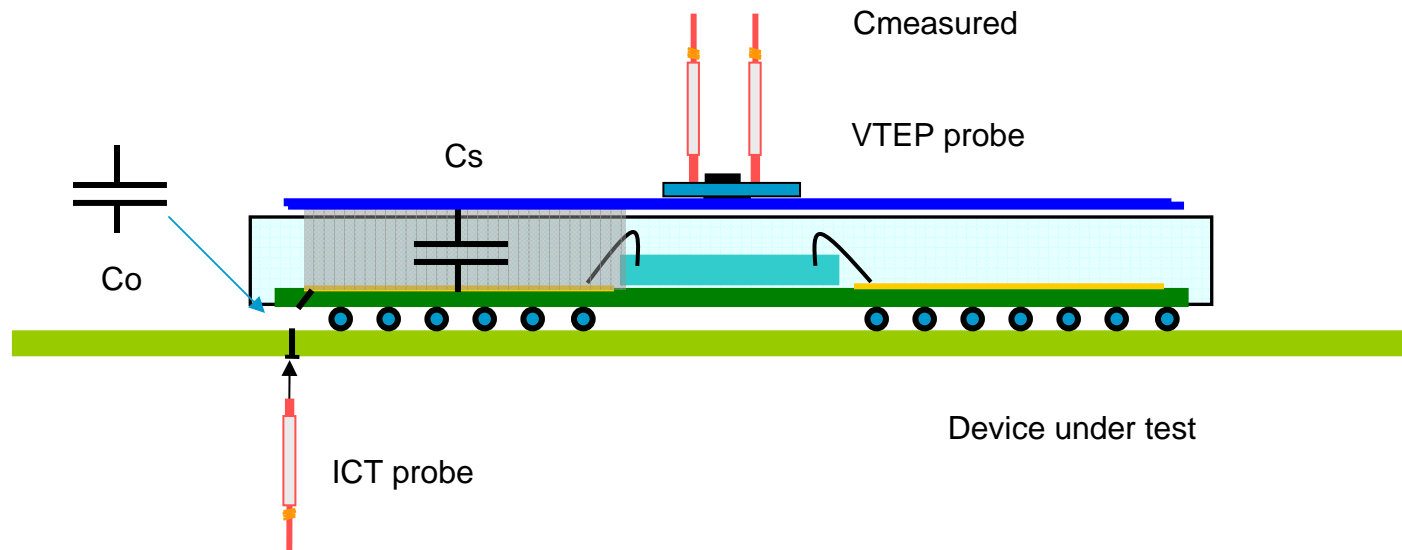
“d” = distance between ball and pad (mm)

- Example: Missing 0.5 mm ball

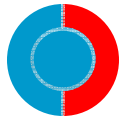
$$C_o = 8.84 * (\pi * (0.5\text{mm}/2)^2) / 0.5\text{mm} = 3.5 \text{ fF}$$



# Detecting BGA opens with VTEP and iVTEP



- $C_{measured} = C_o C_s / (C_o + C_s)$
- Example:  $C_s = 15\text{fF}$ ,  $C_o = 3.5\text{fF}$   
 $C_{measured} = 15 * 3.5 / (15 + 3.5) = 2.8\text{fF}$
- If a VTEP low threshold is set to 2, this defect will escape
- iVTEP will catch this.



# NPM

Network Parameter Measurement

*Sight beyond sight*



Agilent Technologies

# Challenge

- Power and ground pins are not testable ... until now.
- Proper grounding is crucial as High Speed Signal Propagation become more prevalent.
- PWR/GND makes up 35% - 45% of total pins
- Causes performance failure
- Only detectable at system test or not at all.



# The solution

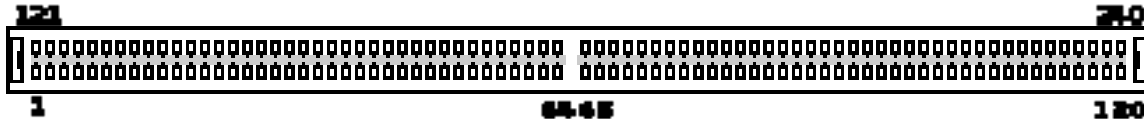
## Network Parameter Measurement Technology:

- Detect and diagnose opens on power and ground pins.
- For connectors and sockets\*
- Uses existing VTEP hardware
- FREE with ver7.0



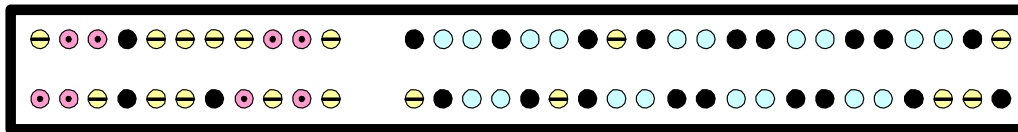
\* Coverage on sockets is in the 7.1 release

# Importance of power and ground



240 pin DIMM DDR2 connector > **88** out of 240 pins for power/ground

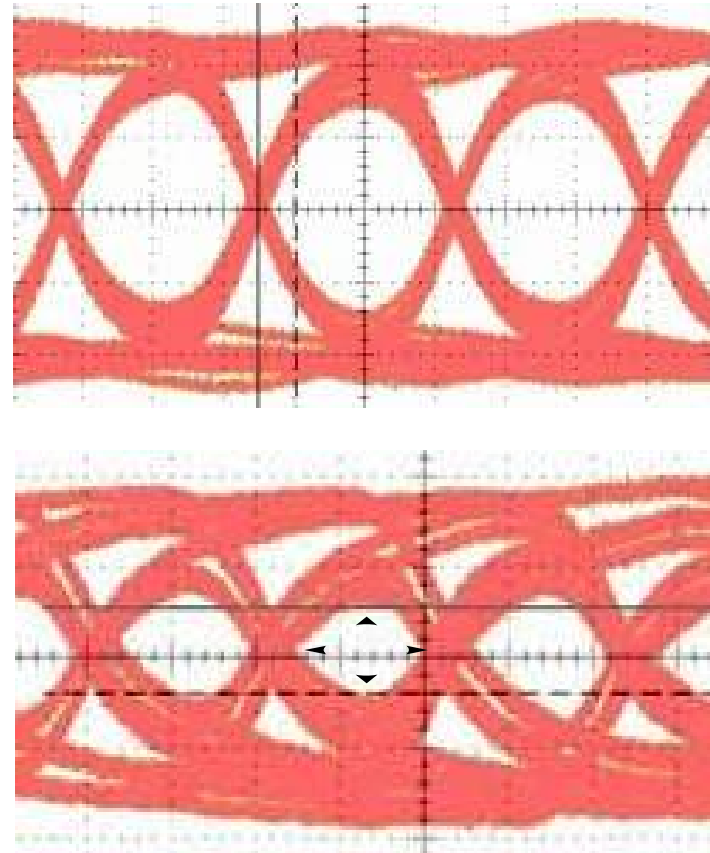
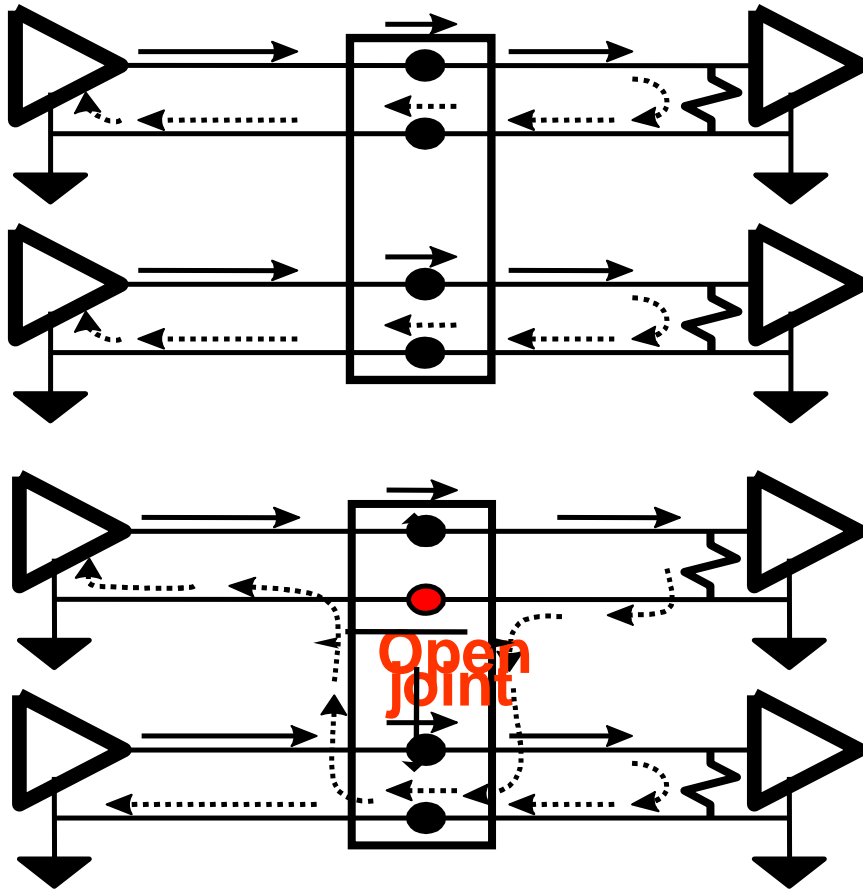
## PCI Express x4 Connector Top View



● Power    ● Ground    ● Signal    ● Differential Pair

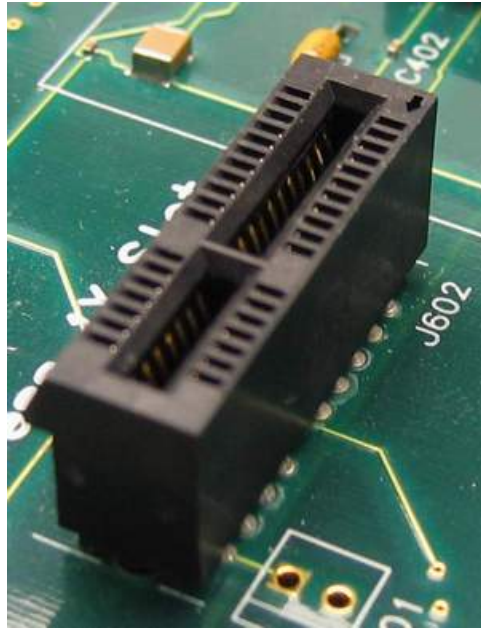
PCI Express x4 connector > **29** out of 64 pins for power/ground

# Network Parameter Measurement Technology : Industry challenges

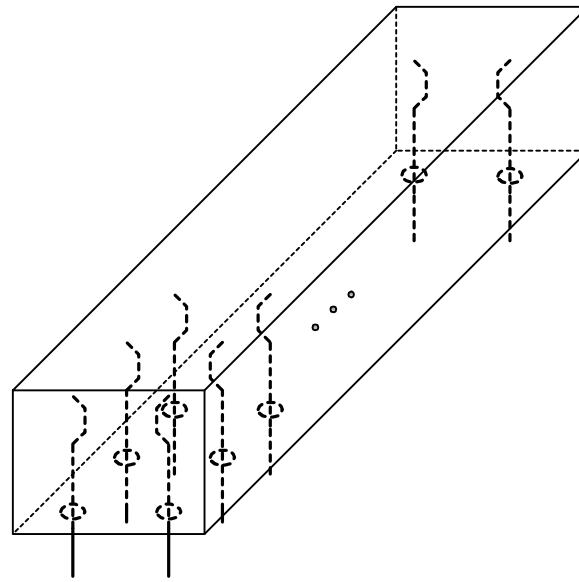


Degraded Eye Opening

# The technology



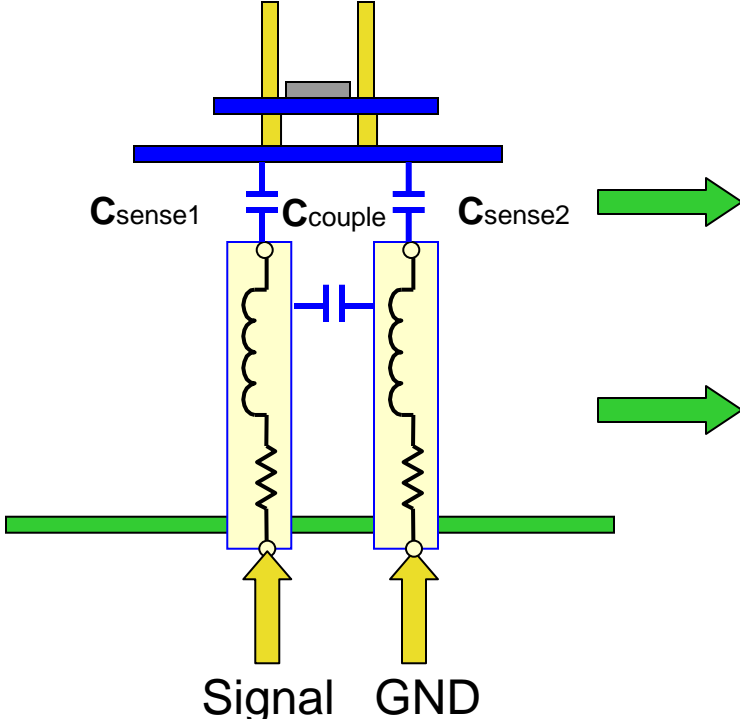
Network of Pins



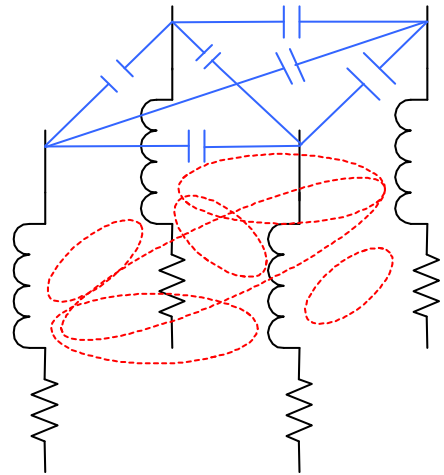
Network parameter measurement



# Network Parameter Technology

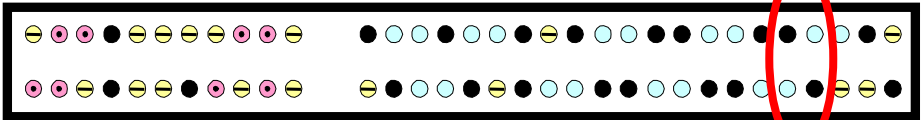


Sensor Plate capacitance



Spice Model

PCI Express x4 Connector Top View



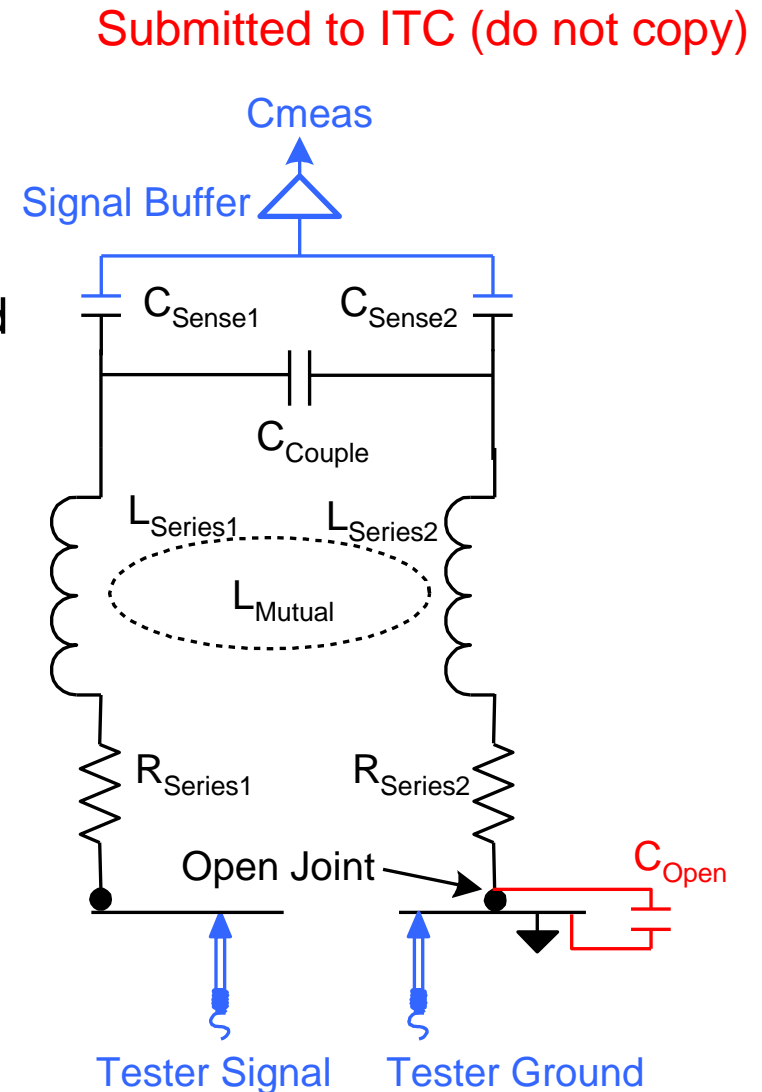
- Power
- Ground
- ⊖ Signal
- Differential Pair

# Network Parameter Technology – ITC paper

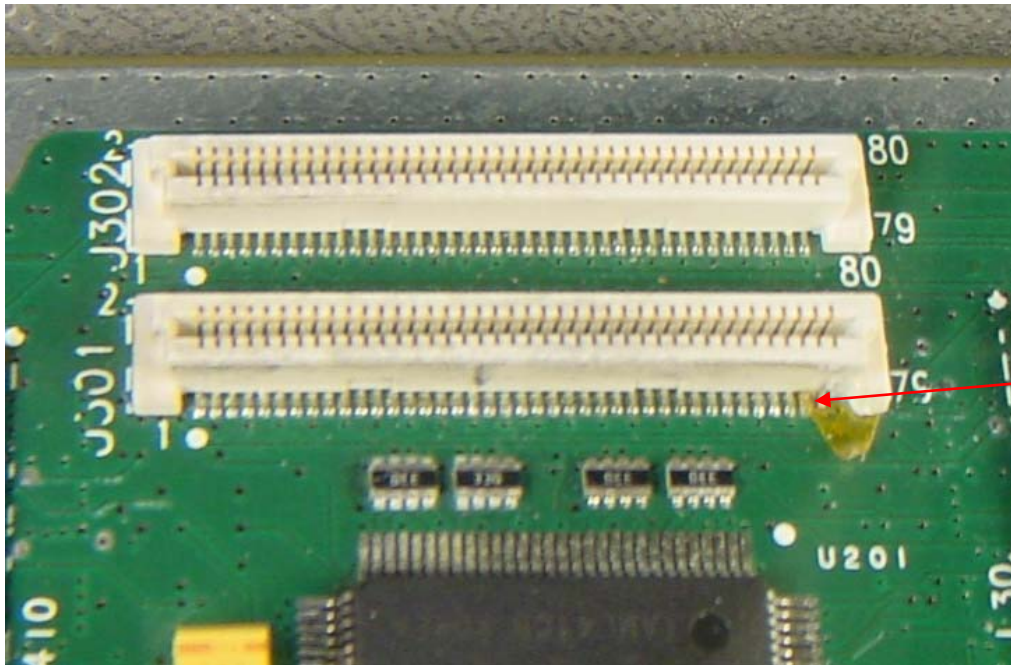
At VTEP measurement frequencies, inductance can be neglected. So can series resistance.

NPM works by examining the value of a good signal pin when there is a defect on an adjacent power or ground pin...

When a defect is present, the measured value of the signal pin increases, indicating a defect on the adjacent power or ground



# Result



-----  
TestJet Report for "testjet\_gx".  
Tue Jan 02 15:40:02 2007  
i3070 Demonstration Board  
-----

Open #1 Device j301  
Pin 75 Node GND  
Measured <NPM Open>  
Open #2 Device j301  
Pin 79 Node GND  
Measured <NPM Open>  
177983-3  
-----

Added ground defects to J301 – Caught as shown

# VTEP v2.0 Benefits

## Increased coverage

- Almost 100% Signal pin coverage on BGA
- Connector Power & Ground Pins

Uses existing VTEP H/W

FREE with software update (i3070)

Preserves high-speed signaling integrity

# In-Circuit Test Agenda

- **New Technology**
- **Software Revision 7.0 (i3070) Overview**
- **Software Revision 7.1 Overview**
- **Future Releases**



# The Next Generation ICT!

## - Protects customer's investment

i3070 combines the flexibility of the 3070 tester with the ease of use features of the i5000, with new and improved capabilities and technologies.



3070 Flexibility



i5000 Simplicity



**Medalist i3070**



# i3070 Rev 7.0 Key New Features

## Increased test coverage

- VTEP v2.0
  - iVTEP (Award winning!)
  - Network Parameter Measurement

## Time Saving Enhancements

- Test Algorithm Enhancements
- Time-To-Manufacturing improvements
  - AutoDebug Tool
  - AutoOptimizer Tool
  - Interactive Pin Locator Tool
- New Graphical User Interface (GUI)

## Compatibility





# Increased Throughput Enhancements

## - Improved IPG!

New board tests generated with the new IPG will be better!

### Capacitor test improvements

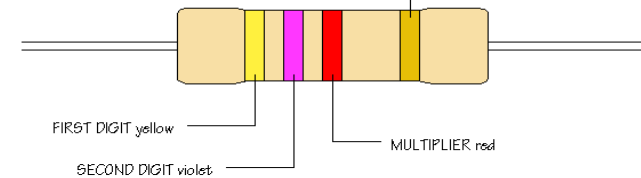
- Improved IPG algorithm on frequency selection
  - Improved algorithm of Capacitor tests using fr1024
  - Select fr1024 instead of fr128 => reduce on “ed” measurements
  - Possible savings of about **48%** over total analog test time or about **19%** of total board test time



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### Resistor test improvements

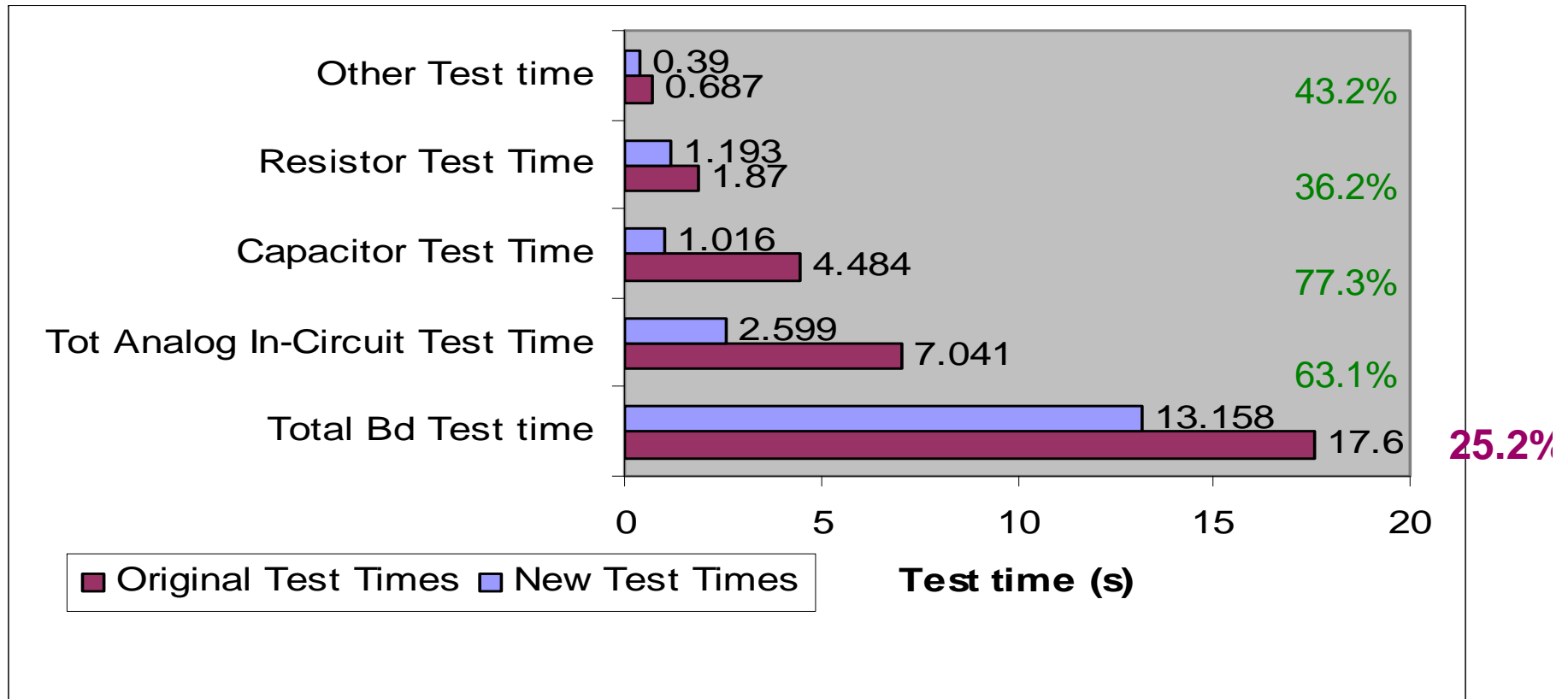
- Adding of guarding to cancel capacitive impedance
- Recalculating wait time for capacitive charging
- Possible savings of about **9%** over total analog test time or about **3%** improvement over total board test time.





# Increased Throughput Enhancements - Improved IPG!

Savings percent from test algorithm enhancements



\*Savings over original test time %

# Increased TTM Enhancements

## - Test Debug in Hours not Days

### Shorts test improvements

- Minimisation of **phantom shorts**
  - Reorder nodes listing in shorts test
  - Reduction in Unpowered Test debug time.
  - Possible improvement of about half an hour for a board with 2000 nodes.

#### **For a 2000 node board,**

Typical phantom shorts found	8
Typical debug time required for each phantom shorts	10 min
	= 0.16 hrs
Typical debug time for phantom shorts	1.3 hrs
Typical debug time for shorts test	2 days
	= 16 hrs
Possible minimisation of phantom shorts	4
Typical savings	<b>0.67 hrs</b>
Typical savings over total shorts debug time %	<b>4.2 %</b>

# Increased TTM Enhancements

## - Test Debug in Hours not Days

### AutoDebug

- First introduced in i5000
- Debugs analog tests at the click of a button
- Uses a set of user definable rules
- Uses statistical methods to determine test stability
- Analog test debug typically reduced from **2days to 4hours**



# Increased Throughput - Improvement in Efficiency

## AutoOptimizer

- Removes excessive test options that take up test time
- Optimises test times to initial debugged state
- Uses statistical methods (CPK, user definable) to determine stability of test

AutoOptimizer	A	B	C	D	E	F
Number of Analog tests	54	60	101	109	140	1968
Test Time-analog only	0.77s	0.78s	2.42s	1.07s	2.41s	26.7s
Optimised Time-analog only	0.38s	0.45s	1.72s	0.83s	1.73s	22.6s
Improvement %	51.0%	42.0%	29.0%	20.9%	28.0%	*15.3%

\*Note that this time savings was achieved even after user manually optimised the test.

# Interactive Pin Locator

A new tool to similar to the “find pins” feature on the 3070, with lots of enhancements!

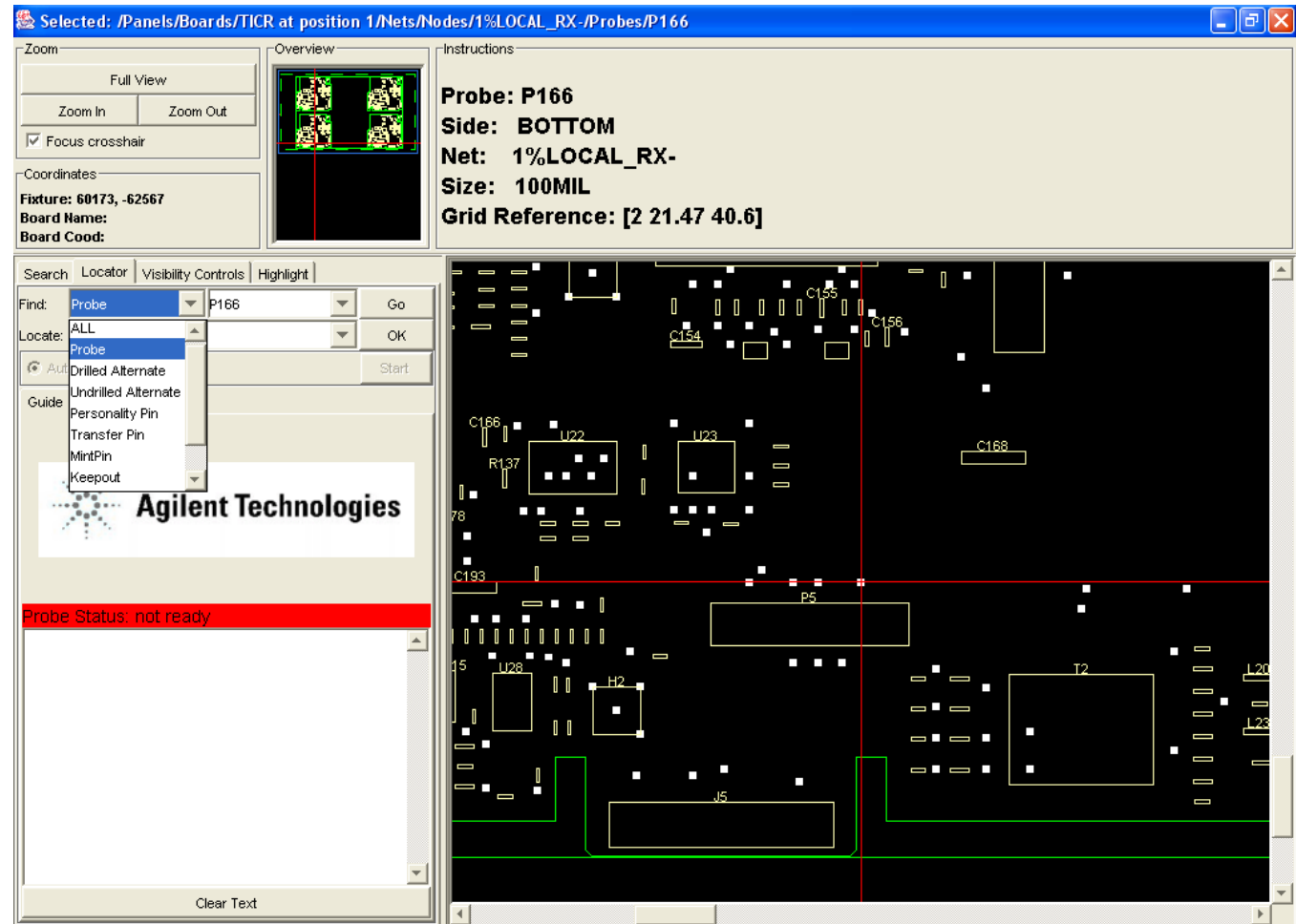
- This is a graphical “find pins”
- It indicates the location of the node that you are finding and interactively displays an arrow from where you have placed the manual probe to the target pin/probe.
- This tool really shortens the time needed to find a probe on the fixture. It is particularly useful when debugging tests or finding the “Worst Probe” during production testing.
- **Gone are the days when you have to find the probe/pin based on the BBRCC!**

# Increased TTM Enhancements

## - Test Debug in Hours not Days

### Interactive Pin Locator

Gone are the days when you have to find the probe/pin based on the BBRRCC!



# New, Easy to Use

## - Graphical User Interface

- Windows-based familiarity
  - Simple point and click interface
- Different Operator Logins for test code security
  - Operator Login
  - Engineer Login
  - Administrator Login
- Worst Probe Reports and Yield Reports
- Analog test Autodebug and AutoOptimiser
  - Auto-debug or Optimise analog tests with just one click



# Graphical User Interface

## Operator Login

The screenshot displays the Agilent Medalist i3070 - Demo software interface. The window title is "Agilent Medalist i3070 - Demo". The interface is divided into several sections:

- Testhead Control Panel:** Contains four buttons: "START (F1)" (green), "STOP (F4)" (red), "LOAD (F5)", and "UNLOAD (F8)".
- Information:** A large green box displays "PASS" in bold black text. Below it, another green box shows "94.2% FPY" in bold black text, with "942 Passed" and "1000 Tested" in smaller text below.
- Worst Probe Report:** A table listing probe IDs and their counts:

Probe ID	Count
P30	33
P31	33
P89	26
P106	26
P93	1
P110	1
- User Defined Controls:** Four buttons labeled "Browser", "USER2", "USER3", and "USER4".
- Output:** A text area displaying test results:

```
----- LOOP TEST -----  
Reset test on this board to: 0  
Test: 1000 of 1000 Counts  
Log level: analog; Report level: report; Board type: Class_fuse  
  
Testing Preshorts  
Testing Shorts  
Testing Analog Unpowered  
Testing Vectorless Test  
Testing Verify Grounds  
Setting Up Power Supplies  
Testing Digital Incircuit  
Testing Analog Powered and Mixed  
** P A S S E D **  
loop is now end 1000  
  
Place board on fixture and press START  
Break/Stop detected.  
P R O G R A M   S T O P P E D
```

The Windows taskbar at the bottom shows the "start" button, the "Agilent Medalist" application icon, and system tray icons including "EN", a clock showing "10:19", and other utility icons.



# Graphical User Interface

## Worst Probe Report

Shows the most common probes that are found in failed tests

It can be disabled (if necessary)

Information

**PASS**

**94.2% FPY**

942 Passed      1000 Tested

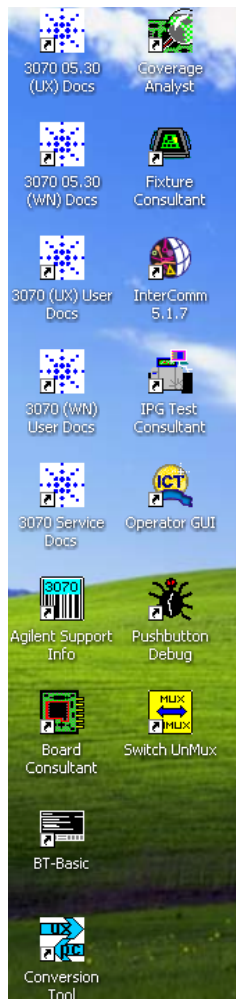
**Worst Probe Report**

P30		33
P31		33
P89		26
P106		26
P93		1
P110		1

Failure type	Probe	Usage	Node Name	Device Name	Date/Time
Shorts Failure	P223	1	/U205-13	tp605	050317100805
Analog Failure	P50	1	/EEPROM_CLK	tp656	050317100807
Analog Failure	P296	1	DCOM	tp787	050317100807
Shorts Failure	P223	1	/U205-13	tp605	050317100815
Analog Failure	P50	1	/EEPROM_CLK	tp656	050317100817
Analog Failure	P296	1	DCOM	tp787	050317100817

# Graphical User Interface

## Engineer Login



The image displays two overlapping windows of the Agilent Medalist software. The background window is titled 'Agilent Medalist i3070 - Demo' and shows a task tree with 'Fixture Options' selected. The foreground window is titled 'Agilent Medalist i5000 - Class\_fuseNswitch\_loop' and shows a test results table and a circuit diagram.

Device	Pass...	Save Tests...	Meas...	Perm...	Cc	Nominal Value	Expected Value/Threshold	Offset	Lower Limit	Upper Limit	Lower Tolerance
cb313	Pass	AutoDe...	27.741u		22u	31.451u			19.47u	43.55u	38.1
c201	Pass	AutoDe...	9.828n		10n	10n			8.97n	11.12n	10.3
c202	Pass	AutoDe...	30.997p		30p	30p			27.44p	53.96p	8.52
ac307	Pass	AutoDe...	1.1663n		1n	1n		+ .15n	1.04n	1.26n	10

The foreground window also shows a circuit diagram with nodes labeled V/S, V/A, V/B, V/I, and V/MOA. The background window shows a task tree with 'Configuration', 'Target Configuration', 'Features', 'Testhead Cards', 'Power Supplies', 'Assignments', 'Testhead Ports', 'Finalize Target Configuration', 'Board Configuration', 'Board Options', 'Device Options', 'Fixture Configuration', 'Fixture Options', 'Custom Size', 'Custom Probes', 'Custom Tooling Pins', 'Default Fixture Keepouts', and 'Finalize Fixture Options'.



Agilent Technologies

# Engineer Login

Agilent Medalist i3070 - Demo

File Edit View Actions Launch Help Base Version Panelized Board

Operator EngineerTest Developer Administrator Undo Redo Save Run Auto Debug Auto Optimize IVTEP Browser RunAllAIC

Class\_fuseNswitch\_loop

- Pins
- Shorts
- Analog In Circuit
  - Capacitor
  - Diode
  - FET
  - Fuse
  - Inductor
  - Jumper
  - Potentiometer
  - Resistor
  - Switch
  - Transistor
  - Zener
  - VTEP/Testjet

Board ID	Permanent	Version
pins	<input checked="" type="checkbox"/>	DefaultVersion

Commented	Node Name	Pass/Fail	Remark
<input type="checkbox"/>	ADD0	Pass	1122+*8*%432!
<input type="checkbox"/>	ADD1	Pass	
<input type="checkbox"/>	ADD2	Pass	
<input type="checkbox"/>	ADD3	Pass	
<input type="checkbox"/>	ADD4	Pass	123 bbb ddd
<input type="checkbox"/>	ADD5	Pass	
<input type="checkbox"/>	ADD6	Pass	
<input type="checkbox"/>	ADD7	Pass	
<input type="checkbox"/>	BUFEN_BAR	Pass	
<input type="checkbox"/>	GND	Pass	
<input type="checkbox"/>	RESET_BAR	Pass	
<input type="checkbox"/>	VCC	Pass	
<input type="checkbox"/>	OSC_ENABLE	Pass	
<input type="checkbox"/>	ENABLET	Pass	
<input type="checkbox"/>	ENABLEP	Pass	
<input type="checkbox"/>	TIEDYE	Pass	
<input type="checkbox"/>	CCLK	Pass	
<input type="checkbox"/>	R315-1	Pass	
<input type="checkbox"/>	LCLK	Pass	
<input type="checkbox"/>	COUNTB	Pass	
<input type="checkbox"/>	COUNTC	Pass	
<input type="checkbox"/>	COUNTD	Pass	
<input checked="" type="checkbox"/>	C201-1		Node capacitively isolated.
<input checked="" type="checkbox"/>	C201-2		Node capacitively isolated.
<input checked="" type="checkbox"/>	C202-1		Node capacitively isolated.
<input checked="" type="checkbox"/>	C202-2		Node capacitively isolated.
<input type="checkbox"/>	CARRY	Pass	
<input type="checkbox"/>	CARRYIN	Pass	
<input type="checkbox"/>	CARRYOUT	Pass	
<input type="checkbox"/>	CLOCK	Pass	
<input type="checkbox"/>	COUNTIN	Pass	

Testhead Execution Queue

0%

Device	Type

Remove Pause

Output

```
Recommended Test Option : capacitor ln + .15n, 10, 10, en, pm, ar200m, wb, ed, am200m, comp, fr8192, re3
```

command> 1 \*

Status

start Agilent Medalist EN 13:17

# Engineer Login

Agilent Medalist i3070 - Demo

File Edit View Actions Launch Help Base Version Panelized Board

Operator EngineerTest Developer Administrator Undo Redo Save Run Auto Debug Auto Optimize IVTEP Browser RunAllAIC

Class\_fuseNswitch\_loop

- ⊖ Pins
- ⊖ Shorts
- ⊖ Analog In Circuit
  - ⊖ Capacitor
  - ⊖ Diode
  - ⊖ FET
  - ⊖ Fuse
  - ⊖ Inductor
  - ⊖ Jumper
  - ⊖ Potentiometer
  - ⊖ Resistor
  - ⊖ Switch
  - ⊖ Transistor
  - ⊖ Zener
  - ⊖ VTEP/Testjet

Board ID	Permanent	Version	Report Limit	Report Common De...	Report Netlist	Report Phantoms
shorts	<input checked="" type="checkbox"/>	DefaultVersion		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Commented	Type	Node1	Node2	Failure Mess...	Threshold	Settling Time	Pass/Fail	Remark
<input type="checkbox"/>	short	L201-1	L201-2		1000	525.0u	Pass	
<input type="checkbox"/>	short	J201-1	J201-2		160	50.00u	Pass	
<input type="checkbox"/>	short	GND	R315-1		160	50.00u	Pass	
<input type="checkbox"/>	node	R208-2			8	50.00u	Pass	
<input type="checkbox"/>	node	ADD0			1000	50.00u	Pass	
<input type="checkbox"/>	node	ADD1			1000	50.00u	Pass	
<input type="checkbox"/>	node	ADD2			1000	50.00u	Pass	
<input type="checkbox"/>	node	ADD3			1000	50.00u	Pass	
<input type="checkbox"/>	node	ADD4			1000	50.00u	Pass	
<input type="checkbox"/>	node	ADD5			1000	50.00u	Pass	
<input type="checkbox"/>	node	ADD6			1000	50.00u	Pass	
<input type="checkbox"/>	node	ADD7			1000	50.00u	Pass	
<input type="checkbox"/>	node	C201-1			1000	50.00u	Pass	
<input type="checkbox"/>	node	C201-2			1000	50.00u	Pass	
<input type="checkbox"/>	node	C202-1			1000	50.00u	Pass	
<input type="checkbox"/>	node	C202-2			1000	50.00u	Pass	
<input type="checkbox"/>	node	CARRY			1000	50.00u	Pass	
<input type="checkbox"/>	node	CARRYIN			1000	50.00u	Pass	
<input type="checkbox"/>	node	CARRYOUT			1000	50.00u	Pass	
<input checked="" type="checkbox"/>	node	CLOCK			1000	50.00u	Pass	
<input type="checkbox"/>	node	COUNTIN			1000	50.00u	Pass	
<input type="checkbox"/>	node	CR201-A			1000	50.00u	Pass	

Testhead Execution Queue

0%

Device	Type

Remove Pause

Output

```
Recommended Test Option : capa
citor ln + .15n, 10, 10, en, p
m, ar200m, wb, ed, am200m, com
p, fr8192, re3
```

command>

Add Delete Mark Paste Above Selection Paste Below Selection

Status

start Agilent Medalist EN 13:16



# Engineer Login

Agilent Medalist i3070 - Demo

File Edit View Actions Launch Help Base Version Panelized Board

Operator Engin Logout Administrator Undo Redo Save Run Auto Debug Auto Optimize IVTEP Browser RunAllAIC

Class\_fuseNs Pins Shorts Analog In Capa Diode FET Fuse Inductor Jumper Potentiometer Resistor Switch Transistor Zener VTEP/Teststet

AutoDebug Optimizer Verify Learn Testhead Execute Test

Run F9 Run Till Fail Run N Times... F11 Run All AIC Shift+F9

Device	Device Type	Pre Shorts	Pass/Fail	Nominal Value	Lower Toler...	Upper Toler...	Expected V...	Measured V...	Comments
vr201	zener		Pass	15	4.84	23.502	15.0	15.172	
ar309	resistor		Pass	100	20.08	20.08	100	54.552	
r316	resistor			100	15.08	20.08	66		
r211	resistor		Pass	1k	17.132	24.568	1k	907.41	
r202	resistor		Pass	1k	13.46	15.7	1.09k	1.0144k	
r204	resistor		Pass	1k	10	10	1k	998.28	
r203	resistor		Pass	4.7k	5.17	5	2.6907k	2.6871k	
r207	resistor		Pass	10k	15	15	500	506.7	
r211	resistor		Pass	10k	30	30	12k	14.071k	
r202	resistor		Pass	10k	1.26	1.45	10k	9.9914k	
rpot201.1	potentiometer	presorts	Pass	10k	10.2	10.4	5k	5.1056k	
rpot201.2	potentiometer	presorts	Pass	10k	30.2	30.4	5k	5.556k	
r204	resistor		Pass	49.9k	1.25	1.36	49.9k	49.668k	
r203	resistor		Pass	50k	1.25	1.37	50k	49.657k	
r207	resistor		Pass	249k	183	183	249k	22.04k	
rp301%r4	resistor		Pass		9.91	10.8	1k	996.94	
rp301%r3	resistor		Pass		9.91	10.8	1k	994.9	
rp301%r2	resistor		Pass		9.91	10.8	1k	997.32	
rp301%r1	resistor		Pass		9.91	10.8	1k	996.08	
rp302%r4	resistor		Pass		10.2	11.0	1k	999.53	
rp302%r3	resistor		Pass		9.91	10.8	1k	1.0088k	
rp302%r2	resistor		Pass		9.91	10.8	1k	998.01	
rp302%r1	resistor		Pass		9.91	10.8	1k	999.41	
q201.B-E	transistor		Pass	602m		922.73m		838.51m	
q201.B-C	transistor		Pass	602m		918.88m		834.64m	
q201.BETA	transistor								
i201%jumper	jumper	presorts	Pass				100.96	4.1785	
j301	jumper	presorts							
f201	fuse		Pass				10	4.1805	
sw302%s1.1	switch		Pass				100	123.91	
sw302%s1.2	switch		Pass				120	123.8	
cr201	diode		Pass		412m	824m		702.53m	
qt201	fet		Pass		22.6	105		79.169	

Testhead Execution Queue: 0%

Output: Recommended Test Option : capacitor ln + .15n, 10, 10, en, pm, ar200m, wb, ed, am200m, comp, fr8192, re3

command>

Status

start Agilent Medalist EN 13:15

# Engineer Login

Agilent Medalist i3070 - Demo

File Edit View Actions Launch Help Base Version Panelized Board

Operator Engin Logout Administrator Undo Redo Save Run Auto Debug Auto Optimize IVTEP Browser RunAllAIC

AutoDebug  
Optimizer  
Verify  
Learn  
Testhead  
Execute Test

Class\_fuseNs  
Pins  
Shorts  
Analog In  
Capa  
Diode  
FET  
Fuse  
Inductor  
Jumper  
Potentiometer  
Resistor  
Switch  
Transistor  
Zener  
VTEP/Testtjet

Device	Device Type	Pre Shorts	Pass/Fail	Nominal Value	Lower Toler...	Upper Toler...	Expected V...	Measured V...	Comment
vr201	zener		Pass	15	4.84	23.502	15.0	15.172	
	Capacitor Compensation F5			100	20.08	20.08	100	54.552	
r209	resistor		Pass	1k	17.132	24.568	1k	907.41	
r205	resistor		Pass	1k	13.46	15.7	1.09k	1.0144k	
r201	resistor		Pass	1k	10	10	1k	998.28	
r314	resistor		Pass	4.7k	5.17	5	2.6907k	2.6871k	
r212	resistor		Pass	10k	15	15	500	506.7	
r211	resistor		Pass	10k	30	30	12k	14.071k	
r202	resistor		Pass	10k	1.26	1.45	10k	9.9914k	
rpot201.1	potentiometer	preshorts	Pass	10k	10.2	10.4	5k	5.1056k	
rpot201.2	potentiometer	preshorts	Pass	10k	30.2	30.4	5k	5.556k	
r204	resistor		Pass	49.9k	1.25	1.36	49.9k	49.668k	
r203	resistor		Pass	50k	1.25	1.37	50k	49.657k	
r207	resistor		Pass	249k	183	183	249k	22.04k	
rp301%r4	resistor		Pass		9.91	10.8	1k	996.94	
rp301%r3	resistor		Pass		9.91	10.8	1k	994.9	
rp301%r2	resistor		Pass		9.91	10.8	1k	997.32	
rp301%r1	resistor		Pass		9.91	10.8	1k	996.08	
rp302%r4	resistor		Pass		10.2	11.0	1k	999.53	
rp302%r3	resistor		Pass		9.91	10.8	1k	1.0088k	
rp302%r2	resistor		Pass		9.91	10.8	1k	998.01	
rp302%r1	resistor		Pass		9.91	10.8	1k	999.41	
q201.B-E	transistor		Pass	602m		922.73m		838.51m	
q201.B-C	transistor		Pass	602m		918.88m		834.64m	
q201.BETA	transistor								
i201%Jumper	jumper	preshorts	Pass				100.96	4.1785	
j301	jumper	preshorts							
f201	fuse		Pass				10	4.1805	
sw302%1.1	switch		Pass				100	123.91	
sw302%1.2	switch		Pass				120	123.8	
cr201	diode		Pass		412m	824m		702.53m	
qt201	fet		Pass		22.6	105		79.169	

Testhead Execution Queue  
0%  
Device Type  
Remove Pause

Output  
Recommended Test Option : capacitor ln + .15n, 10, 10, en, pm, ar200m, wb, ed, am200m, com p, fr8192, re3

command>

Status  
start Agilent Medalist EN 13:14





# Engineer Login

Agilent Medalist i3070 - Demo

File Edit View Actions Launch Help Base Version Panelized Board

Operator EngineerTest Developer Administrator Undo Redo Save Run Auto Debug Auto Optimize IVTEP Browser RunAllAIC

Class\_fuseNswitch\_loop

- (P) Pins
- (P) Shorts
- (P) Analog In Circuit
  - (P) Capacitor
  - (P) Diode
  - (P) FET
  - (P) Fuse
  - (P) Inductor
  - (P) Jumper
  - (P) Potentiometer
  - (P) Resistor
  - (P) Switch
  - (P) Transistor
  - (P) Zener
  - (P) VTEP/Testtjet

Device	Device Type	Pre Shorts	Pass/Fail	Nominal Value	Lower Toler...	Upper Toler...	Expected V...	Offset	Measured V...
c202	capacitor		Pass	30p	8.52	13.2	30p		28.698p
ac307	capacitor		Pass	1n	10	10	1n	+ .15n	1.0866n
c201	capacitor		Pass	10n	10.3	11.2	10n		9.8099n
cb313	capacitor		Pass	22u	38.1	38.46	31.451u		21.363u
l201	inductor		Pass	10m	8	8.91	10m		9.6329m
r315	resistor		Pass	5.1	9.84	40.3	5.81		5.7892
r214	resistor		Pass	10	17.93	30.6	30	- 20	11.442
r213	resistor		Pass	10	7.93	30.6	10	+ 1	11.472
r210	resistor		Pass	10	20.55	21.2	55		
r208	resistor		Pass	10	28.9	28.9	13		11.991
r206	resistor		Pass	10	5.54	21.2	10		11.069
vr201	resistor		Pass	15	4.84	23.502	15.0	- 1.5	15.172
ar309	resistor		Pass	100	20.08	20.08	100	- 44	54.552
r316	resistor		Pass	100	15.08	20.08	66		
r209	resistor		Pass	1k	17.132	24.568	1k		907.41
r205	resistor		Pass	1k	13.46	15.7	1.09k		1.0144k
r201	resistor		Pass	1k	10	10	1k		998.28
r314	resistor		Pass	4.7k	5.17	5	2.6907k		2.6871k
r212	resistor		Pass	10k	15	15	500		506.7
r211	resistor		Pass	10k	30	30	12k		14.071k
r202	resistor		Pass	10k	1.26	1.45	10k		9.9914k
rpot201.1	potentiometer	presshorts	Pass	10k	10.2	10.4	5k		5.1056k
rpot201.2	potentiometer	presshorts	Pass	10k	30.2	30.4	5k		5.556k
r204	resistor		Pass	49.9k	1.25	1.36	49.9k		49.668k
r203	resistor		Pass	50k	1.25	1.37	50k		49.657k
r207	resistor		Pass	249k	183	183	249k	- 214.671k	22.04k
rp301%r4	resistor		Pass		9.91	10.8	1k		996.94
rp301%r3	resistor		Pass		9.91	10.8	1k		994.9
rp301%r2	resistor		Pass		9.91	10.8	1k		997.32
rp301%r1	resistor		Pass		9.91	10.8	1k		996.08
rp302%r4	resistor		Pass		10.2	11.0	1k		999.53
rp302%r3	resistor		Pass		9.91	10.8	1k		1.0088k
rp302%r2	resistor		Pass		9.91	10.8	1k		998.01

Testhead Execution Queue

0%

Device	Type

Remove Pause

Output

```

D: u305 P: 18 36.1 p 28.0 452.
0
D: u305 P: 19 49.7 p 36.0 578.
0
=====
command>
    
```

Status

start Agilent Medalist EN 12:42



# Engineer Login

Agilent Medalist i3070 - Demo

File Edit View Actions Launch Help Base Version Panelized Board

Operator EngineerTest Developer Administrator Undo Redo Save Run Auto Debug Auto Optimize IVTEP Browser RunAllIAC

Device	Pass/Fail	Save Tests...	Measured V...	Capacitor Compensation	Parallel Mode	Detector Wait	Reference	Extra Digit	Enhance
cb313	Pass	<input checked="" type="checkbox"/> AutoDe...	27.741u	<input type="checkbox"/>	<input type="checkbox"/>	50m	100	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
c201	Pass	<input checked="" type="checkbox"/> AutoDe...	9.826n	<input type="checkbox"/>	<input type="checkbox"/>	50m		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
c202	Pass	<input checked="" type="checkbox"/> AutoDe...	30.997p	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		10K	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ac307	Pass	<input checked="" type="checkbox"/> AutoDe...	1.1863n	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		1K	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Class\_fuseNswitch\_loop

- Pins
- Shorts
- Analog In Circuit
  - Capacitor
  - Diode
  - FET
  - Fuse
  - Inductor
  - Jumper
  - Potentiometer
  - Resistor
  - Switch
  - Transistor
  - Zener
  - VTEP/Testjet

Testhead Execution Queue

0%

Device	Type

Remove Pause

Output

```
Recommended Test Option : capa
citor ln + .15n, 10, 10, en, p
m, ar200m, wb, ed, am200m, com
p, fr8192, re3
```

command>

ac307

Wiring

Measurement

Swap S (GND) I (VCC)

Sense

A bus B bus

None None

On Failure

On failure report

Add Remove

Guard

G	GL	Node Name	Device Name	Device Pin	Nominal Value
<input type="checkbox"/>	<input type="checkbox"/>	LCLK	J301, U305, ...	2, 11, 11, 1	na, na, na, 1...
<input type="checkbox"/>	<input type="checkbox"/>	BUFEN_BAR	RP301, U302	5, 19	na, na

Select All Guards Deselect All Guards Add Guard Remove Guard

	Source Volt...	A Bus Volta...	B Bus Volta...	I Bus Voltag...	Voltage Acr...	MOA Output...	Iv
Default	200m			DC=69.571u...		DC=-69.571u...	AC
am = 0V							AC

Histogram MOA

Status

start Agilent Medalist EN 13:09

# Graphical User Interface

## Administrator Login

**Medalist i3070**  
File View Actions Help

Operator EngineerTest **Administrator**

**Change File Attributes**  
Copy Board Directory

**Change the group ownership and permissions on files beginning in specified user directory. File permissions will be changed recursively for all files in all sub-directories.**

Steps to accomplish task:

- Identify the base directory below.
- Use File Explorer to provide write access to files (if needed).
- The group permissions will be set group ownership assigned to the group specified in the text field.

Directory:  ...

Group: AgilentICTOperators

---

**Medalist i3070**  
File View Actions Help

Operator EngineerTest **Administrator**

**Change File Attributes**  
**Copy Board Directory**

**Copy a board directory from one computer to another.**

Steps to accomplish task:

- Identify the source directory below. Make sure you have read access.
- Use File Explorer to map any remote network drives. Tools->Map...
- Check to be sure the system has given you read/write access.
- Identify a **writable** directory where the copy can be placed.
- This copy will overwrite any existing files at destination directory.

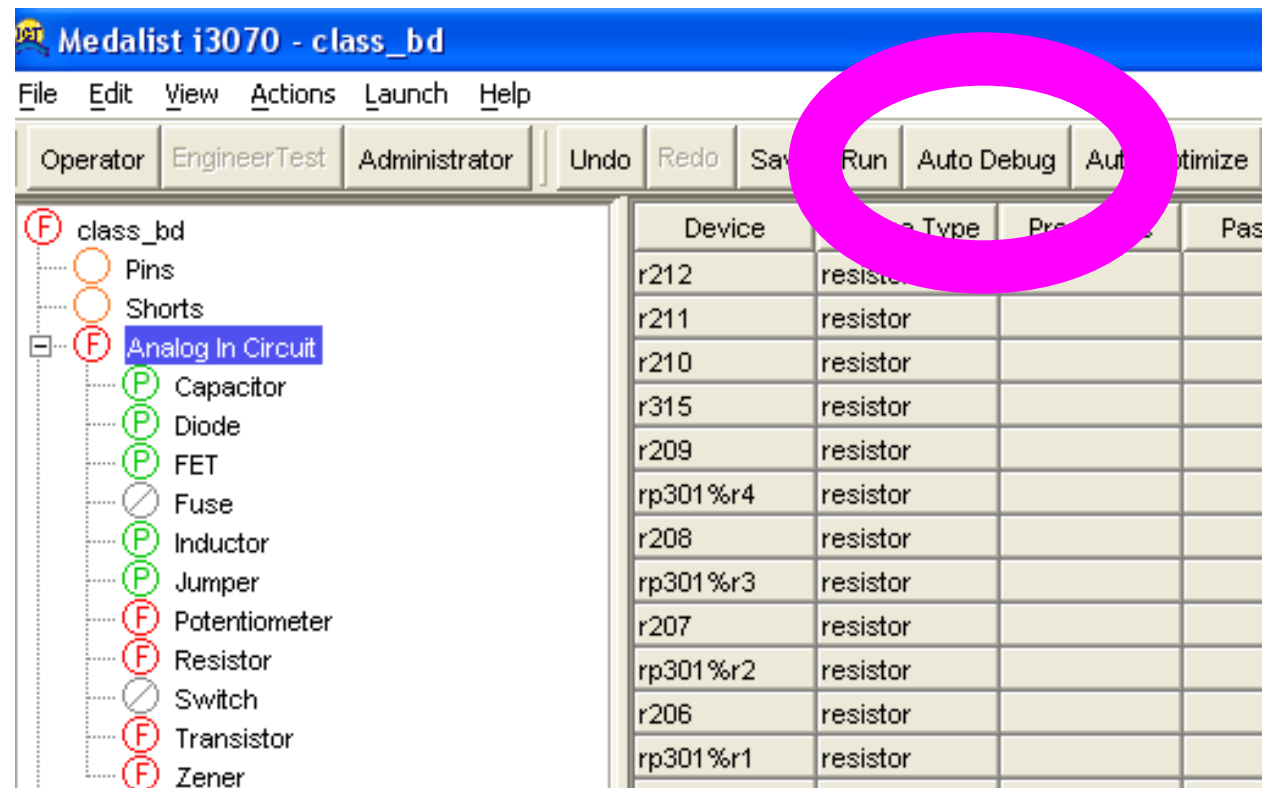
Source Directory:  ...

Destination Directory:  ...

# Auto-Debug Interface

Just by a click of a button

Unpowered Analog Tests will be debugged based on rules that you set.



# Auto-Debug Interface

Agilent Medalist i3070 - Demo

File Edit View Actions Launch Help Base Version Panelized Board

Operator EngineerTest Developer Administrator Undo Redo Save Run Auto Debug Auto Optimize IVTEP Browser RunAllAIC

Class\_fuseNswitch\_loop

- (P) Pins
- (P) Shorts
- (P) Analog In Circuit
  - (P) Capacitor
  - (P) Diode
  - (P) FET
  - (P) Fuse
  - (P) Inductor
  - (P) Jumper
  - (P) Potentiometer
  - (P) Resistor
  - (P) Switch
  - (P) Transistor
  - (P) Zener
- (F) VTEP/Testjet

Device	Test Time	Pass/Fail	Save Tests...	Nominal Value	Expected Value/Threshold	Offset	Lower Limit	Upper Limit	Lower Tol
r211	1.112502	Pass	<input type="checkbox"/>	10k	12k		8.4k	15.6k	30
r314	704.659m	Pass	<input type="checkbox"/>	4.7k	2.6907k		2.55k	2.83k	5.17
r205	595.072m	Pass	<input checked="" type="checkbox"/>	1k	1.09k		943.29	1.26k	13.46
r207	212.554m	Pass	<input checked="" type="checkbox"/>	249k	249k	-214...	-28.49k	97.15k	183
r209	211.709m	Pass	<input type="checkbox"/>	1k	1k		828.68	1.25k	17.132
r206	204.784m	Pass	<input type="checkbox"/>	10	10		9.45	12.12	5.54
rp302%r4	97.261m	Pass	<input type="checkbox"/>		1k		898	1.11k	10.2
ar309	56.189m	Pass	<input type="checkbox"/>	100	100	-44	44.76	67.24	20.08

r205

Wiring

Measurement

Swap S (R205-1) I (R205-2)

Sense

A bus: None B bus: None

On Failure

On failure report

Add Remove

Guard

G	L	GL	Node Name	Device Name	Device Pin	Nominal Value
<input type="button" value="Select All Guards"/> <input type="button" value="Deselect All Guards"/> <input type="button" value="Add Guard"/> <input type="button" value="Remove Guard"/>						

Testhead Execution Queue

0%

Device	Type

Remove Pause

Output

```
Optimized Test Option :
resistor 1.09k, 15.7, 13.46, e
n, sm, ar7, wb, fr8192, re5
Estimated Debug Time Saving :
296ms (40.33%)
```

command>

Histogram MOA

High Limit:	1.261k(15.70%)
Low Limit:	943.286(13.46)
Total:	20
Pct. Passing:	100.00%
Mean:	1.065k
Std. Dev.:	282.227m
CPK:	143.517

Status

start Agilent Medalist EN 11:09

# Auto-Debug Interface

The screenshot displays the Agilent Medalist i3070 - Demo software interface. The window title is "Agilent Medalist i3070 - Demo". The menu bar includes File, Edit, View, Actions, Launch, and Help. The toolbar contains buttons for Operator, EngineerTest, Developer, Administrator, Undo, Redo, Save, Run, Auto Debug, Auto Optimize, IVTEP, Browser, and RunAllAIC. The interface is divided into several panels:

- Left Panel:** A tree view showing a hierarchy of components: Class\_fuseNswitch\_loop, Pins, Shorts, Analog In Circuit, Capacitor, Diode, FET, Fuse, Inductor, Jumper, Potentiometer, Resistor, Switch, Transistor, Zener, and VTEP/Testjet (selected).
- Device Table:** A table listing devices and their test results.
 

Device	Pass/Fail	Commented	File Name
u301	Pass	<input type="checkbox"/>	vtep
u302	Pass	<input type="checkbox"/>	vtep
u303	Pass	<input type="checkbox"/>	vtep
u304	Pass	<input type="checkbox"/>	vtep
u305	Pass	<input type="checkbox"/>	vtep
u306		<input checked="" type="checkbox"/>	vtep
y301		<input checked="" type="checkbox"/>	vtep
- vtep - u301 Table:** A table showing test results for pin 7.
 

Pin No	Threshold L...	Threshold H...	ivTEP/Throu...	Measured V...	Pass/Fa
1	108f	661f	Throughput ...	291.36f	Pass
2	73f	463f	Throughput ...	147.11f	Pass
3	51f	325f	Throughput ...	91.86f	Pass
4	43f	273f	Throughput ...	82.84f	Pass
5	46f	289f	Throughput ...	84.97f	Pass
6	2f	21f	Throughput ...		
7	82f	509f	Throughput ...	162.37f	Pass
8, 16	20f	10000f	Throughput ...		
- VTEP/Testjet Global Control:** A panel with AutoDebug Parameters:
  - LowestLowLimit: 2.0
  - MinCpk: 2.5
  - HiPercent: 2.0
  - HiMinOffset: 20.0
  - LowPercent: 0.5
  - LowMinOffset: 10.0
  - Reset Defaults button
- File:** A table for file management.
 

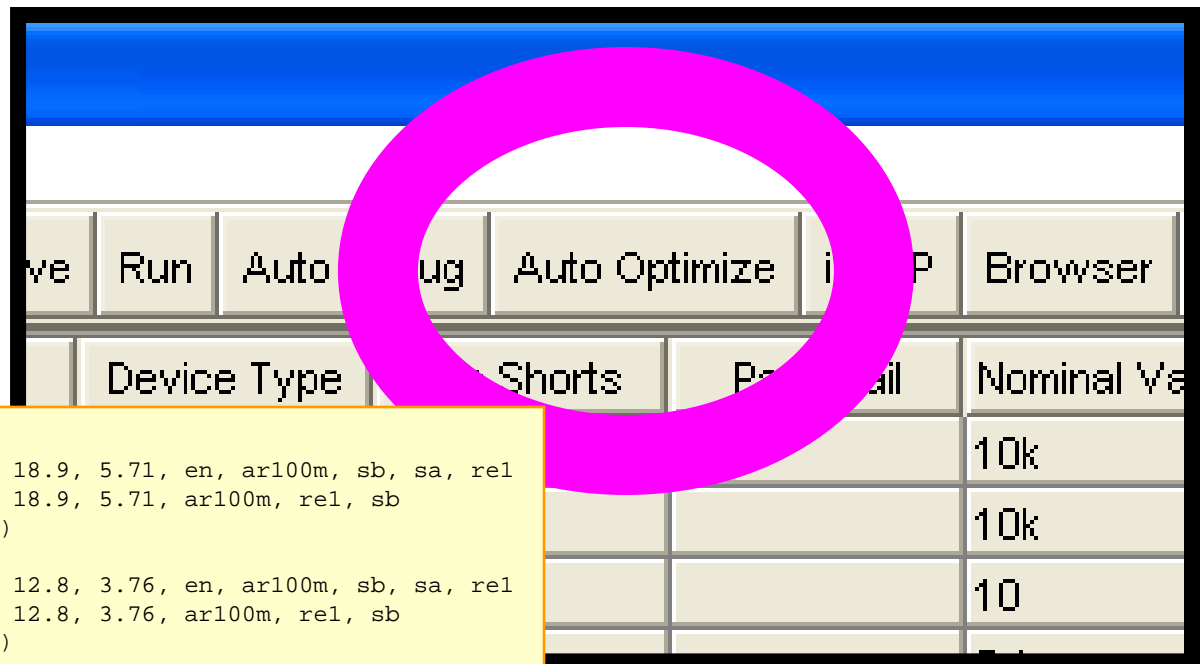
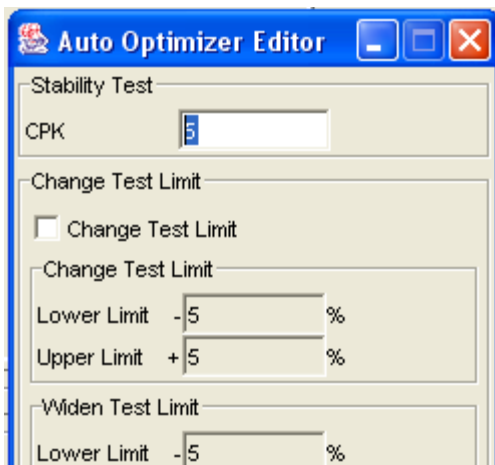
File Name	Permanent
vtep	<input type="checkbox"/>
- Testhead Execution Queue:** Shows 0% completion with a progress bar and a table with columns for Device and Type. Buttons for Remove and Pause are present.
- Output:** A text area displaying the message: "Recommended Test Option : capacitor ln + .15n, 10, 10, en, pm, ar200m, wb, ed, am200m, com p, fr8192, re3".
- Status:** A bar at the bottom showing the Start button, Agilent Medalist logo, and system tray icons including EN, a help icon, and the time 13:12.



# Auto-Optimizer Interface

Just by a click of a button

The Optimizer can save from 10% to 50% of test time per test!



```
Device Name           : r214
Original Test Option   : resistor 10, 18.9, 5.71, en, ar100m, sb, sa, rel
Optimized Test Option  : resistor 10, 18.9, 5.71, ar100m, rel, sb
Estimated Debug Time Saving : 31ms (39.74%)
Device Name           : r210
Original Test Option   : resistor 10, 12.8, 3.76, en, ar100m, sb, sa, rel
Optimized Test Option  : resistor 10, 12.8, 3.76, ar100m, rel, sb
Estimated Debug Time Saving : 16ms (34.04%)
Device Name           : r206
Original Test Option   : resistor 10, 12.8, 3.77, en, ar100m, sb, sa, rel
Optimized Test Option  : resistor 10, 12.8, 3.77, ar100m, rel, sb
Estimated Debug Time Saving : 15ms (24.19%)
```

The Optimiser will only work with Control XTP cards.

# Auto-Optimizer Interface

The screenshot displays the Agilent Medalist i3070 - Demo software interface. The main window is titled "Agilent Medalist i3070 - Demo" and features a menu bar (File, Edit, View, Actions, Launch, Help) and a toolbar with buttons for Operator, EngineerTest, Developer, Administrator, Undo, Redo, Save, Run, Auto Debug, Auto Optimize, IVTEP, Browser, and RunAllAIC. The interface is divided into several panes:

- Left Pane (Auto Optimizer Editor):** Contains settings for "Stability Test" (CPK: 5), "Change Test Limit" (Lower Limit: -5%, Upper Limit: +5%), and "Widen Test Limit" (Lower Limit: -5%, Upper Limit: +5%). It also has a "Save" button.
- Tree View:** Shows a hierarchical structure of components including Pins, Shorts, Analog In Circuit, Capacitor, Diode, FET, Fuse, Inductor, Jumper, Potentiometer, Resistor, Switch, Transistor, Zener, and VTEP/Testjet.
- Table:** Displays test results for various devices. The table has columns for Device, Test Time, Measured V..., Save Tests..., Auto Optimize Test..., Offset, Extra Digit, Enhance, Low..., Up..., Lower Tol..., and Upper Tol... The data is as follows:
 

Device	Test Time	Measured V...	Save Tests...	Auto Optimize Test...	Offset	Extra Digit	Enhance	Low...	Up...	Lower Tol...	Upper Tol...
c202	256.921m	28.698p	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	27.44p	33...	8.52	13.2
ac307	212.992m	1.0866n	<input type="checkbox"/>	<input type="checkbox"/>	1n 1n	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.04n	1.26n	10	10
c201	7.994m		<input type="checkbox"/>	<input type="checkbox"/>	10n 10n	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	8.97n	11....	10.3	11.2
cb313	226.768m		<input type="checkbox"/>	<input type="checkbox"/>	22u 31.451u	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	19.47u	43....	38.1	38.46
- Bottom Pane (c201):** Shows detailed settings for device c201, including Wiring, Measurement (Swap: S (C201-2), I (C201-1)), Sense (A bus: None, B bus: None), and On Failure (On failure report). It also includes a "Guard" section with buttons for "Select All Guards", "Deselect All Guards", "Add Guard", and "Remove Guard".
- Right Pane (Histogram):** Displays a histogram of the number of runs for device c201. The x-axis represents capacitance values (7.741n, 8.97n, 11.12n, 12.349n) and the y-axis represents the number of runs (0 to 25). A single bar at 11.12n reaches a height of 20. A summary table on the right shows:
 

High Limit:	11.12n(11.20%)
Low Limit:	8.97n(10.30%)
Total:	20
Pct. Passing:	100.00%
Mean:	9.815n
Std. Dev.:	2.38p
CPK:	118.287

The bottom status bar shows the Windows Start button, the Agilent Medalist application icon, and the system tray with the time 12:51.

# Auto-Optimizer Interface

Agilent Medalist i3070 - Demo

File Edit View Actions Launch Help Base Version Panelized Board

Operator EngineerTest Developer Administrator Undo Redo Save Run Auto Debug Auto Optimize IVTEP Browser RunAllAIC

Device	Test Time	Measured V...	Save Tests...	Nom...	Expected...	Offset	Extra Digit	Enhance	Low...	Up...	Lower Tol...	Upper Tol...
cb313	881.959m	21.373u	<input type="checkbox"/>	22u	31.451u		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	19.47u	43....	38.1	38.46
c201	814.106m	9.8281n	<input type="checkbox"/>	10n	10n		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	8.97n	11....	10.3	11.2
c202	256.921m	28.698p	<input type="checkbox"/>	30p	30p		<input checked="" type="checkbox"/>	<input type="checkbox"/>	27.44p	33....	8.52	13.2
ac307	213.001m	1.0865n	<input type="checkbox"/>	1n	1n	+ .15n	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.04n	1.26n	10	10

Class\_fuseNswitch\_loop

- Pins
- Shorts
- Analog In Circuit
  - Capacitor
  - Diode
  - FET
  - Fuse
  - Inductor
  - Jumper
  - Potentiometer
  - Resistor
  - Switch
  - Transistor
  - Zener
- VTEP/Testjet

Testhead Execution Queue

0%

Device	Type

Remove Pause

Output

command>

Wiring

Measurement

Swap S (VCC) I (GND)

Sense

A bus B bus

None None

On Failure

On failure report

Add Remove

Guard

G	L	GL	Node Name	Device Name	Device Pin	Nominal Value

Select All Guards Deselect All Guards Add Guard Remove Guard

II Number of Runs

High Limit: 11.12n(11.20%)  
 Low Limit: 8.97n(10.30%)  
 Total: 20  
 Pct. Passing: 100.00%  
 Mean: 9.816n  
 Std. Dev.: 2.45p  
 CPK: 115.1

II Number of Runs

High Limit: 11.12n(11.20%)  
 Low Limit: 8.97n(10.30%)  
 Total: 20  
 Pct. Passing: 100.00%  
 Mean: 9.815n  
 Std. Dev.: 2.38p  
 CPK: 118.287

Histogram MOA

Status

start Agilent Medalist EN 12:56



# Auto-Optimizer Interface

Agilent Medalist i3070 - Demo

File Edit View Actions Launch Help Base Version Panelized Board

Operator EngineerTest Developer Administrator Undo Redo Save Run Auto Debug Auto Optimize IVTEP Browser RunAllAIC

Device	Test Time	Measured V...	Save Tests...	Nom...	Expected...	Offset	Extra Digit	Enhance	Low...	Up...	Lower Tol...	Upper Tol...
cb313	13.136m	22.929u	<input checked="" type="checkbox"/> AutoOpt...	22u	31.451u		<input type="checkbox"/>	<input type="checkbox"/>	19.47u	43....	38.1	38.46
c201	199.68m	9.8151n	<input checked="" type="checkbox"/> AutoOpt...	10n	10n		<input type="checkbox"/>	<input type="checkbox"/>	8.97n	11....	10.3	11.2
c202	256.921m	28.698p	<input type="checkbox"/>	30p	30p		<input checked="" type="checkbox"/>	<input type="checkbox"/>	27.44p	33....	8.52	13.2
ac307	213.001m	1.0865n	<input type="checkbox"/>	1n	1n	+ .15n	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.04n	1.26n	10	10

Class\_fuseNswitch\_loop

- Pins
- Shorts
- Analog In Circuit
  - Capacitor
  - Diode
  - FET
  - Fuse
  - Inductor
  - Jumper
  - Potentiometer
  - Resistor
  - Switch
  - Transistor
  - Zener
- VTEP/Testjet

Testhead Execution Queue

0%

Device	Type

Remove Pause

Output

```
Optimized Test Option :
capacitor 10n, 11.2, 10.3, ar2
00m, am0.201, nocomp
Estimated Debug Time Saving :
828ms (37.31%)
```

command>

Wiring

Measurement

Swap S (VCC) I (GND)

Sense

A bus B bus

None None

On Failure

On failure report

Add Remove

Guard

G	L	GL	Node Name	Device Name	Device Pin	Nominal Value

Select All Guards Deselect All Guards Add Guard Remove Guard

Number of Runs

High Limit:	11.12n(11.20%)
Low Limit:	8.97n(10.30%)
Total:	20
Pct. Passing:	100.00%
Mean:	9.818n
Std. Dev.:	1.942p
CPK:	145.528

Number of Runs

High Limit:	11.12n(11.20%)
Low Limit:	8.97n(10.30%)
Total:	20
Pct. Passing:	100.00%
Mean:	9.816n
Std. Dev.:	2.45p
CPK:	115.1

MOA

Status

start Agilent Medalist EN 12:58

# In-Circuit Test Agenda

- **New Technology (VTEP 2.0)**
- **Software Revision 7.0 (i3070) Overview**
- **Software Revision 7.1 Overview**
- **Future Releases**



# i3070 Rev 7.1 Key New Features

## New Features

- Native Support for 1149.6 Boundary Scan Standards
- Enhanced Log Records
- Automatic generation of Enhanced FET tests

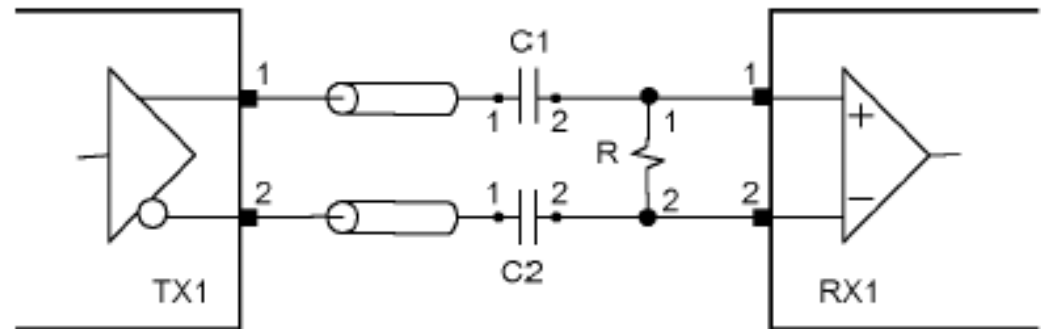
## Enhancements

- VTEP v2.0 test speed up
- NPM libraries for sockets
- auxconnect alternative to fxon



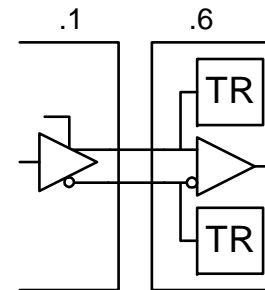
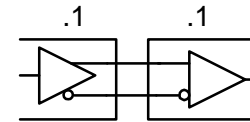
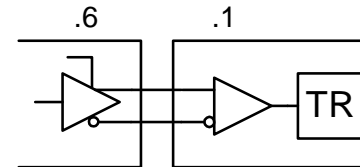
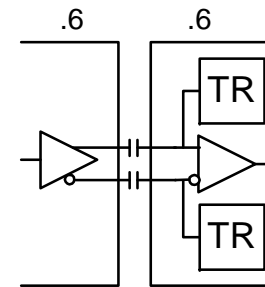
# Agilent Medalist 1149.6 Boundary Scan

- Agilent solution to the IEEE 1149.6 Boundary Scan standard
- Industry first native 1149.6 implementation
- To cater for the high speed serial data links
- AC coupling ( a series capacitor between driver and receiver)
- Differential signaling
- Offered in ver 07.10p
- No change in use model



# Agilent Medalist 1149.6 Boundary Scan

- 1149.6 to 1149.6 AC/DC interconnect tests
- Also adding Differential pair reporting for .1 nets
- 7.1 interconnect Boundary Scan coverage suite is:
  - .6 to .6 AC/DC
  - .6 to .1 DC
  - .1 to .1 DC
  - .1 to .6 DC



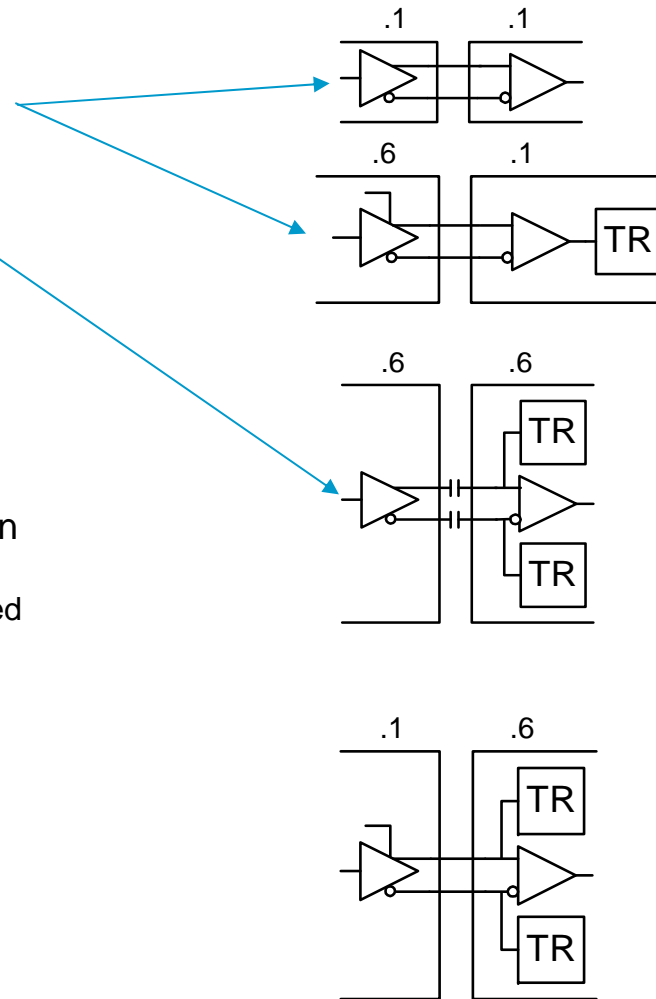
# Agilent Medalist i3070 Software Release 7.10p

## Two new config enable keywords

- enable advanced boundary scan **differential**
  - Does not require a new license
- **enable 1149.6 boundary scan**
  - Requires new 1149.6 Advanced IO license

## New ITL test generation enhancements

- u5\_u6 (DC only, may be impacted by AC structures)
  - With no new enable keyword, ITL is the same
  - If generated with the “advanced boundary scan **differential**”
    - Negative legs included and reported on DC-coupled differential structures
- **u5\_u6\_aio (new test for AC and DC structures!)**
  - Includes the 1149.6 tests (AC and DC)



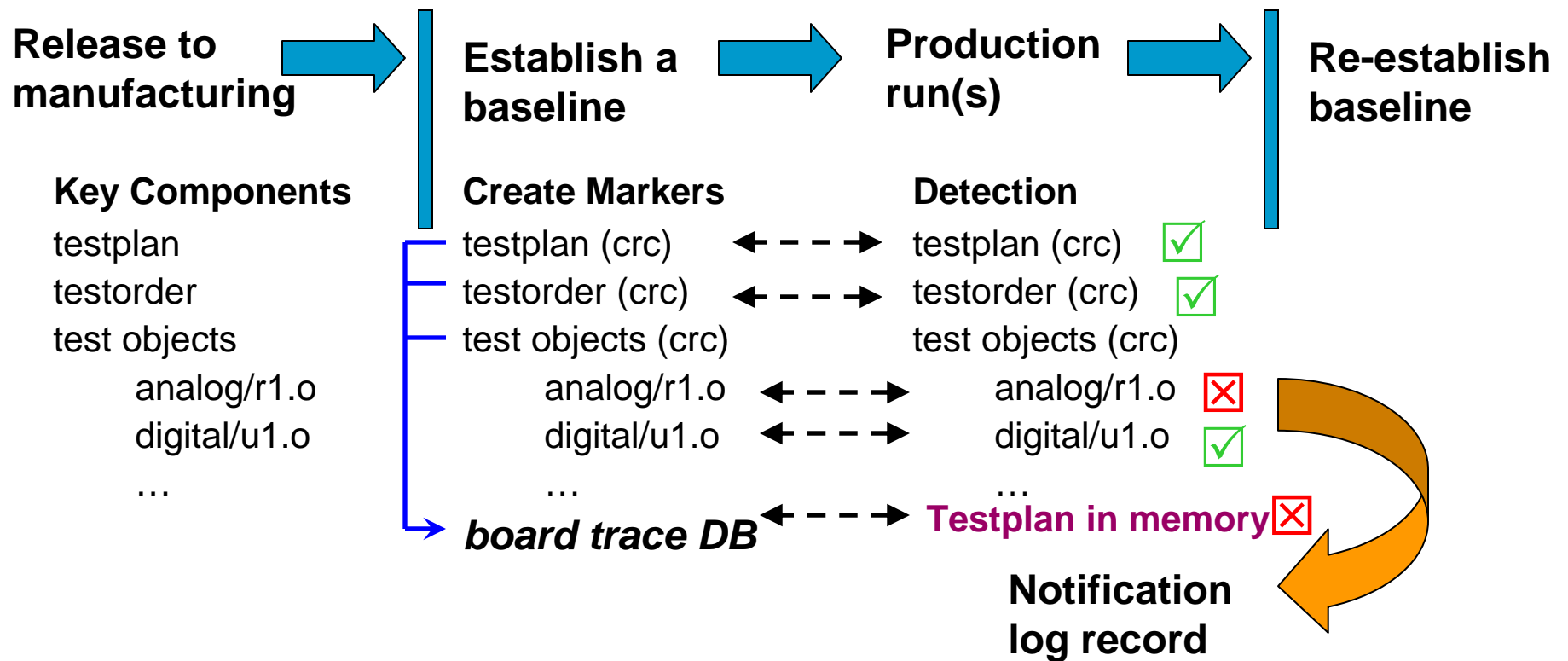
## Problem Statement Review

*Production board test lacks the tool to detect test program modifications and provide alerts that communicate when such events occur. This results in a loss of coverage and in some case an escapee happens.*

## The Solution

*Test Program Monitoring tool that tracks all the changes in the board directory including object file. A report can be generated that includes the date/time and the file that was changed.*

# Concept: Integrated Traceability



- Key components are board test elements that are subject to change
- Baseline markers establish a known good working state by storing aside important information
- Detection identifies that a change occurred between a component and its established baseline
- Notification communicates that a change occurred during a production run



## *Enhance Log Records Feature*

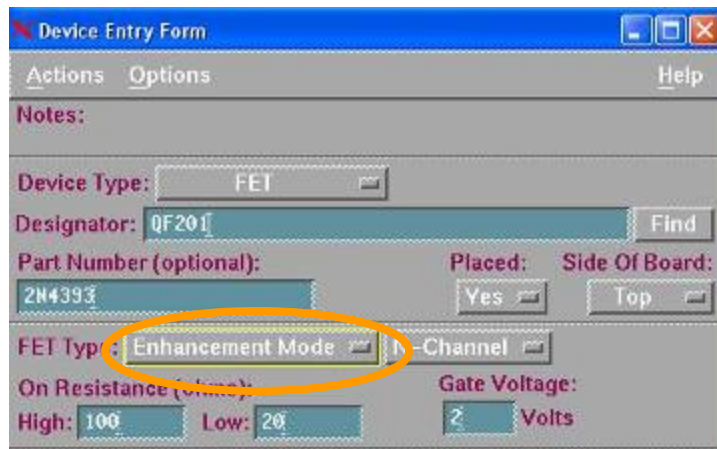
**Provide a password mechanism check for controlling the creation/updating a baseline.**

- Two passwords provided. One for super-user and one more for a proxy.
- Password creation controlled by a separate application. BT-Basic will not create passwords, only validate them.
- Password encrypted file looked for when baseline command called in BT-Basic.

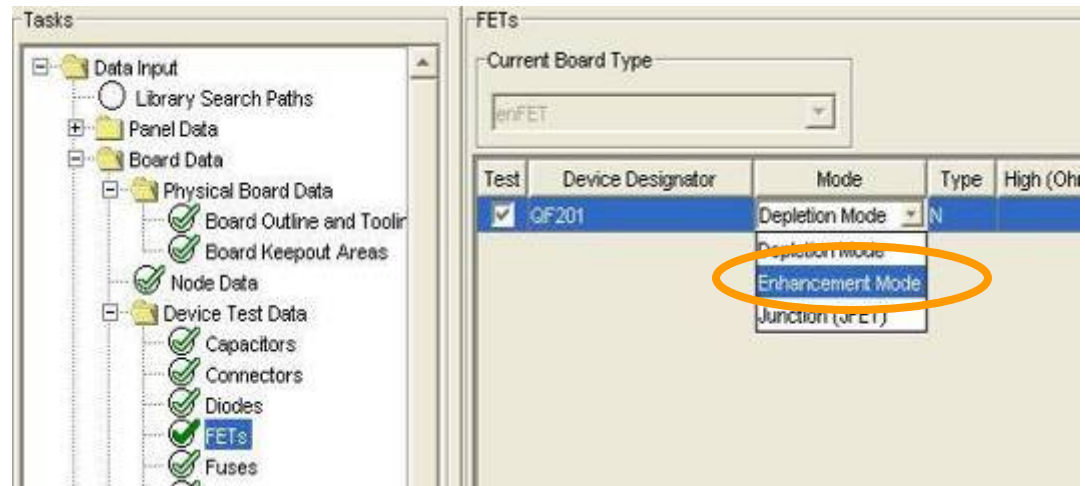
# Automated Enhancement FET generation

- The enhancement FET needs gate-source voltage before channel conduct.
- Traditional method is a manual process to create the library for that test.
- This enhancement is to generate a powered analog test for enhancement FET automatically.
- How to use?**
  - Mux (Board Consultant) and UnMux (Developer - Data-Input)
  - Define the FET type as “Enhancement Mode” and follow the normal development process.

## Mux System

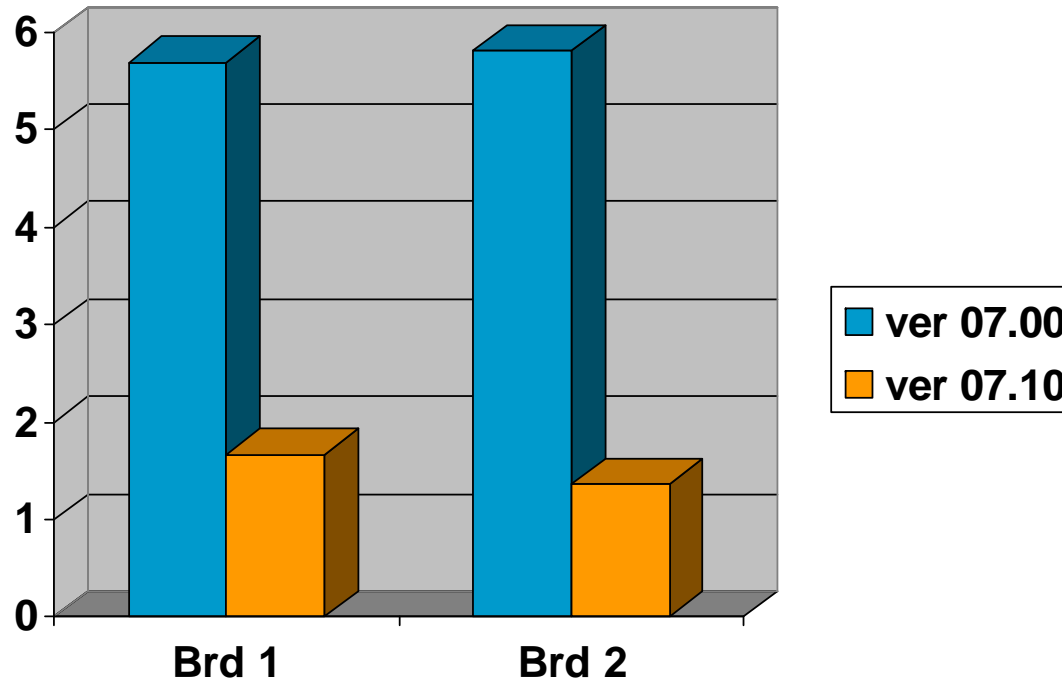


## UnMux System



# VTEP v2.0 Speed Up Results

Time  
(sec per test)

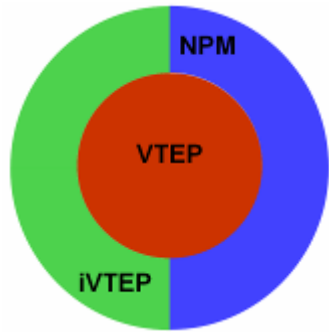


**> 4X  
improvement**

	ver 07.00		ver 07.10p	
	Brd#1	Brd#2	Brd#1	Brd#2
Per pin speed (msec)	11	11.3	3.2	2.5
Throughput (pins/sec)	91	89	309	396







# Additional Vectorless Test Coverage

## VTEP v2.0



- One of the capability of VTEP v2.0 is Network Parameter Measurement.

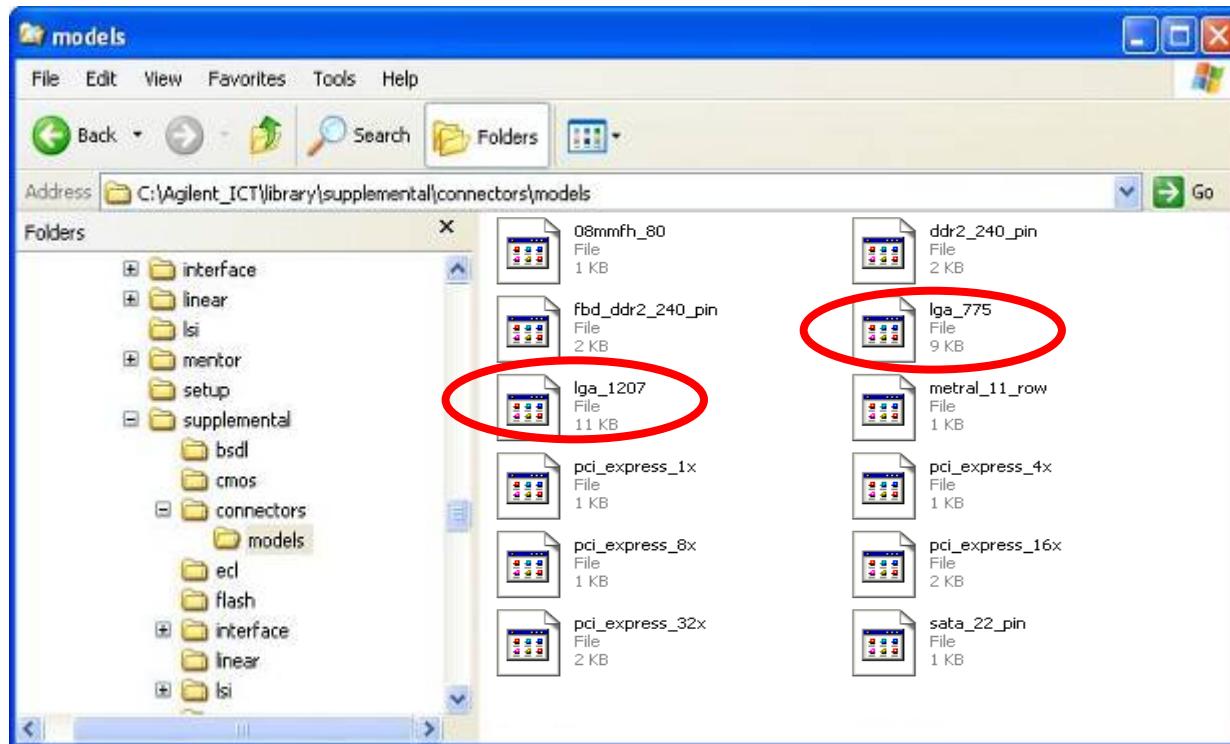
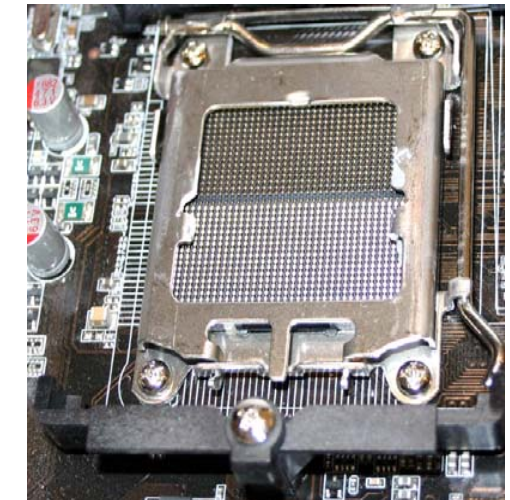
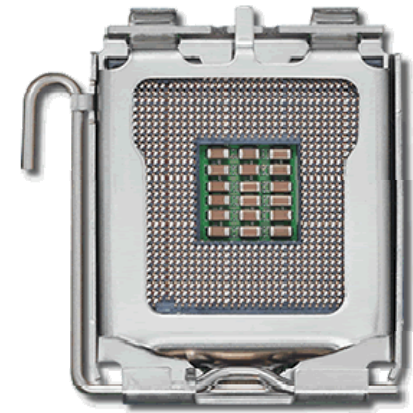
- NPM detects open on PWR and GND pins

VTEP v2.0	Devices (ICs)	Connectors	Sockets
VTEP			
iVTEP			
NPM			Now  Available!

# NPM now support CPU sockets

With 7.10p, NPM now supports :

- LGA 775 (Intel based)
- LGA1207 (AMD based)



# Requesting new NPM library files

## Jumpstations

[www.agilent.com/see/vtep](http://www.agilent.com/see/vtep)

[www.agilent.com/see/npm](http://www.agilent.com/see/npm)

[www.agilent.com/see/ivtep](http://www.agilent.com/see/ivtep)

VTEP Products	Description
N4300A	Signal Conditioning MUX Card (Qty : 10)
N4301A	Probe Active Electronics (Qty : 50)
N4302A	1.2 Inch Passive Sensor Plate (Qty : 100)
N4303A	2.5 Inch Passive Sensor Plate (Qty : 50)
N4306A	0.5 X 6.0 Passive Sensor Plate (Qty : 50)
N4307A	Connect Check Mux Card (Qty : 10)
N4311A	Small Probes (Qty : 50)
N4312A	Small Probes (Qty : 250)
N4313A	Probes (Qty : 250)

Software  
Medalist VTEP software ver.07.00, and above

**New NPM Connector Library File Request**  
NPM requires a library file of the connector that user wants to test. To request for a library file for a new connector not currently in your ICT software, [please click here](#)

**Documents & Downloads**

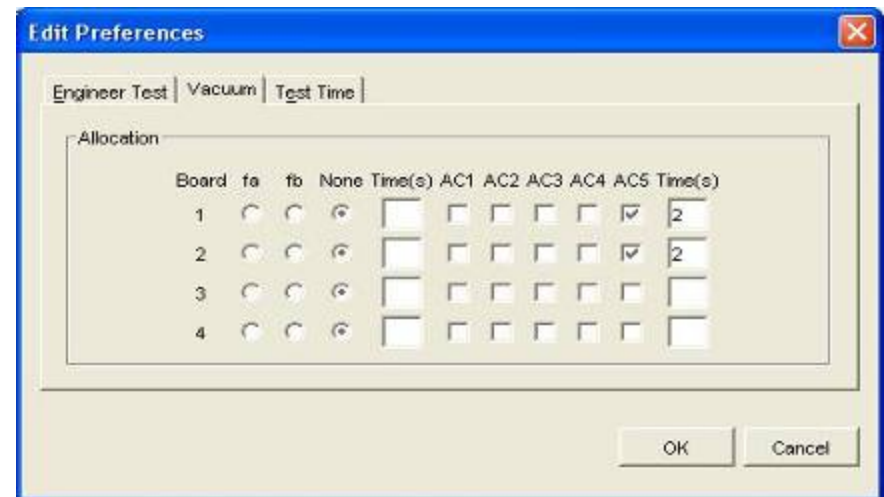
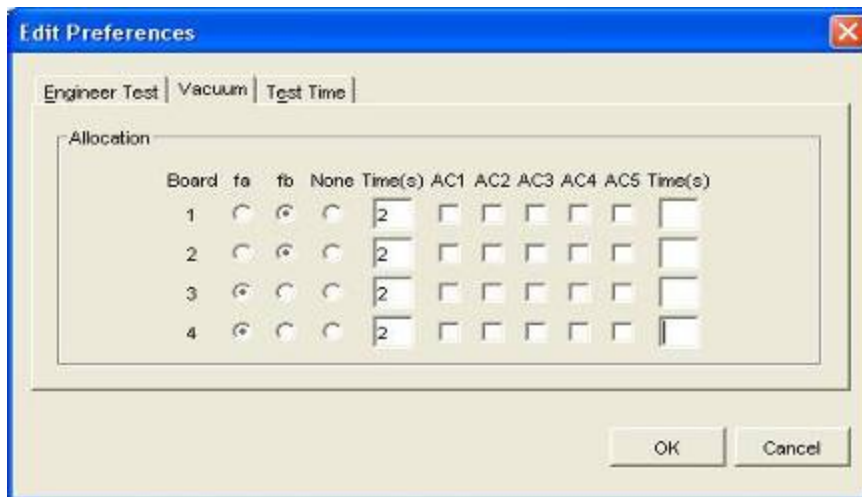
Name/Description	Date	Size
Success Story: <a href="#">Agilent Vectorless Test EP (VTEP) Goes Head-to-Head with Agilent TestJet</a> - In beta tests, VTEP proved its abilities to improve in-circuit test coverage by over 80 percent compared to Agilent TestJet, especially on boards with hard-to-test packages such as BGAs, micro-BGAs, and SMT edge connectors.	2003-12-16	351 KB
Application Note: <a href="#">Maximising Test Coverage with Agilent Medalist VTEP and iVTEP</a> - This paper describes how to get the most from Agilent Technologies' industry-leading vectorless test innovation, the Medalist VTEP hardware and software. It has been updated to include the latest Medalist iVTEP technology.	2006-08-09	227 KB
Technical Overview: <a href="#">Agilent Medalist iVTEP - intelligent Vectorless Test EP</a> - Building on the strength of TestJet and VTEP, Agilent intelligent Vectorless Test Extended Performance (iVTEP) can be used for ultra-small geometry packages, flip chips, as well as devices with minimal or no lead frames and heat spreaders.	2006-04-04	365 KB

[top of page](#)

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# AUXCONNECT alternative to fxon

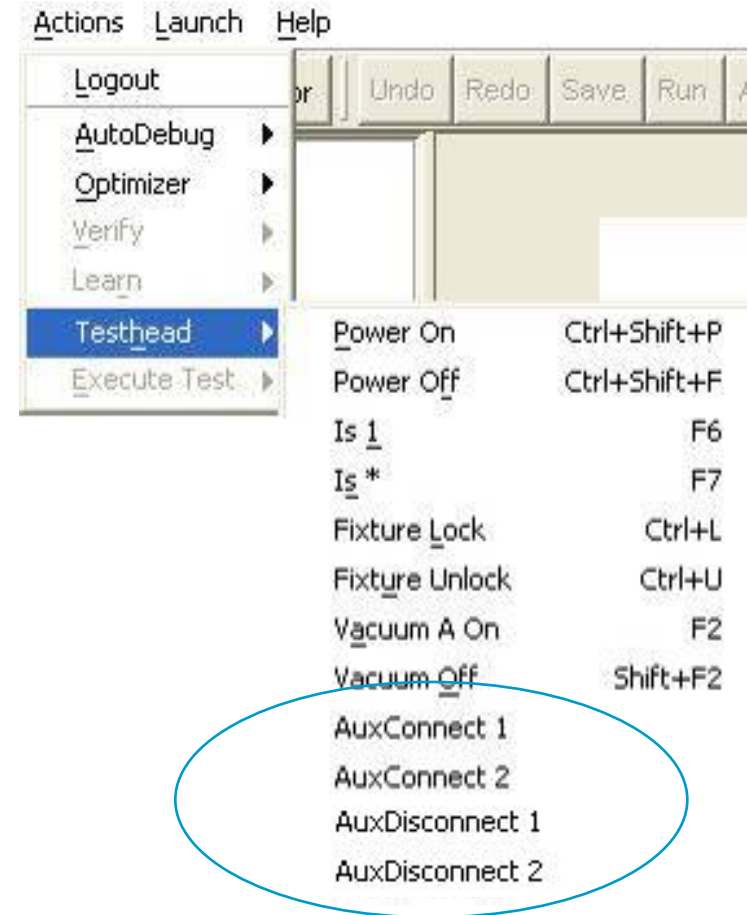
- It allows user to use auxconnect as an alternative to fxon.
- How to use it?
- Engineer Test: Edit → Preference → vacuum



Note: If the relay is defined in the testhead config, auxconnect will not work for that relay.

# AUXCONNECT alternative to fxon – Con't

- Pull Down Menu to activate:  
Actions → Testhead





# Future Releases

## Software Releases 2008

Thruput improvements

Digital Drive Thru

Serial Bus Support (I2C, SPI)

Additional Limited Access Technology



## Web Links



# Useful Web Links

## Software Updates Information –

<http://www.home.agilent.com/agilent/facet.jspx?t=80045.k.1&co=152910.i.2&cc=US&lc=eng&sm=g>

## VTEP & iVTEP Information –

<http://www.home.agilent.com/USeng/nav/-536900456.0/pc.html>

## Hardware and Software Support Details -

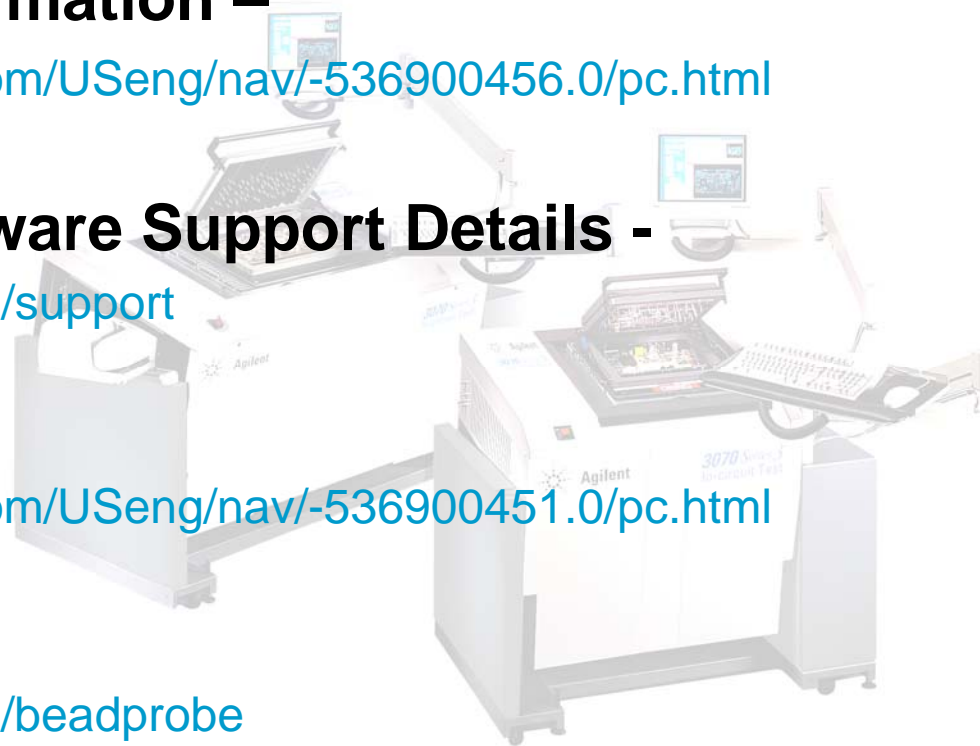
<http://www.agilent.com/see/support>

## ISP Flash/PLD –

<http://www.home.agilent.com/USeng/nav/-536900451.0/pc.html>

## Bead Probe –

<http://www.agilent.com/see/beadprobe>



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