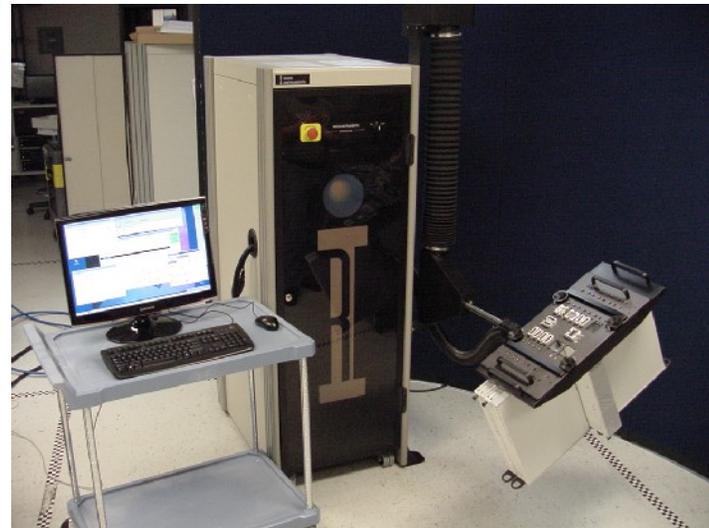




CASSINI RF/ Microwave ATE System Test Design & Best Practice Test Optimization





Test Plan - Comments, Guidelines and Suggestions

Optimizer - Optimizes over Test Section

Only add state buttons that are needed

Changes cost time and money

Data is displayed in the order listed & not
displayed in the order performed

Parameters set by LVs must be reset in the
Disconnect Settings panel



Optimizer: Optimizes over each Test Section

Compiled Delta Settings Shows Test Times

The screenshot shows a software window titled "Delta Settings for TestPlan: RFMD3100_F_offset". The window is divided into two panes. The left pane, titled "Test Plan Settings", lists various test sections and their steps. The right pane displays hardware timing data for the test plan.

Test Plan Settings

- Testplan idle Settings
- Section: DC Tests
 - 1. Icc Power Down (Current)
 - 2. Icc Idle High (Current)
 - 3. Icc Idle Low (Current)
- Section: 824 MHz AMPS FH1 Find
 - 1. AMPS Sweep (RelativeVc)
 - 2. AMPS Sweep (RelativeVc)
 - 3. AMPS Sweep (RelativeVc)
 - 4. AMPS Sweep (RelativeVc)
 - 5. AMPS Sweep (RelativeVc)
- Section: 824 MHz AMPS FE1 Find
 - 1. AMPS Sweep (RelativeVc)
 - 2. AMPS Sweep (RelativeVc)
 - 3. AMPS Sweep (RelativeVc)
 - 4. AMPS Sweep (RelativeVc)
 - 5. AMPS Sweep (RelativeVc)
- Section: 824 MHz AMPS FH1 Out
 - 1. Power Gain FH1 (Relative)
 - 2. Operating Current FH1 (C)
- Section: 824 MHz AMPS FE1 Out
 - 1. Power Efficiency FE1 (Re)
 - 2. Operating Current FE1 (C)
- Section: 824 MHz CDMA HP Find
 - 1. CDMA HP Sweep (Relativ)
 - 2. CDMA HP Sweep (Relativ)

Hardware Timing Data:

- Total Testplan Hardware timing
- Setup pauses 80435.2 us
- Setup Settling Time 220400 us
- TOTAL Setup Time 321153.3 us
- Measure pauses 264596.8 us
- TOTAL Meas Time 379283.0 us
- Total Hardware Test Time 700436.3 us
- **Deltas*****



Optimizer: Optimizes each Test Section.

Lowest DUT Frequency Measured First

Delta Settings for TestPlan: RFMD3100_F_offset

Section: 824 MHz CDMA ACPr M

- 1. Alternate Low HP (RelativeVoltageVsTime) Hardware time
- 2. Adjacent Low HP (RelativeVoltageVsTime) Hardware time
- 3. Adjacent High HP (RelativeVoltageVsTime) Hardware time
- 4. Alternate High HP (RelativeVoltageVsTime) Hardware time
- 5. Alternate Low LP (RelativeVoltageVsTime) Hardware time
- 6. Adjacent Low LP (RelativeVoltageVsTime) Hardware time
- 7. Adjacent High LP (RelativeVoltageVsTime) Hardware time
- 8. Alternate High LP (RelativeVoltageVsTime) Hardware time

Section: 824 MHz AMPS Harmonic

- 1. 2nd Harmonic FE1 (RelativeVoltageVsTime) Hardware time
- 2. 3rd Harmonic FE1 (RelativeVoltageVsTime) Hardware time

Section: 849 MHz CDMA HP Find

- 1. CDMA HP Sweep (RelativeVoltageVsTime) Hardware time
- 2. CDMA HP Sweep (RelativeVoltageVsTime) Hardware time
- 3. CDMA HP Sweep (RelativeVoltageVsTime) Hardware time
- 4. CDMA HP Sweep (RelativeVoltageVsTime) Hardware time
- 5. CDMA HP Sweep (RelativeVoltageVsTime) Hardware time
- 6. CDMA HP Sweep (RelativeVoltageVsTime) Hardware time

Section: 849 MHz CDMA Output

- 1. Channel Power (RelativeVoltageVsTime) Hardware time
- 2. Prefl_RL (RelativeRms) Hardware time
- 3. Operating Current (Current) Hardware time
- 4. Pin (RelativeRms) Hardware time

Section: 849 MHz CDMA LP Find

- 1. CDMA LP Sweep (RelativeVoltageVsTime) Hardware time
- 2. CDMA LP Sweep (RelativeVoltageVsTime) Hardware time

1. Alternate Low HP (RelativeVoltageVsTime) Hardware time
Setup pauses 318.4 us
Setup Settling Time 5000 us
TOTAL Setup Time 6049.0 us
Measure pauses 752.6 us
TOTAL Meas Time 2242.6 us
Total Hardware Test Time 8291.6 us
Deltas***

Receiver
FreqOffset --> RiFreqD(-1.98)
IfBw --> narrow
IfGain --> 56

RecLo
FreqOffset --> -1.98

Src12Output
AuxPower --> 824_CDMA_HP_AuxPwrSet_28

StaticDigital
CurrentMeasMax --> RiCurrentD(1.0)
Db1 --> off
MeasureLimit --> RiCurrentD(0.0)
MeasureMode --> none
MeasurePin --> none
MeasureVForce --> RiVoltageD(0.0)

System
Averages --> 16

Testhead



Optimizer: Optimizes each Test Section. Measurement with Lowest Input Power Performed First

Delta Settings for TestPlan: RFMD3100_F_offset

Test Plan Settings

- Testplan idle Settings
- Section: DC Tests
 - 1. Icc Power Down (Current)
 - 2. Icc Idle High (Current)
 - 3. Icc Idle Low (Current)
- Section: 824 MHz AMPS FH1 Find
 - 1. AMPS Sweep (RelativeVc)
 - 2. AMPS Sweep (RelativeVc)
 - 3. AMPS Sweep (RelativeVc)
 - 4. AMPS Sweep (RelativeVc)
 - 5. AMPS Sweep (RelativeVc)
- Section: 824 MHz AMPS FE1 Find
 - 1. AMPS Sweep (RelativeVc)
 - 2. AMPS Sweep (RelativeVc)
 - 3. AMPS Sweep (RelativeVc)
 - 4. AMPS Sweep (RelativeVc)
 - 5. AMPS Sweep (RelativeVc)
- Section: 824 MHz AMPS FH1 Out
 - 1. Power Gain FH1 (Relative)
 - 2. Operating Current FH1 (C)
- Section: 824 MHz AMPS FE1 Out
 - 1. Power Efficiency FE1 (Re)
 - 2. Operating Current FE1 (C)
- Section: 824 MHz CDMA HP Find
 - 1. CDMA HP Sweep (Relativ)
 - 2. CDMA HP Sweep (Relativ)
 - 3. CDMA HP Sweep (Relativ)
 - 4. CDMA HP Sweep (Relativ)

1. CDMA HP Sweep (RelativeRms) Hardware timing
Setup pauses 24.0 us
Setup Settling Time 100 us
TOTAL Setup Time 222.2 us
Measure pauses 5754.7 us
TOTAL Meas Time 7374.7 us
Total Hardware Test Time 7596.9 us
Deltas***
PowerV1
PowerV1 --> RiVoltageD(3.2)
Source2
Power --> RiPowerDbm(0.0)
RfState --> off
Src12Output
AuxPower --> RiPowerDbm(-26.0)
System
Averages --> 16



Test Plan - Comments, Guidelines and Suggestions

The tester is very fast changing state

Your part may not be fast, add Pauses

The tester will find unstable DUT states



Test Plan - Comments, Guidelines and Suggestions

Fewer Test Sections better than more

More simple test panels are better than fewer complex test panels

Duplicate test states/conditions when ever possible

Be consistent about where you place buttons in a test panel



Test Plan - Comments, Guidelines and Suggestions

IMD Tests - more Receive Attn is better

Noise Figure - Use 0 dB Rec Attn.

Set DB Current Limit = DB I Meas Max.

Set VI Current Limit \geq VI I Meas Max.

RF Sources - Levels ≤ -22 to $\geq +13$ dBm

DMSG - Optimum levels < -5 dBm

RF Off is < -30 dBm



System Receive Gain Adjustment

Receive Attenuation

IF Gain

Signal Dependent

Single tone

Multi tone

Measurement Repeatability



Simplified Receive Diagram

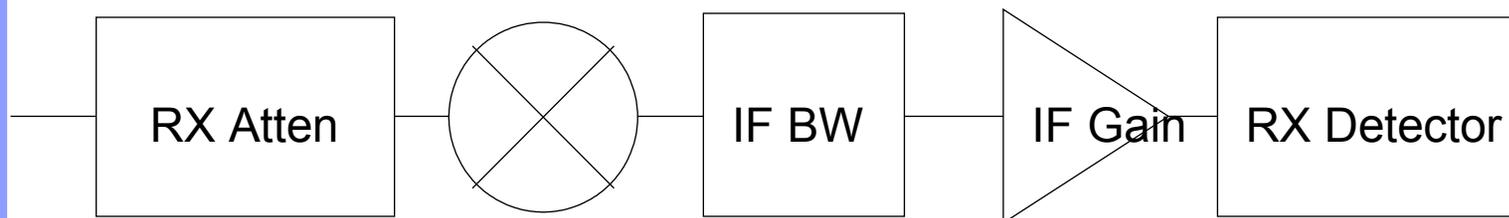
Receive Attenuator

Mixer

IF Filter

IF Amplifier

Receiver Detector





System Sensitivities

RI 7100A Receiver Mixer

Saturate (Compression)

Generate Intermodulation Distortion

Receiver Detector

Compression

"Fold-over"



Single Tone Measurements

RF Power, S-Parameters, Noise Figure

Objectives

- Maximize Power to Receiver

- Maximize Power to Mixer

- Set Appropriate IF Gain



Single Tone Method

Set IF Gain to 20 dB or Lower

Reduce Rx Atten Until Error Message

Backoff One Rx Atten Setting

Increase IF Gain Until Error Message

Backoff One IF Gain Setting



Multi-Tone Measurements

IM3/5/7 and ACPR

Measure Device not Tester's Mixer

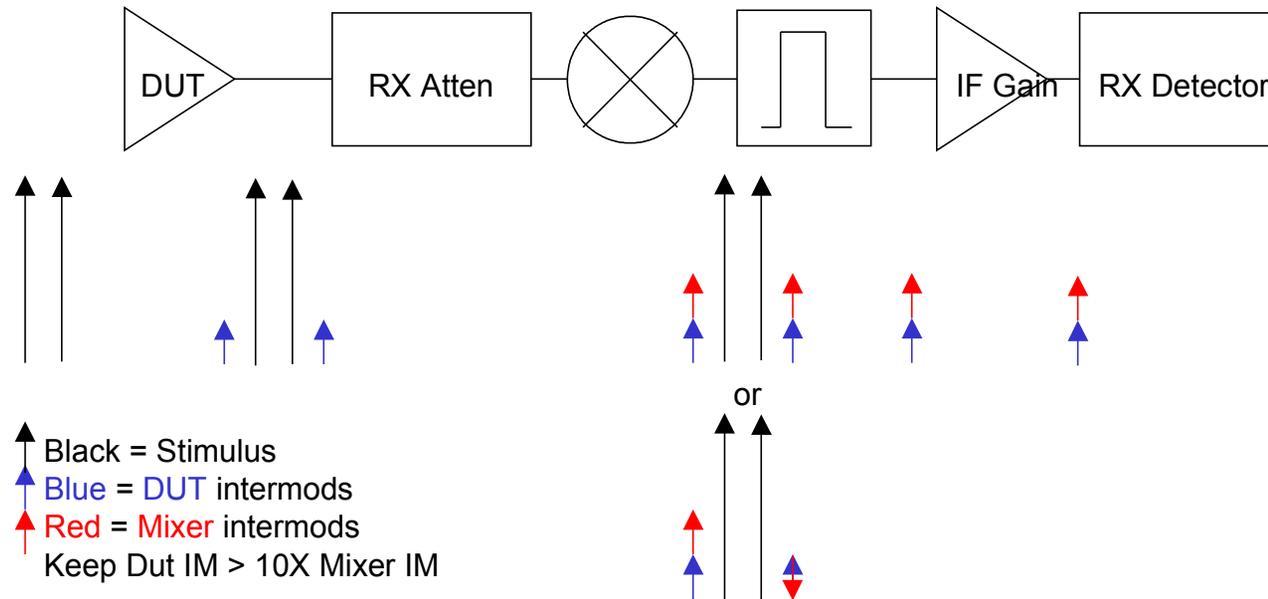
Operate in the Mixer's Linear Range

The Mixer Can Add to or Subtract from the Measurement



Mixer Intermods

Receive Attenuator Controls Mixer IM Performance and System Noise Floor





Multi-Tone Method

Measuring Main Tone(s)

- Not Sensitive to Mixer IMs

- Use Method for Single Tone

Measuring IM & ACPR Tones

- Sensitive to Mixer's IM performance

- IF Gain usually at or near Maximum
(Minimize noise floor)

- Verify with Spectrum Analyzer (SA)

- Be careful of SA's intermods!



Measure IM Tone

Set IF Gain 50/55; Receive Atten 20 dB

Measure C/I

Verify with Spectrum Analyzer

Go to break point

Set Receive input to Aux out

Measure C/I

If Different, Increase RF Attenuator

Repeat



IM Considerations

Verify High and Low IM Tones

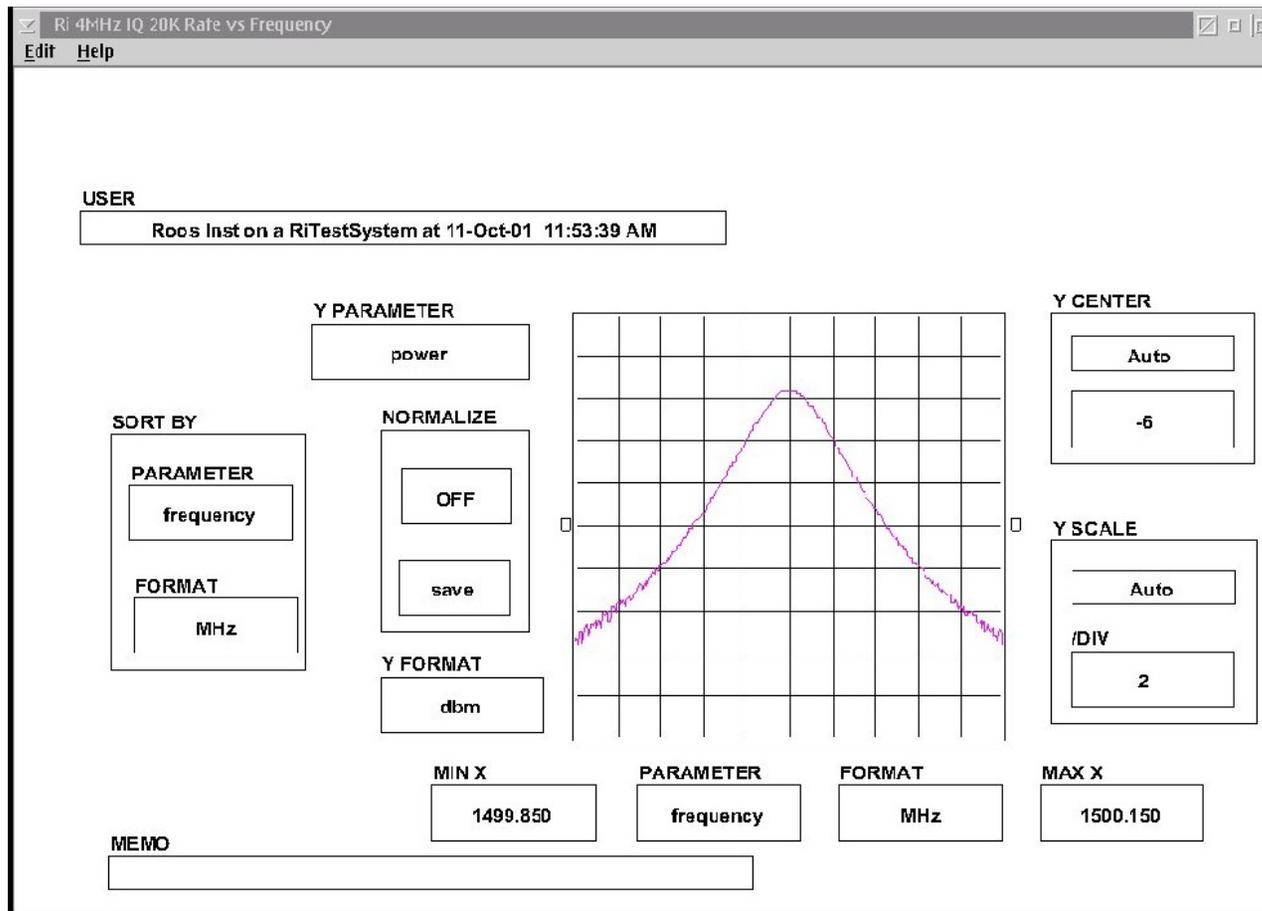
Use Highest Linear Power DUT Condition

Typically 20 dB Rx Atten, 55 dB IF Gain

Too Much Rx Atten Raises Noise Floor



Effective Receiver Bandwidth





Organizing Your Test Plan

Define 1st RF state in Global Defaults

Add Fixture ON to Global Defaults

Define general test conditions in Section Default Panels

Define DC tests in 1st or last Section which require the RF Sources to be off

Define DC tests in 1st or last Section which require the DUT to be turned off



Organizing Your Test Plan

Define special startup sequences in the Connect Sequence panel or in the 1st Test Section

Write the tests in the order listed on your test list



Speeding-up Your Test Plan

VCC Changes & DC Measurements: < 2 msec.

RF Measurements: <30 msec.

RF Frequency Moves: <20 msec. (Fast Settle) or
<1.5 msec (Freq Offset)

RF Mechanical Switches: >30 msec. & Expensive
Minimize RF Source and Receiver Frequency Moves

Minimize/Eliminate RF Mechanical Switch Changes:
Changing RF Ports from Src to Rec or Rec to Src
Changing RF Src 1 and RF Src 2 RF Attenuators

Using the Wide IF Filter is faster than Narrow IF

Typically use 16 or less Averages for RF Measure

Typically use 32 or less Averages for DC Measure



Speeding-up Your Test Plan 2

Fast RF Meas: S parameters, RF Power and Phase

Slow RF Meas: ACPR, Noise Figure, IP3, Harmonics

Setting a Parameter to a Local Variable Value is very costly : Requires a Mini-Compile

The Optimizer only Optimizes within a Test Section

Time Domain vs Freq Domain:

If the RF Receiver can make the Measurement, it is faster with better Frequency & Dynamic Range

Oscope is designed to measure Pulse Characteristics
Rise/Fall Time, Period, Duty Cycle, etc.

Receiver is designed to measure Complex Signals:
Amplitude, Phase, Noise, Power, Frequency, etc.



Speeding-up Your Test Plan 3

Items to Set in Global Defaults

Receiver Freq Tracking to Source 1 or System

Test Head Parameter to b2

RF Ports to Receive or Source

Receiver IF Gain

Source 1 Freq & Level to first RF Stimulus Signal

Source 2 Freq & Level to the first IM Stimulus Signal

Source 3 Freq & Level to the first LO Stimulus Signal

Turning On and Off a RF Source is fast

Switching Source 1 Mode to Noise is faster!

Use Source 1 Mode button to Isolate Src 1 & 2 from DUT



Speeding-up Your Test Plan 4

Check Compiled Delta Settings to Improve Test Speed

Look for changes in Receiver & Source Frequency, Attenuator & Test Head Settings, etc.

Minimize Test State changes by making test conditions exactly the same for as many meas as possible:

i.e. RF Stimulus Levels, Frequencies, Receiver Settings, DC Levels, Current Limits, Ranges, etc.

Use b1 to test LO Leakage at the DUT's RF Input

Use Source 1 "back door" for S22 Measurements

For IM measurements, leave RF Source 1 at the normal stimulus Freq, this saves 2 RF Freq Moves

Remember DC only measurements still set the Receiver and RF Src's to their Default Frequencies

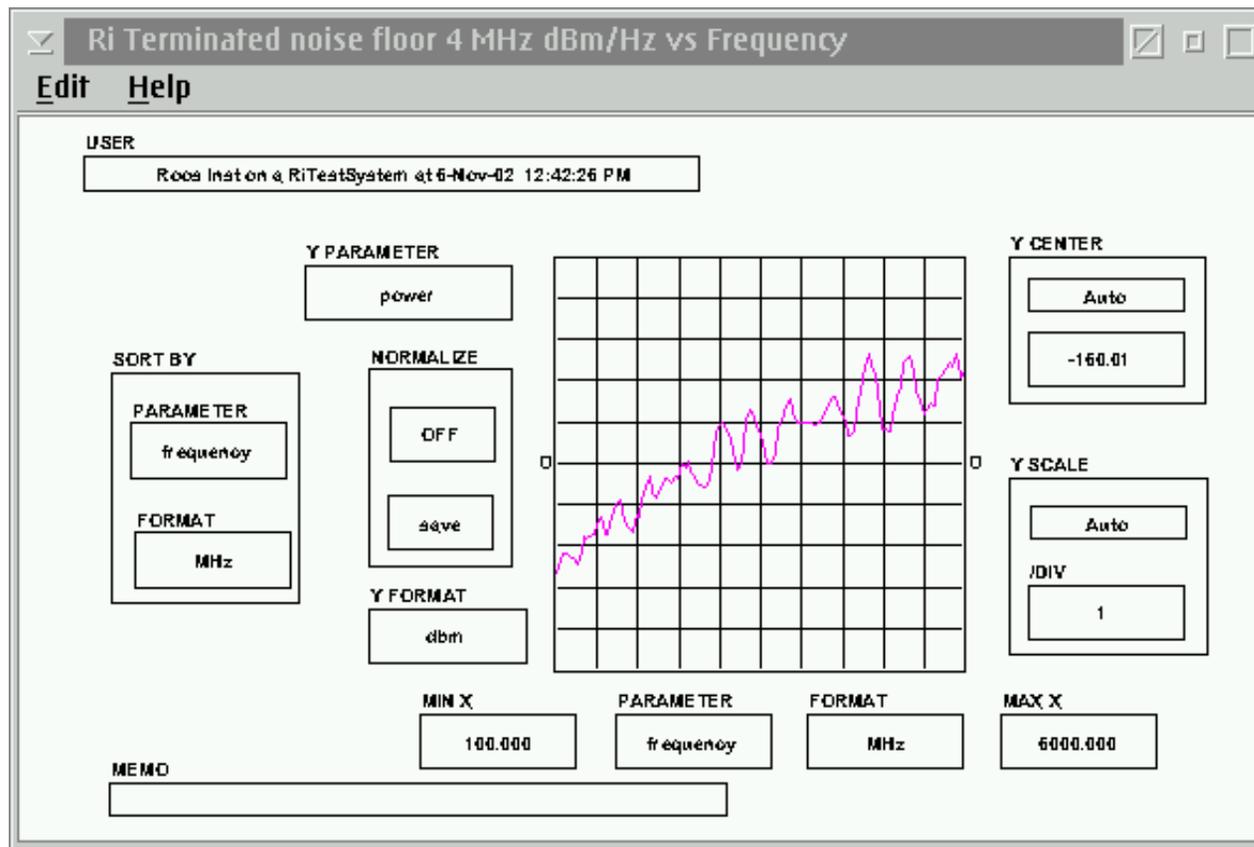


Typical RI 7100A RF ATE Measurement Time

<u>Measurement</u>	<u>Time</u> (msec.)	<u>Std. Dev</u>
Power	2.5	<0.02 dB
Frequency	11.5	<0.5 Hz
S11, S12, S21 & S22	12	0.02 dB (S21)
Noise Figure	26	0.1 dB
Phase Noise	60	0.3 dB
IIP3	78	0.3 dB
P1dB	17.5	0.1 dB
ACLR or ACPR	93	0.4 dB
Harmonic Power	56	0.05 dB
I/Q Mod Phase & Amp	25	0.1 dB, 0.1 deg.
I/Q Demod Phase & Amp	60	0.02 dB, 0.15 deg.
DC Voltage	2	0.025%
DC Current	2	0.03%



Typical RI 7100A Noise Floor <-155 dBm/Hz to 6 GHz

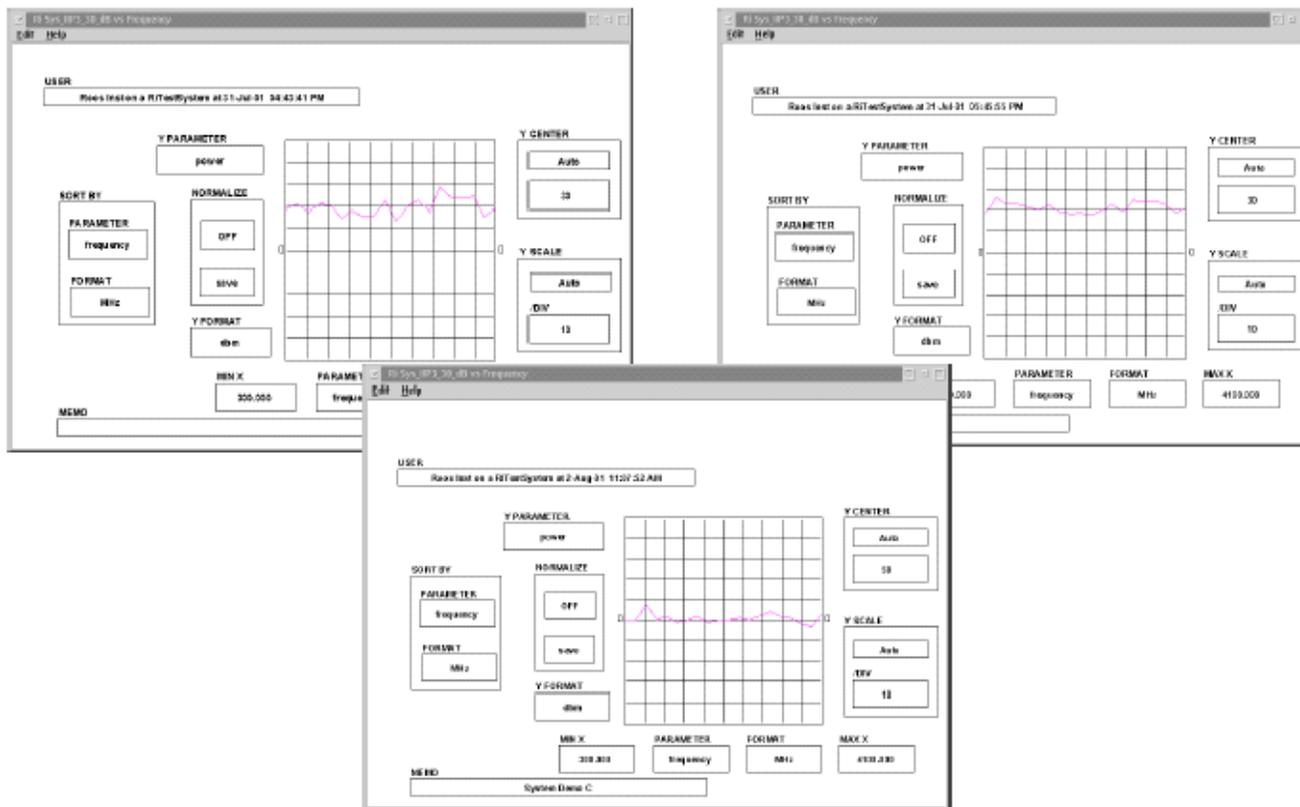




Typical Test System IIP3

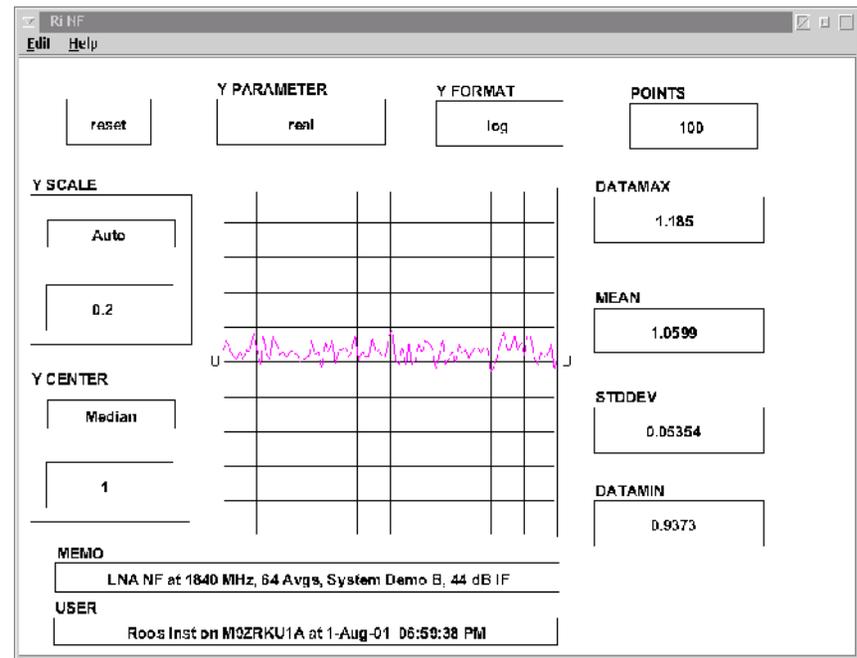
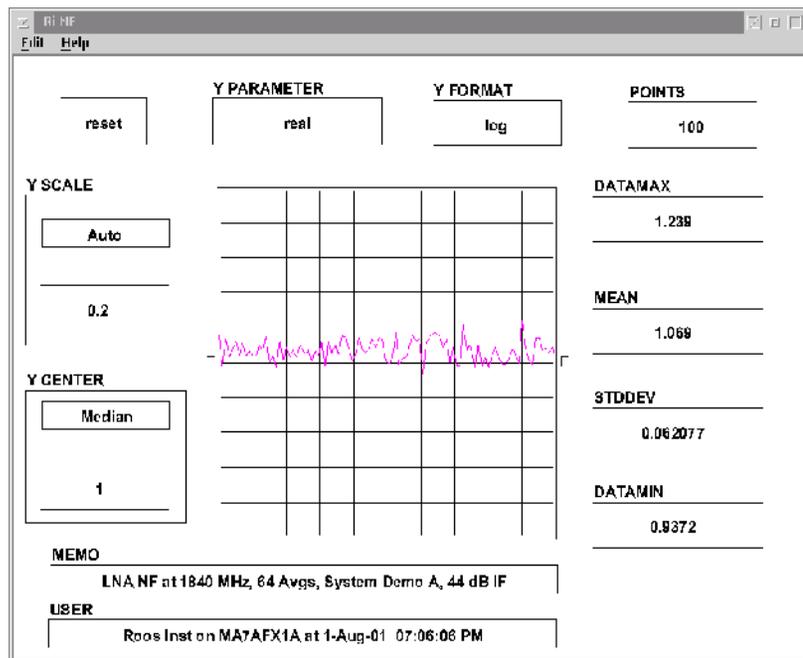
+49 dBm

3 Testers (30 dB Rec Attenuation)





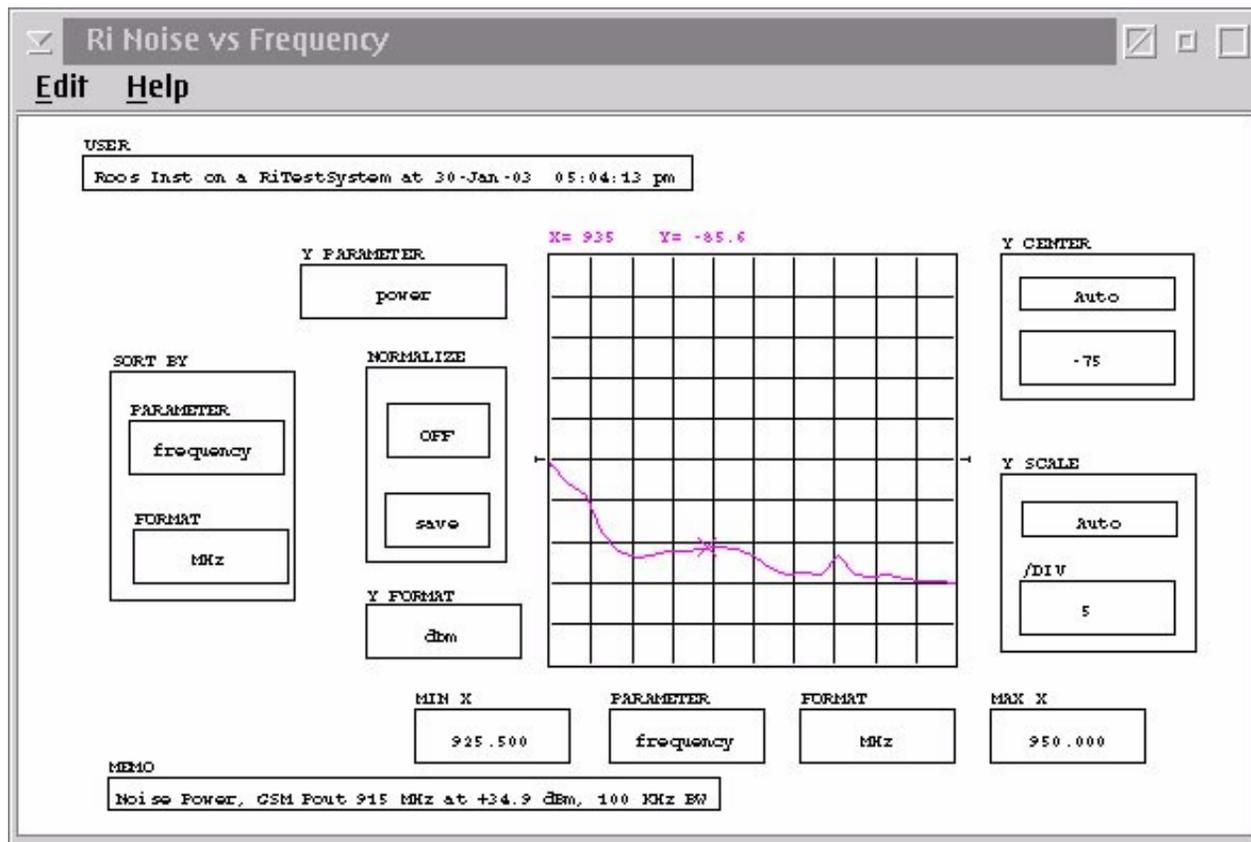
1 dB Noise Figure – Two Testers





Noise Floor Measurements

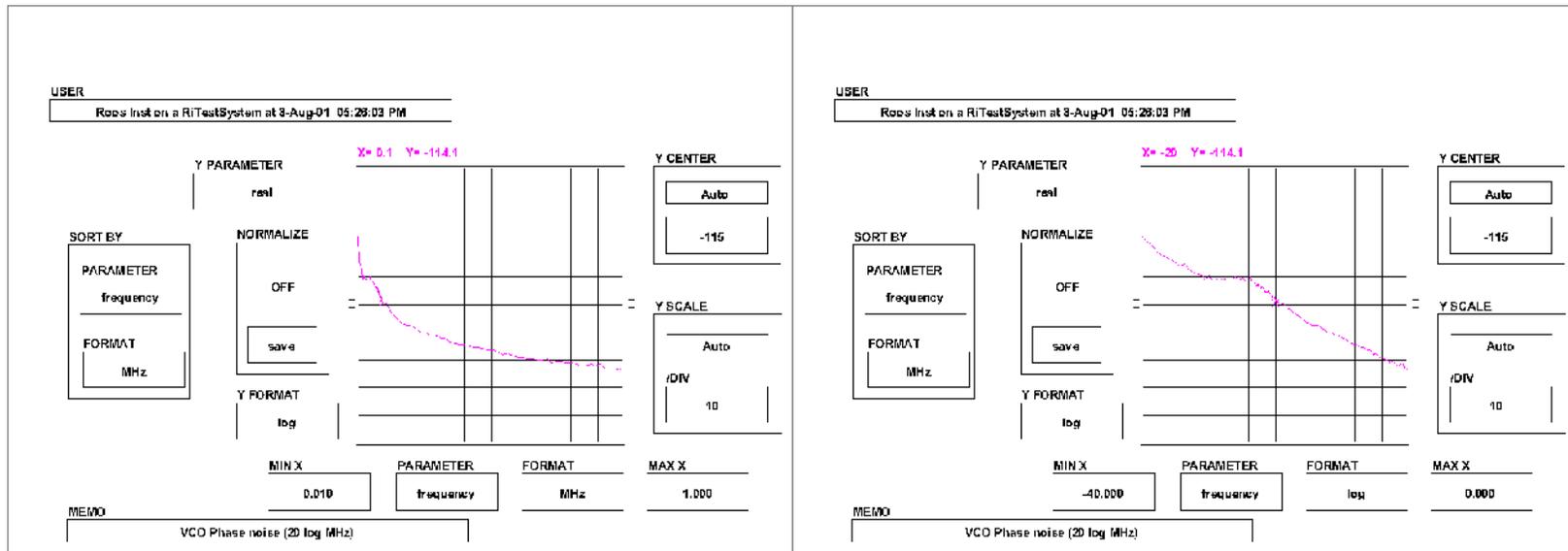
Pout +34.9 dBm, Noise Floor <-85 dBm





VCO Phase Noise Measurements

-114 dBc/Hz at 100 kHz Offset
-137 dBc/Hz at 1 MHz Offset





Production Measurement Performance Limits

<u>DUT</u>	<u>Measurement</u>	<u>Performance</u>
LNA	Noise Figure IIP3	<1.0 dB >+25 dBm
PA	CDMA ACPR1 CDMA ACPR2	<-60 dBc <-70 dBc
Mixer	Noise Floor	<-150 dBm/Hz
PLL/VCO	Phase Noise	<-114 dBc/Hz @ 100 kHz <-137 dBc/Hz @ 1 MHz



Production Measurement Performance Limits cont.

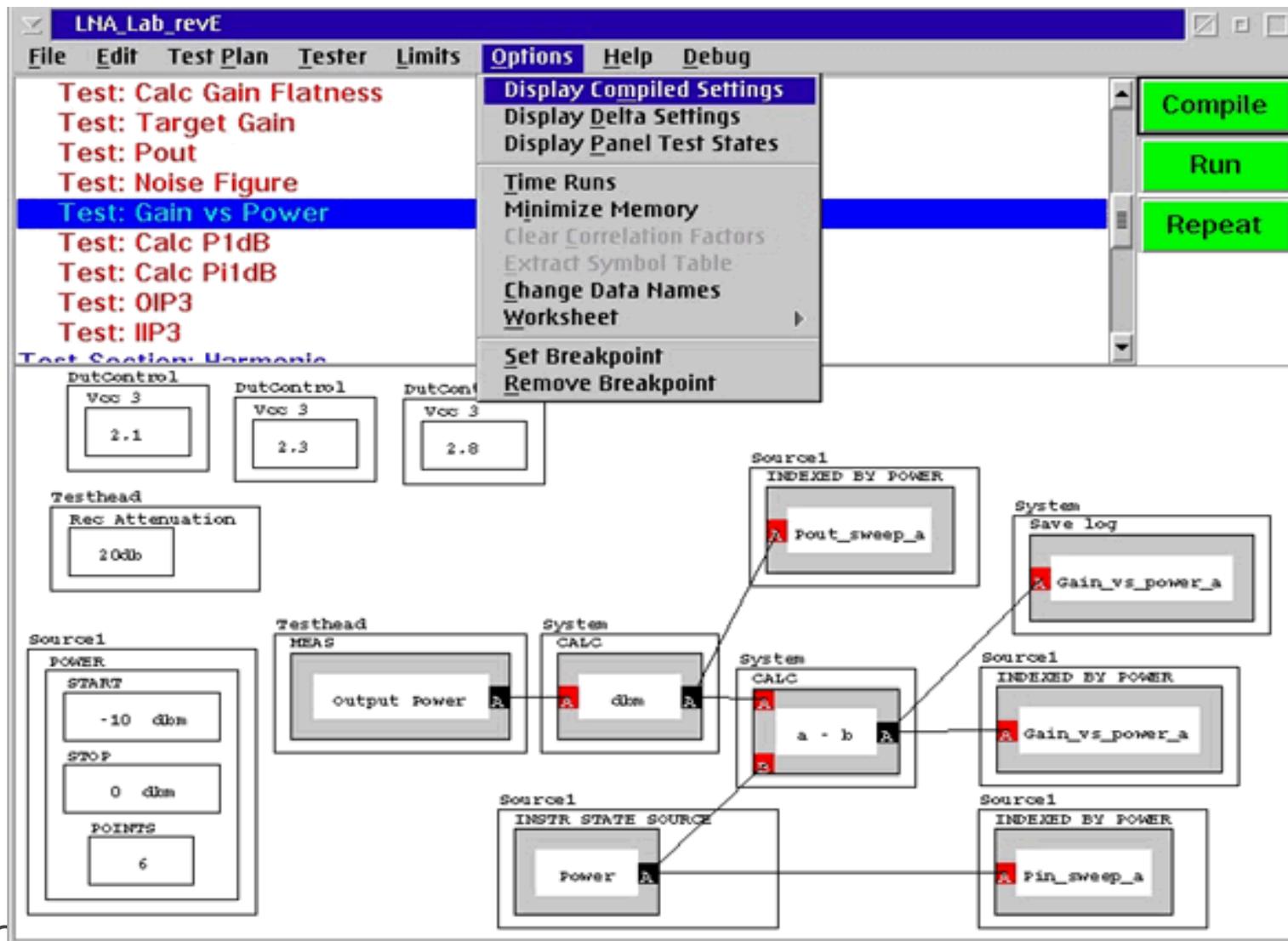
<u>DUT</u>	<u>Measurement</u>	<u>Performance</u>
Dividers	Frequency	<1 Hz Resolution to 20 GHz
I/Q Mod	Phase Match	<0.1 degree
	Amplitude Match	<0.025%
	LO Rejection	<-60 dBS
	Image Rejection	<-70 dBS
I/Q Demod	Phase Match	<0.1 degree
	Amplitude Match	<0.1 dB



Debugging and Breakpointing

Measurement Order and Test Flow
Setting a Breakpoint

Measurement Order and Test Flow





Test Section Optimization

Delta Settings for TestPlan: LNA_Lab_revE

Test Plan Settings

- Testplan idle Settings
- Section: Current Tests
 - 1. IDD (Current)
 - 2. Igcq (Current)
- Section: RF Tests
 - 1. S-Parameters Bi-directional
 - 2. Noise Figure (RelativeRms)
 - 3. Calc P1dB (CalcOnly)
 - 4. Gain Flatness (TwoPort)
 - 5. Noise Figure (RelativeRms)
 - 6. Pout (TwoPort)
 - 7. Gain vs Power (TwoPort)
 - 8. Gain vs Power (TwoPort)
 - 9. Gain vs Power (TwoPort)
 - 10. Gain vs Power (TwoPort)**
 - 11. Gain vs Power (TwoPort)
 - 12. Gain vs Power (TwoPort)
 - 13. Gain vs Power (TwoPort)
 - 14. Gain vs Power (TwoPort)
 - 15. Gain vs Power (TwoPort)
 - 16. Gain vs Power (TwoPort)
 - 17. Gain vs Power (TwoPort)
 - 18. Gain vs Power (TwoPort)

10. Gain vs Power (TwoPort) Hardware timing

Setup pauses 1.2 us
Setup Settling Time 200 us
TOTAL Setup Time 326.7 us
Measure pauses 1090.3 us
TOTAL Meas Time 6709.9 us
Total Hardware Test Time 7036.6 us

****Deltas*******

DutControl
Vcc3 --> RiVoltageD(2.1)

Source1
Power --> RiPowerDbm(-8.0)
SrcPower --> RiPowerDbm(5.58445626e-1)

****State Changes*******

State
(DutControl 'compileConfigVcc3:' RiVoltageD(2.8) RiVoltageD(2.1) 1)
(Source1 'compileConfigSrcPower:' RiPowerDbm(-1.44155437) RiPower
(Source1 'compileConfigRfState:' on on 9)
Settle 200 uSec
Measure
(Testhead TwoPort 1)



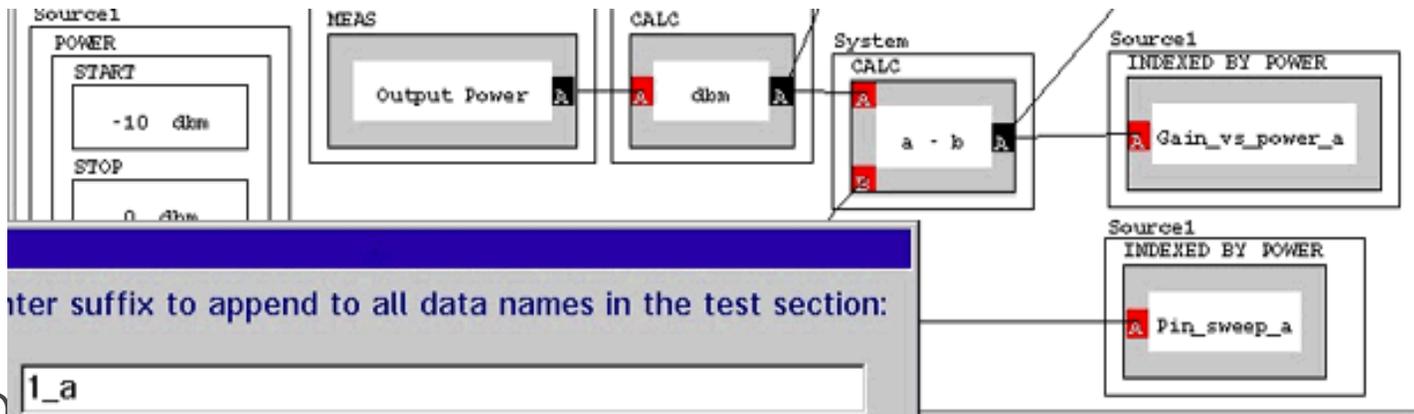
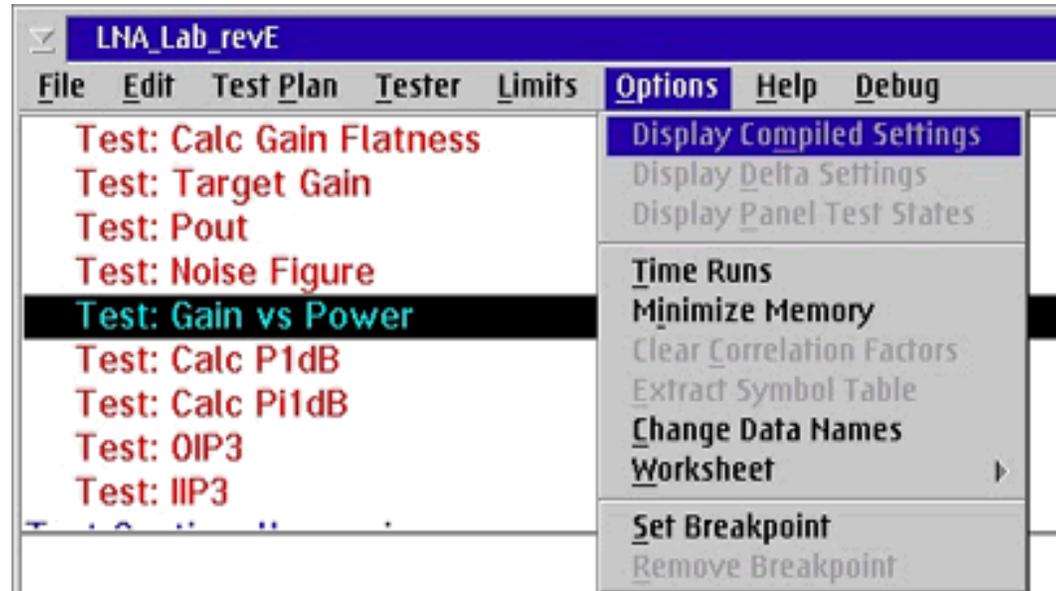
Multiple States in a Panel

The screenshot shows a software window titled "Panel State Indexes for 'Gain vs Power'". The window has a menu bar with "File", "Edit", "Smalltalk", and "Help". The main content is a table with three columns: "State Index", "DutControl Vcc3", and "Source1 Power". The table lists 18 states, each with a unique index, a voltage value, and a power value.

State Index	DutControl Vcc3	Source1 Power
1	RiVoltageD(2.1)	RiPowerDbm(-10.0)
2	RiVoltageD(2.1)	RiPowerDbm(-8.0)
3	RiVoltageD(2.1)	RiPowerDbm(-6.0)
4	RiVoltageD(2.1)	RiPowerDbm(-4.0)
5	RiVoltageD(2.1)	RiPowerDbm(-2.0)
6	RiVoltageD(2.1)	RiPowerDbm(0.0)
7	RiVoltageD(2.3)	RiPowerDbm(-10.0)
8	RiVoltageD(2.3)	RiPowerDbm(-8.0)
9	RiVoltageD(2.3)	RiPowerDbm(-6.0)
10	RiVoltageD(2.3)	RiPowerDbm(-4.0)
11	RiVoltageD(2.3)	RiPowerDbm(-2.0)
12	RiVoltageD(2.3)	RiPowerDbm(0.0)
13	RiVoltageD(2.8)	RiPowerDbm(-10.0)
14	RiVoltageD(2.8)	RiPowerDbm(-8.0)
15	RiVoltageD(2.8)	RiPowerDbm(-6.0)
16	RiVoltageD(2.8)	RiPowerDbm(-4.0)
17	RiVoltageD(2.8)	RiPowerDbm(-2.0)
18	RiVoltageD(2.8)	RiPowerDbm(0.0)

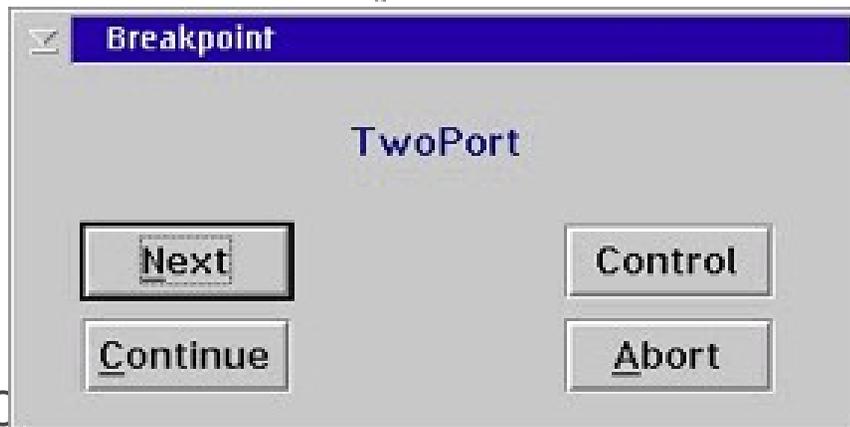
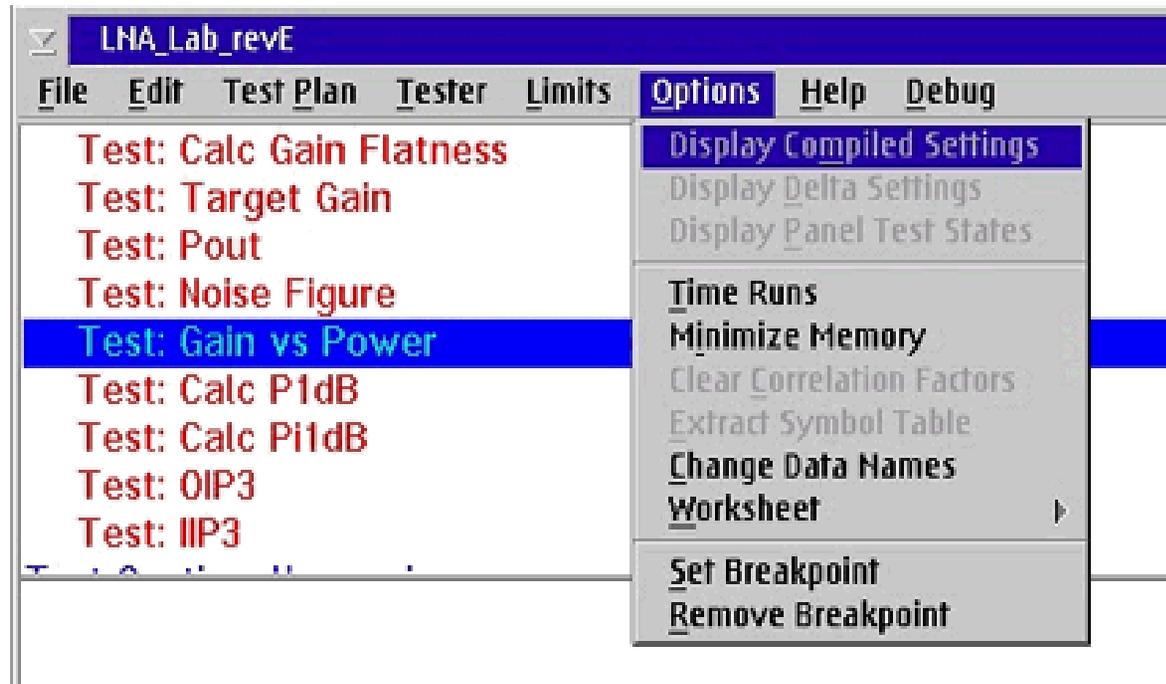


Copy a Test or Test Section





Setting a Breakpoint





RI Interactive Control Window

The screenshot shows a software window titled "D:\RIAPPS\testsys\Gen3Demo Controller". The window has a menu bar with "Tester", "Instrument", "Measurements", and "Help". Below the menu bar is a list of sources: "Source1", "Source2", "Source3", "Source4", "Src120output", and "Src30output". A "control panel" is selected, showing options: "calibration", "debug", and "modulation".

The main control area contains several parameters:

- Frequency: 925 Mhz
- Alc Mode: fast
- Power: -10 dbm
- Freq Offset: 0 Mhz
- Rf State: ON
- Fast Settle: OFF

An "INFO ONLY" box displays the following values:

- Freq: 925 Mhz
- Src Power: -1.44 dbm
- Power Correction: 8.56 db



Interactive DC Measurements

The screenshot shows the 'Gen3 Demo Controller' software interface. The title bar indicates the path 'D:\RIAPPS\testsys\Gen3Demo Controller'. The menu bar includes 'Tester', 'Instrument', 'Measurements', and 'Help'. A list of components is visible on the left, with 'DutControl' selected. The main area displays various measurement controls and results:

- Device Power 1: open
- Device Power 2: open
- Device Power 3: open
- Device Power 4: open
- Device Power 5: open
- Device Power 6: open
- Device Power 7: open
- Device Power 8: open
- Vcc 3: 2.2
- Vcc 4: 0
- DutControl: Current Meas Max: 0.1, Measure: Vcc5, Measure Bw: fast
- CURRENT MEAS: 0.023794



Interactive RF Measurements

D:\RIAPPS\testsys\Gen3Demo Controller

Tester Instrument Measurements Help

noiseFigure
Oscilloscope
PowerVI
Receiver
RecLo
SineGen
Source1
Source2

control panel

Select the wave parameter for measurement. A1 is incident, B1 is reflected from the input, B2 is the voltage out of the device and A2 is the voltage into the device output

Test

Pa

a1
a2
b1
b2

Frequency
925 Mhz

Input
1 - 2 (.1 - 20 input

If Bw
4 Mhz

If Gain
30*

POWER DBM
18.142

NOISE DBM/HZ
-81.663

RMS DBM
-18.603



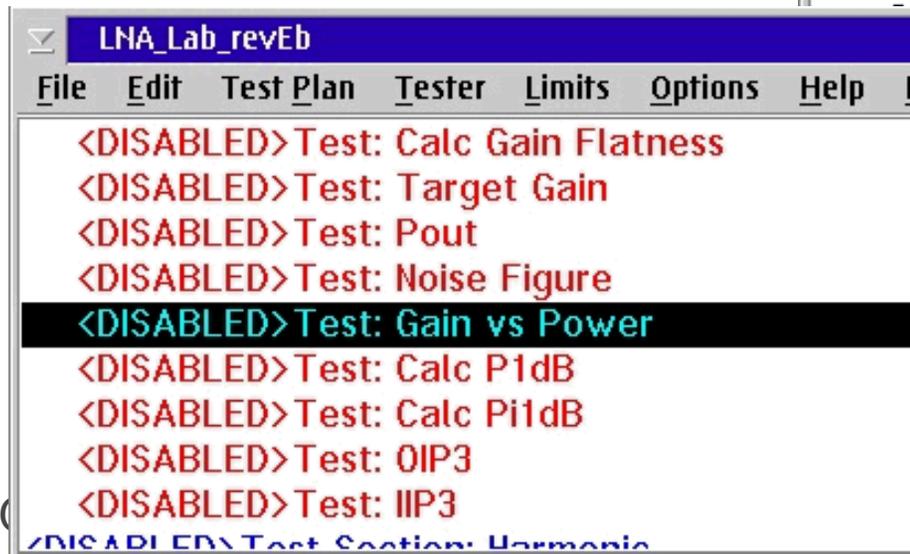
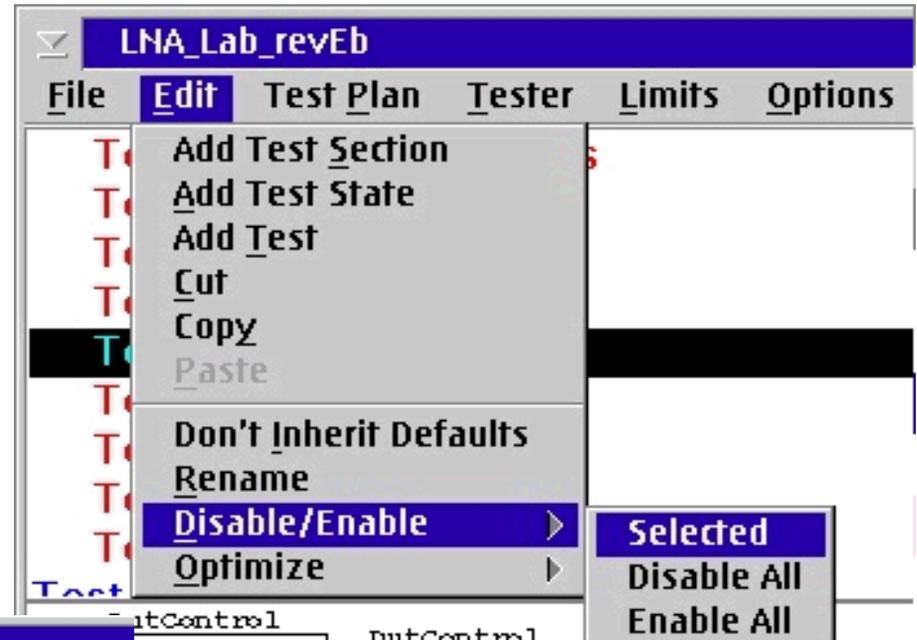
Receiver Measurement Types

The screenshot shows a software window titled "D:\RIAPPS\testsys\Gen3Demo Controller" with a menu bar containing "Tester", "Instrument", "Measurements", and "Help". A list of measurement types is on the left, with "Receiver" selected. The "control panel" is active, displaying the following settings and results:

Parameter	Value
Frequency	925 Mhz
Input	1 - 2 (.1 - 20 input
If Bw	4 Mhz
If Gain	30*
Testhead Parameter	b2
POWER DBM	7.3879
NOISE DBM/HZ	-78.288
RMS DBM	-9.8612



Test Disable Usage





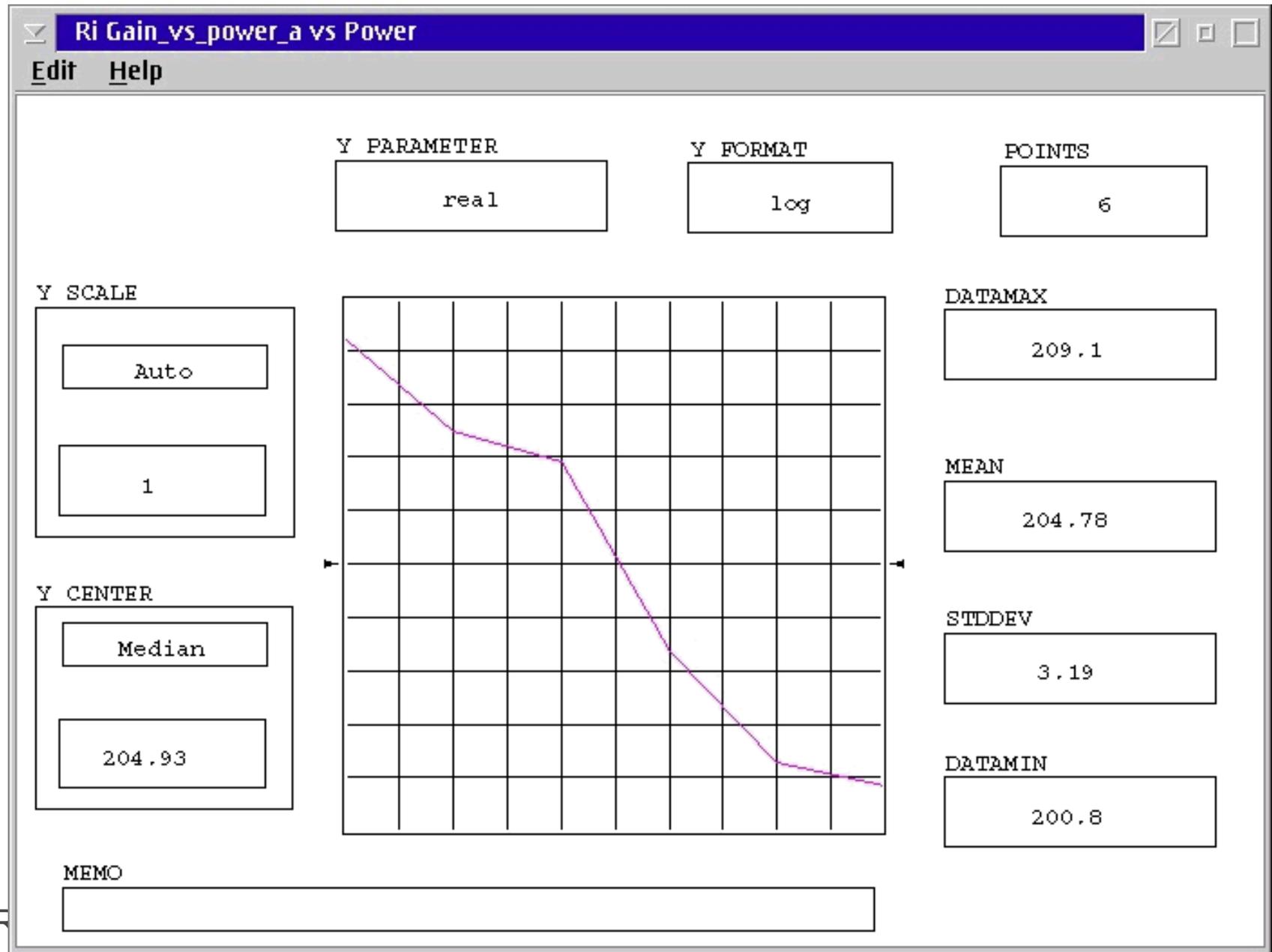
Data Viewers

The screenshot shows a software window titled "LNA_Lab_revEb" with a menu bar (File, Edit, Test Plan, Tester, Limits, Options, Help, Debug). The main area contains a list of tests, with "Test: Gain vs Power" selected and highlighted in black. To the right of the test list are three green buttons: "Compile", "Run", and "Repeat".

A "Select Viewer" dialog box is open, listing several viewer options: "Moving Strip Chart", "Polar", "Rectangular", "Smith Chart", "Strip Chart" (which is highlighted), and "Validation Plot". The dialog has "Select" and "Cancel" buttons at the bottom.

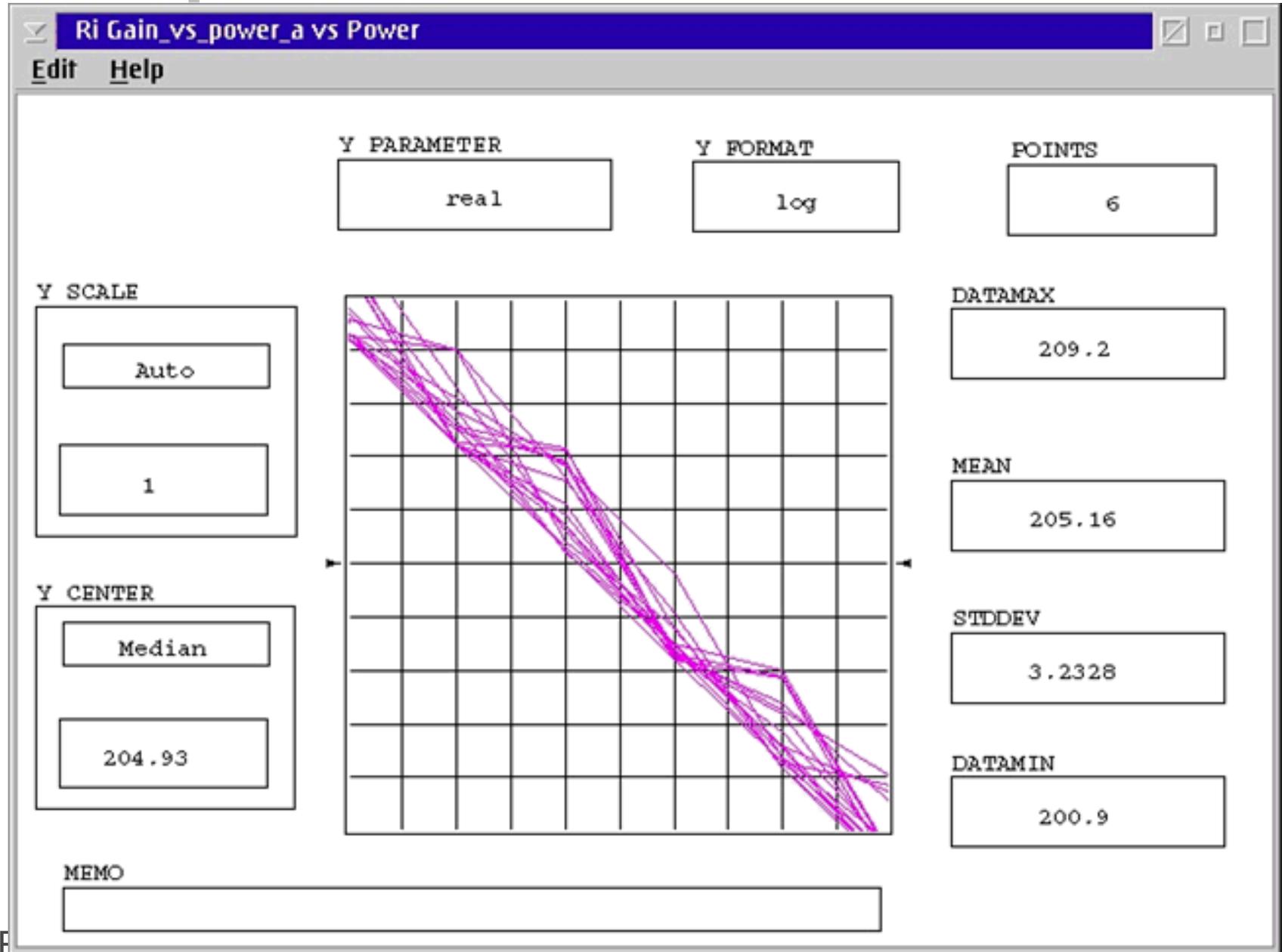
The background shows a block diagram of the test setup. It includes a "Testhead" with "Rec Attenuation" set to "20db". A "Source1" block is configured with "POWER" settings: "START" at "-10 dbm", "STOP" at "0 dbm", and "POINTS" at "6". This source is connected to a "Testhead" labeled "MEAS" which displays "Output Power". The signal then goes to a "System" block labeled "CALC" which displays "dbm". Another "Source1" block is labeled "INSTR STATE SOURCE" and displays "Power", which is connected to a "Source1" block labeled "INDEXED BY POWER" which displays "Pin_sweep_a".

Single Variable Data Viewers





Overpaint Function





Single Event Repetitive Measurements

The screenshot shows a software window titled "LNA_Lab_revEb" with a menu bar (File, Edit, Test Plan, Tester, Limits, Options, Help, Debug). The main area displays a list of tests, with "Test: Pout" selected. To the right are buttons for "Compile", "Run", and "Repeat". Below the test list is a measurement setup diagram. It includes a "Source1" block with "Power" set to "-12 dbm", a "Testhead" block with "MEAS" and "Output Power", and a "System" block with "CAL" and "Pout_a". A "Select Viewer" dialog is open, listing options: "Moving Strip Chart", "Polar", "Rectangular", "Smith Chart", "Strip Chart", and "Validation Plot".



Moving Strip Chart Display

The image displays two overlapping screenshots of a software window titled "Ri Pout". The window contains a moving strip chart display and various control panels.

Top Window (Ri Pout):

- Y PARAMETER: power
- Y FORMAT: dbm
- POINTS: 11
- Y SCALE: Auto
- Y CENTER: Median
- STATISTICS: DATAMAX (181.8), MEAN (180.81), STDDEV (0.54128), DATAMIN (180.1)
- Time: 27-Jun-05 11:20:52 am

Bottom Window (Ri Pout):

- Y PARAMETER: power
- Y FORMAT: dbm
- POINTS: 155
- Y SCALE: Auto
- Y CENTER: Median
- STATISTICS: DATAMAX (182), MEAN (180.73), STDDEV (0.58613), DATAMIN (180.1)
- MEMO: (empty)
- USER: Roos Inst on a RiTestSystem at 27-Jun-05 11:20:52 am



Debugging Tips

Check active Calibration data for anomalies

Check each measurement for optimal RF Attenuator and IF Gain settings (max S/N).

Measurement must "Fit" in the Receiver's 70 dB instantaneous Dynamic Range

Small changes (1 to 5 dB) in Device Power Level can be large if using all the dynamic range. (i.e. measure a 50 to 60 dB carrier to tone.)

Setting resolution in the RF Attenuator is 10 dB steps and the IF Gain is 6 dB