Leading producer of
GaN-on-Silicon RF Power Devices

NITRONEX

NPT25100
Source and Load-Pull Data

June 2008

ISO 9001:2000

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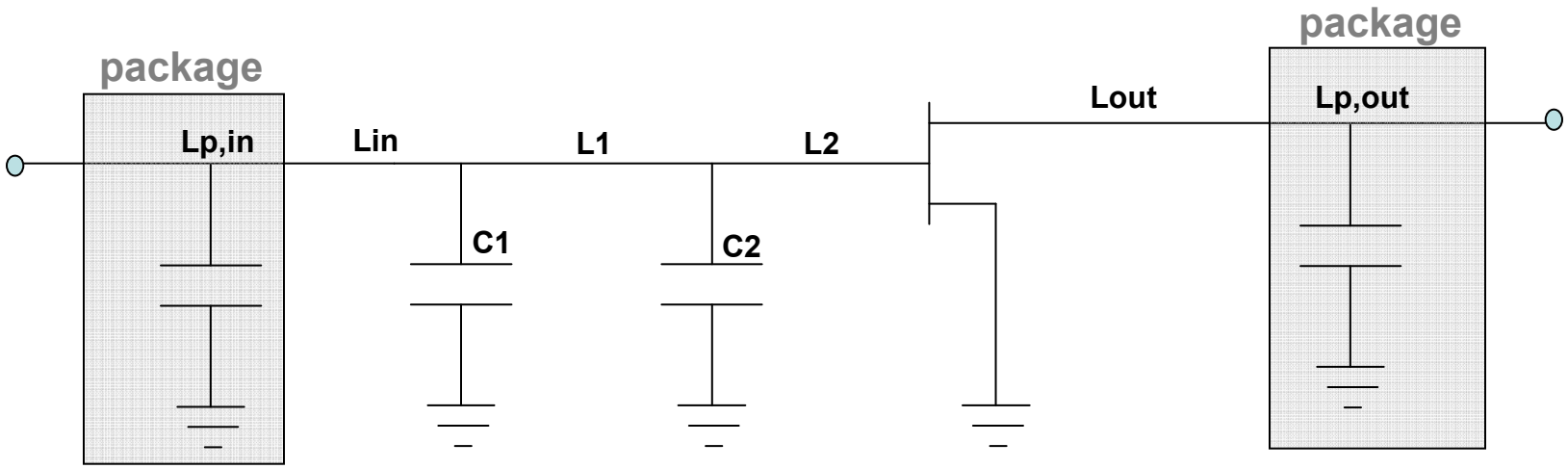
Simplified Device Schematic

ISO 9001:2000

NPT25100 Device Schematic

2 stage low-pass input match, no output match



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2.5GHz Load-Pull Data Varying Vdd

- Tested on Focus Load-Pull system
  - 700mA Idq
  - CW Signal
  - Constant Pin to deliver ~2dB compression
  - Vdd = 10, 15, 22, 28, 32V

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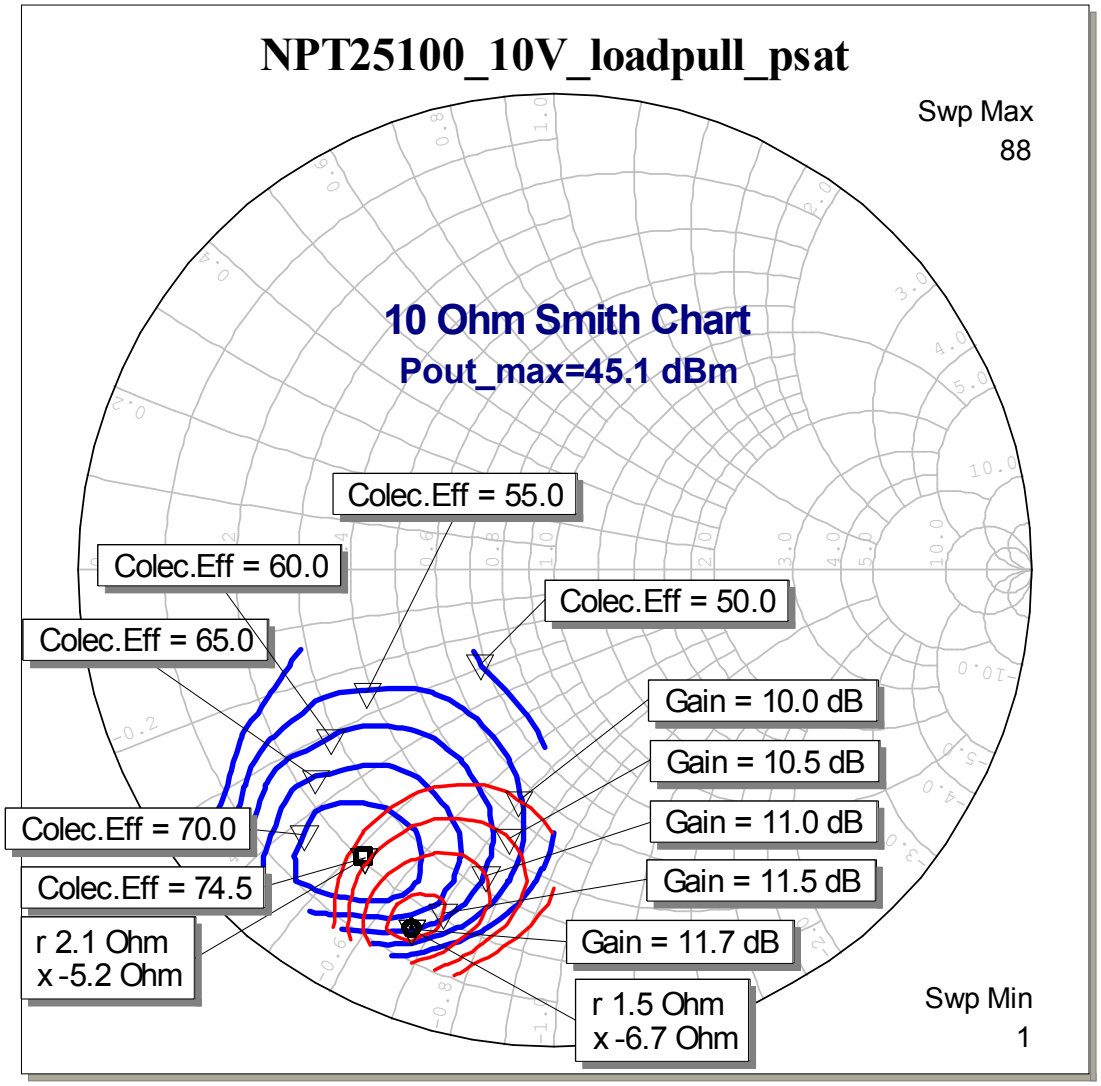
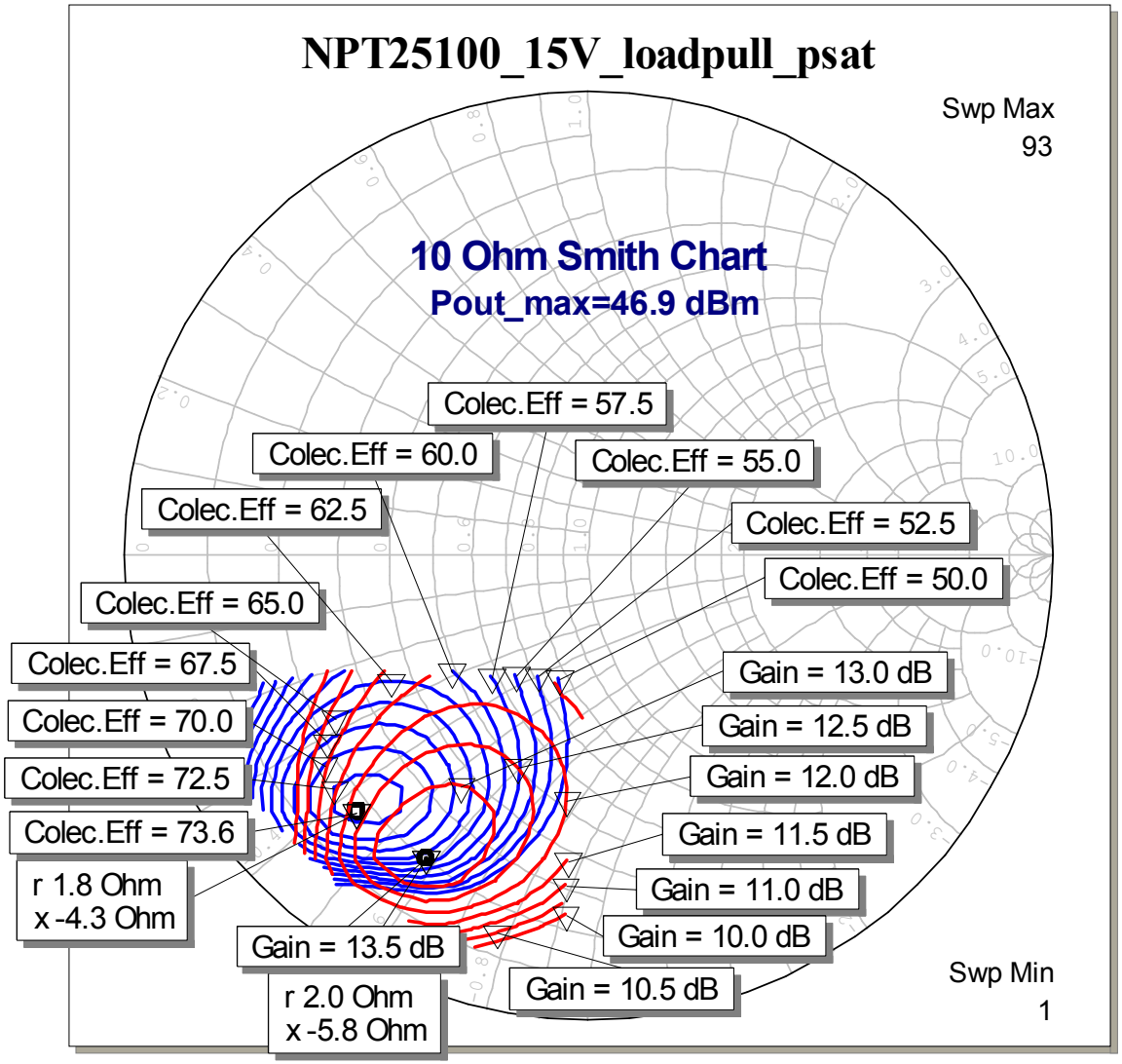
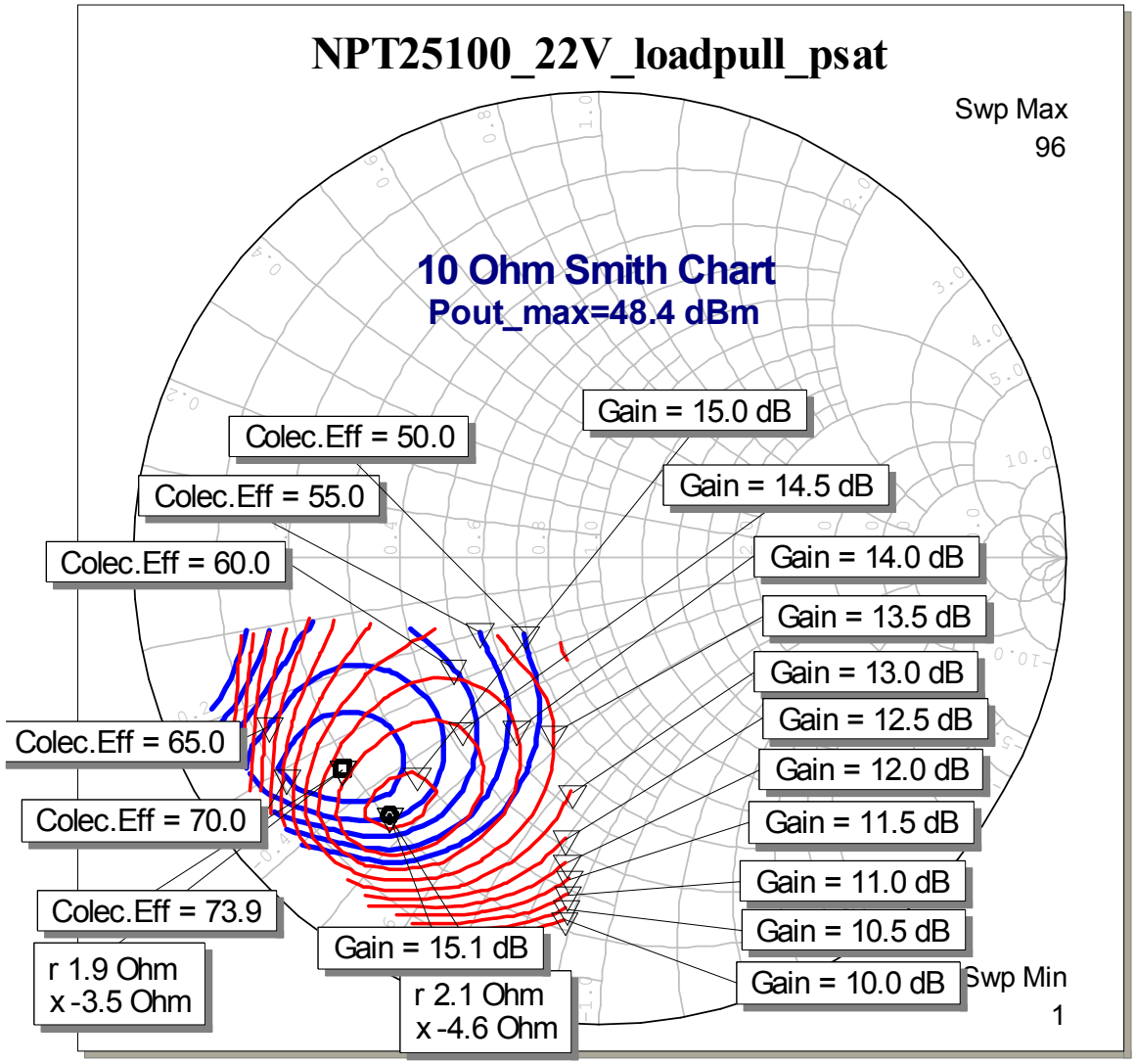
10V Load-pull



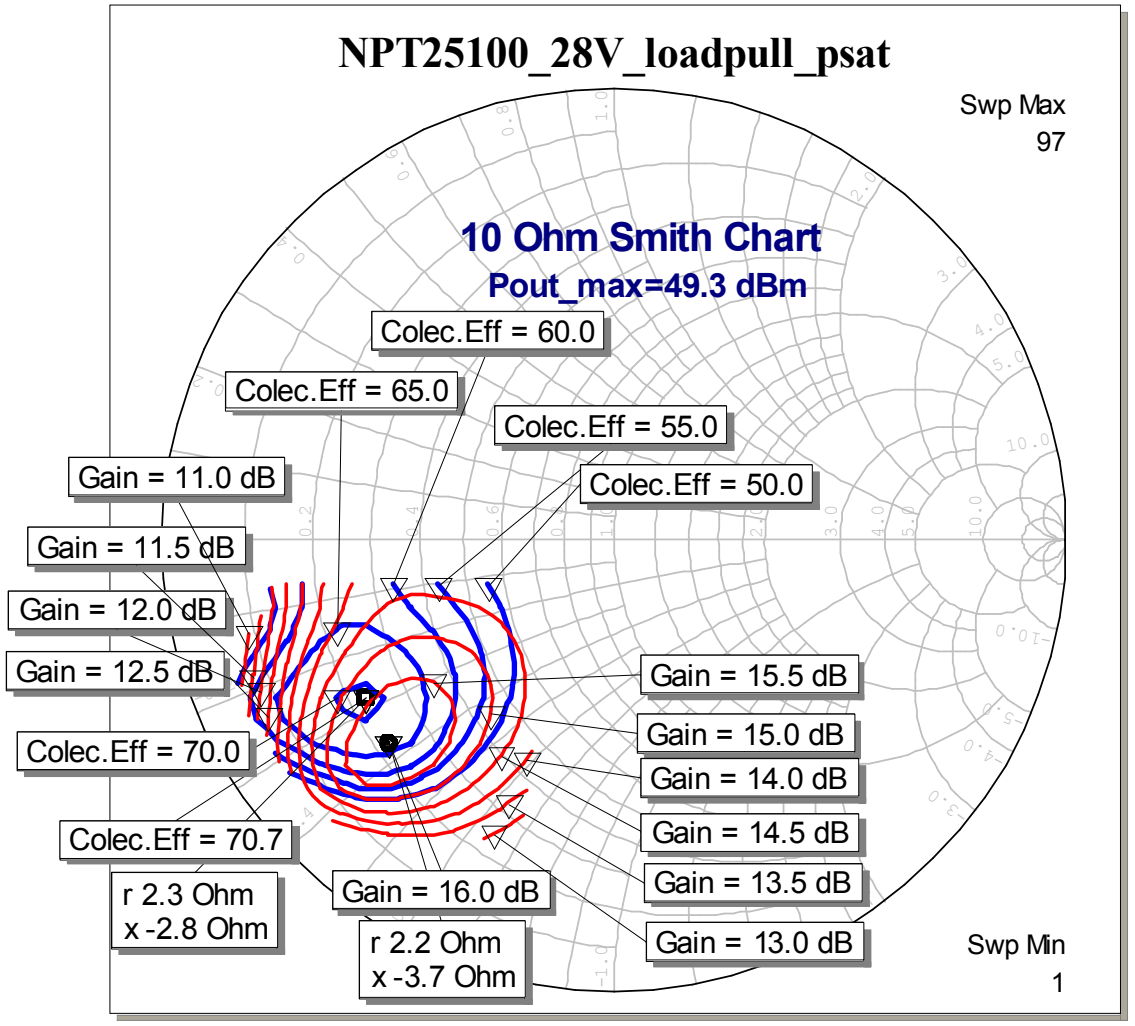
15V Load-pull



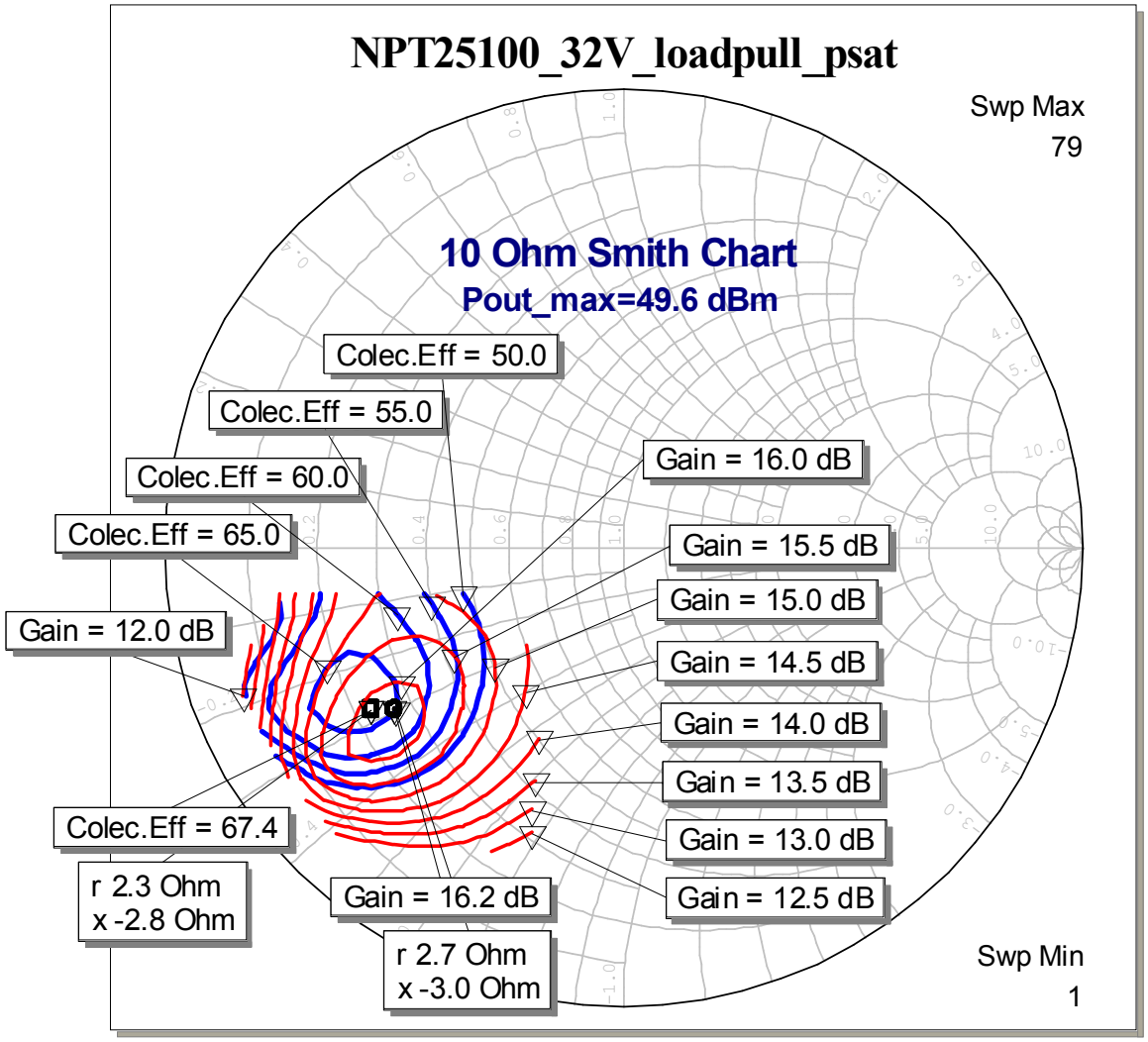
22V Load-pull



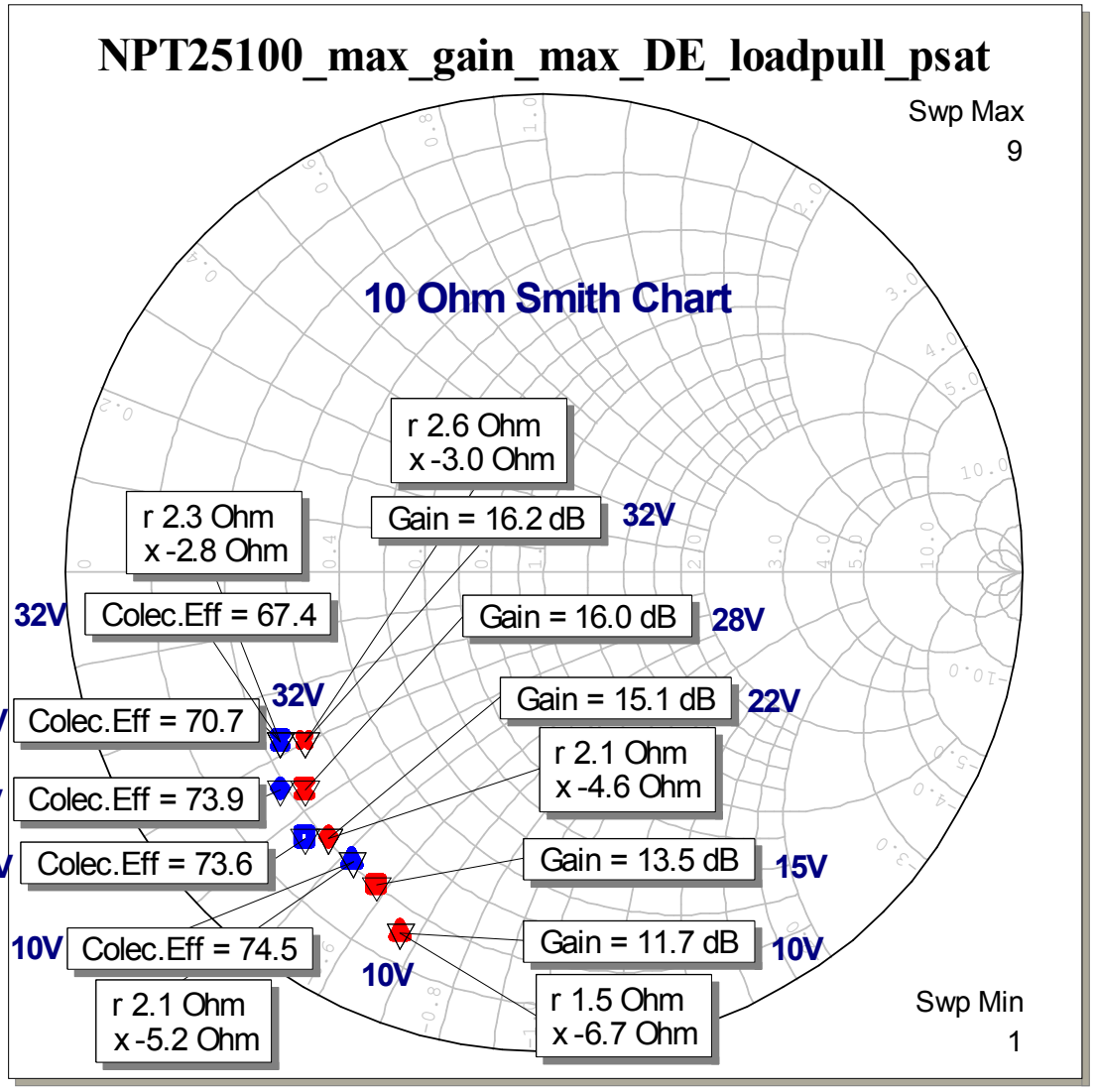
28V Load-pull



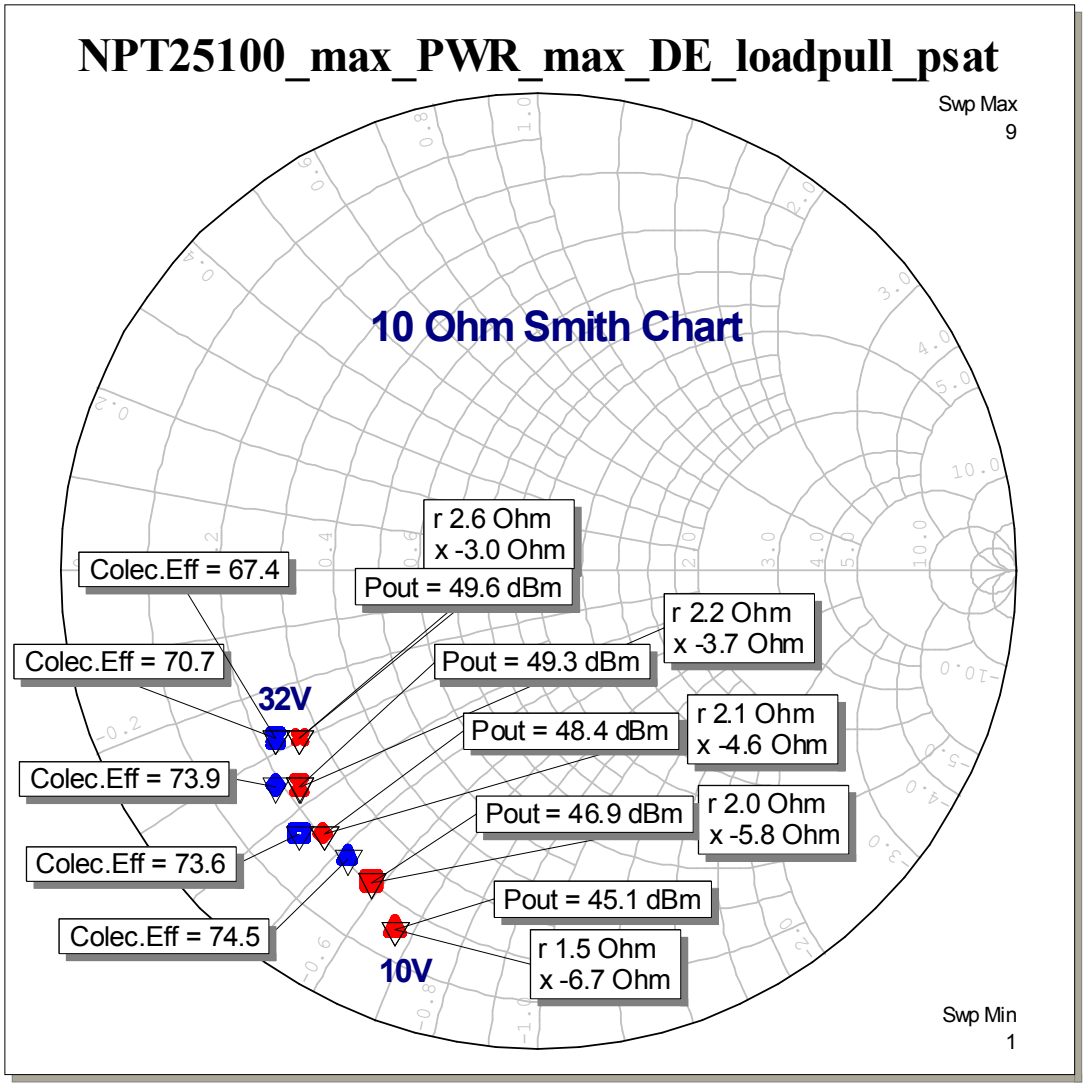
32V Load-pull



Impedances for Peak Gain and DE (10,15,22,28,32V)



Impedances for Peak Power and DE (10,15,22,28,32V)



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1.8-2.0 GHz Load-Pull Data

- Tested on Focus Load-Pull system
  - 28V, 700mA
  - CW Signal
  - Fixed Pin that delivers ~49dBm max

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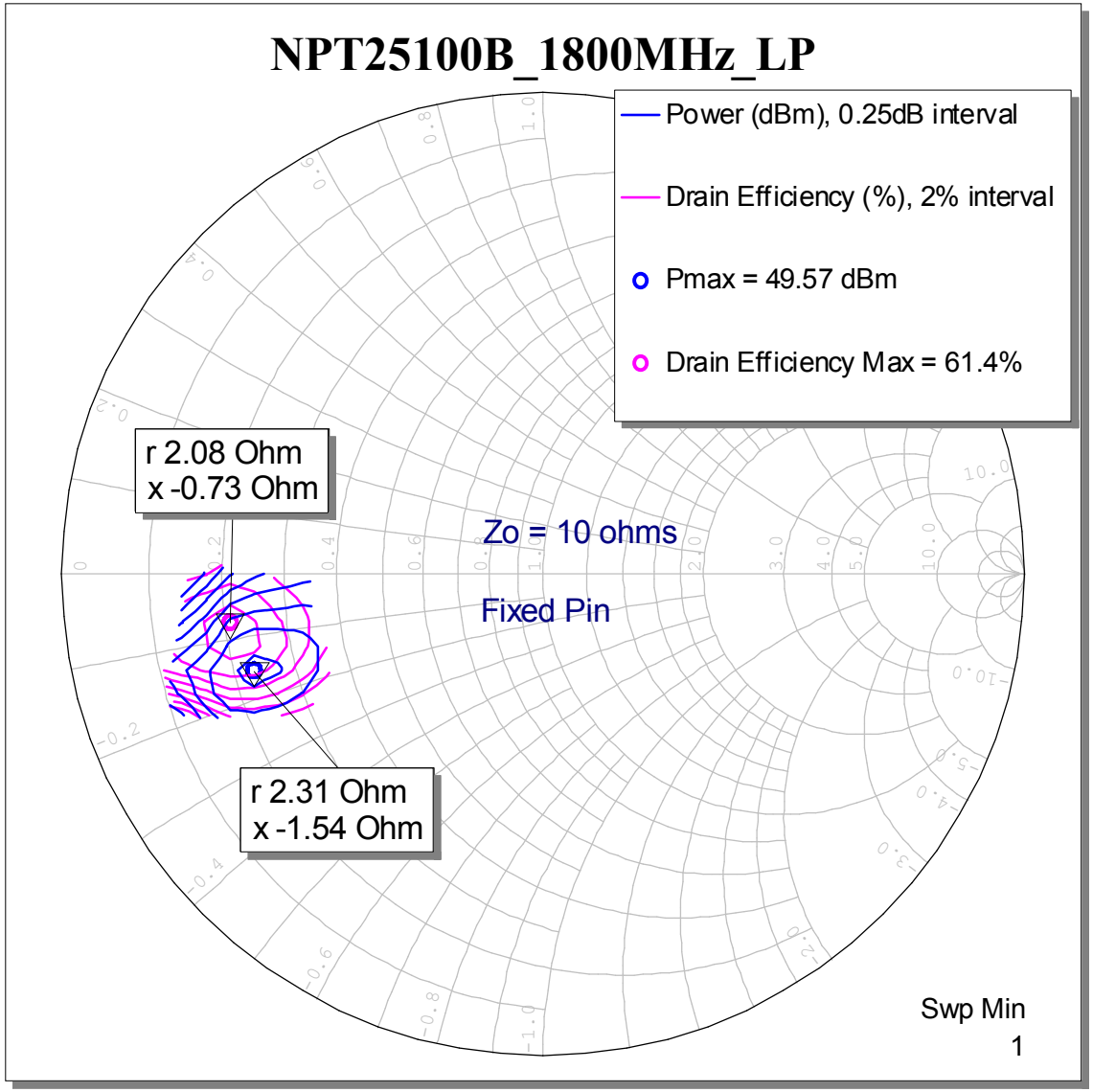
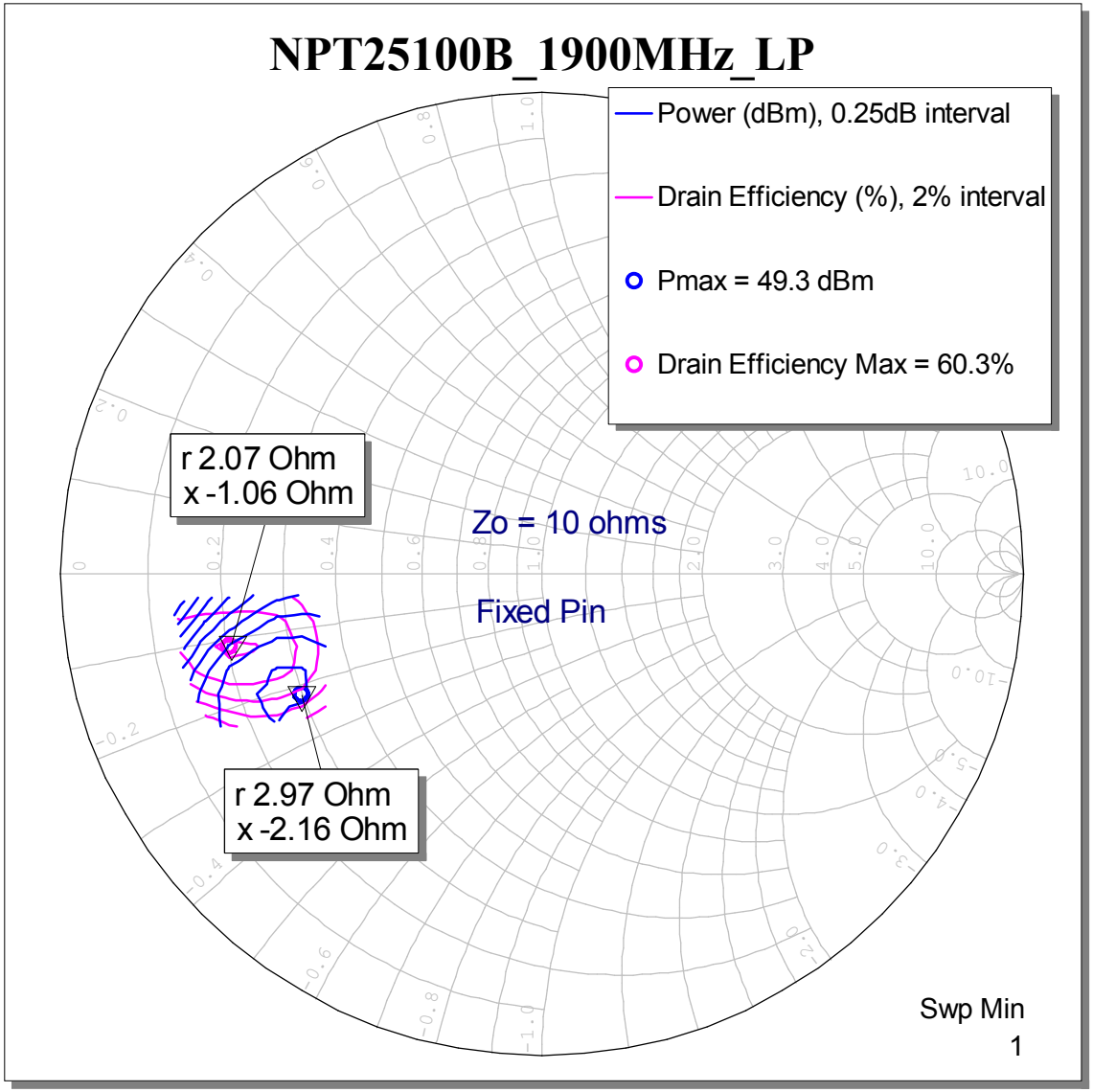
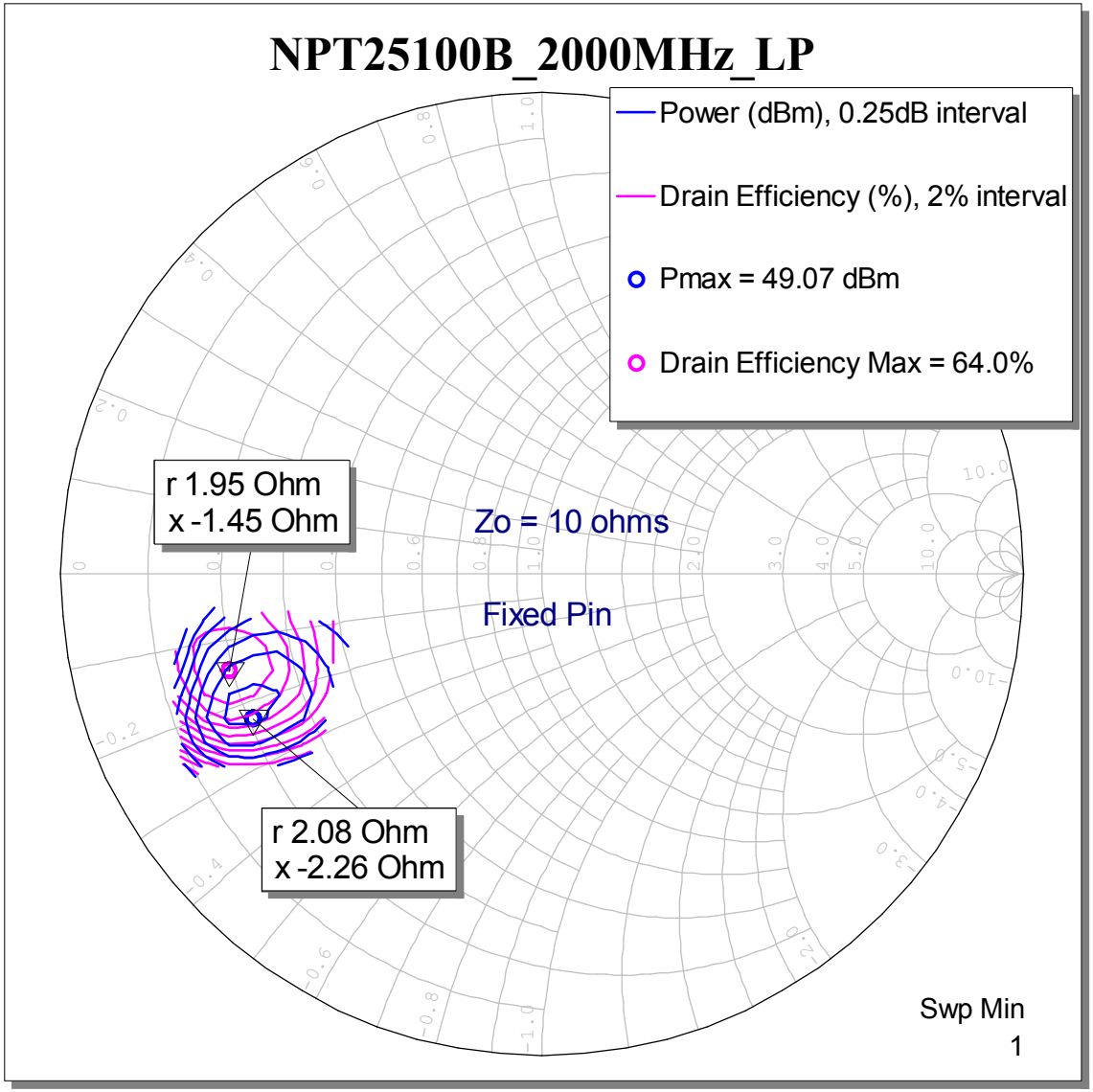
1.8GHz Load-pull



1.9GHz Load-pull



2.0GHz Load-pull



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2.5-2.7GHz Low Power Load-Pull Data

- Tested on Focus Load-Pull system
- Load was tuned for max CW power
  - 28V, 600mA
  - CW Signal
  - Pout = 44dBm

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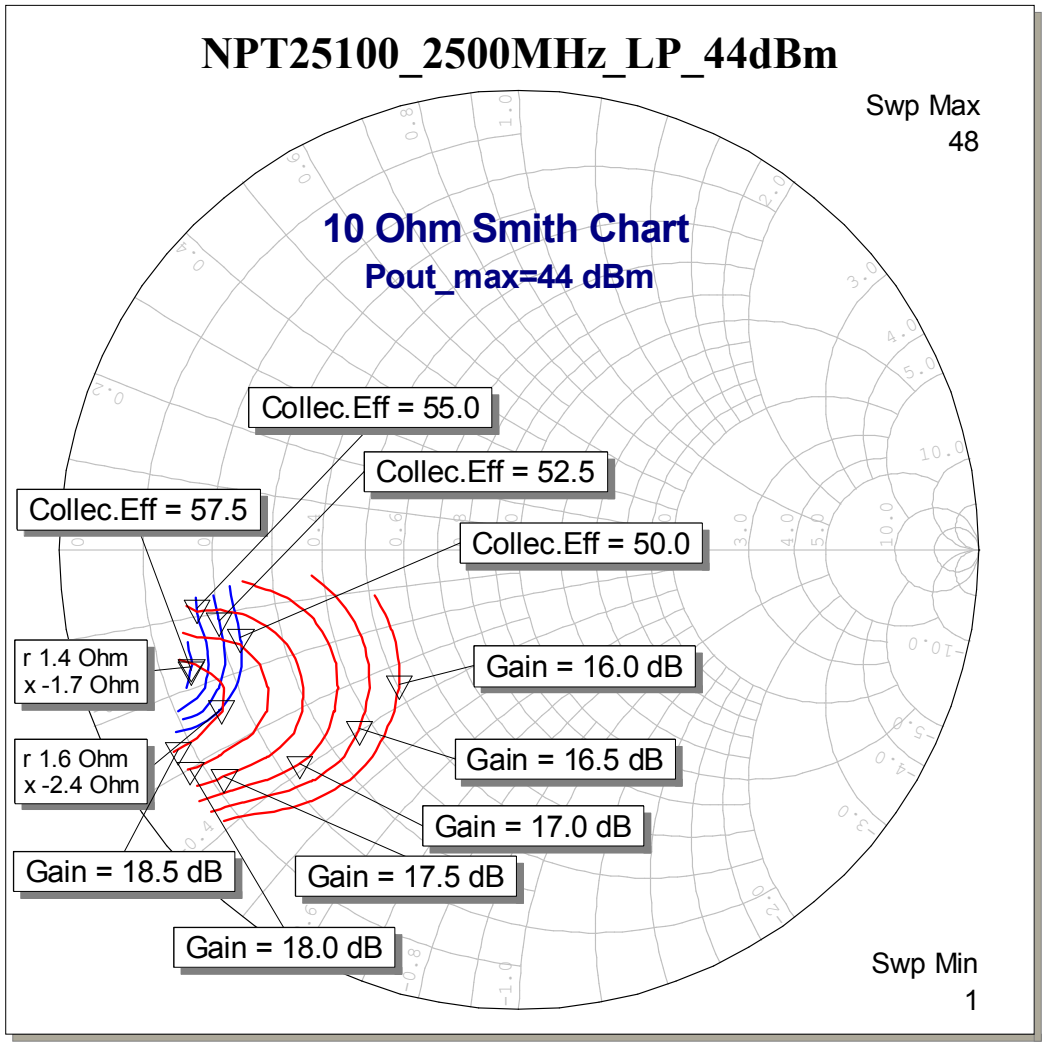
2.5 GHz Load-Pull

DC bias is 28V and 700mA
Pout=44 dBm

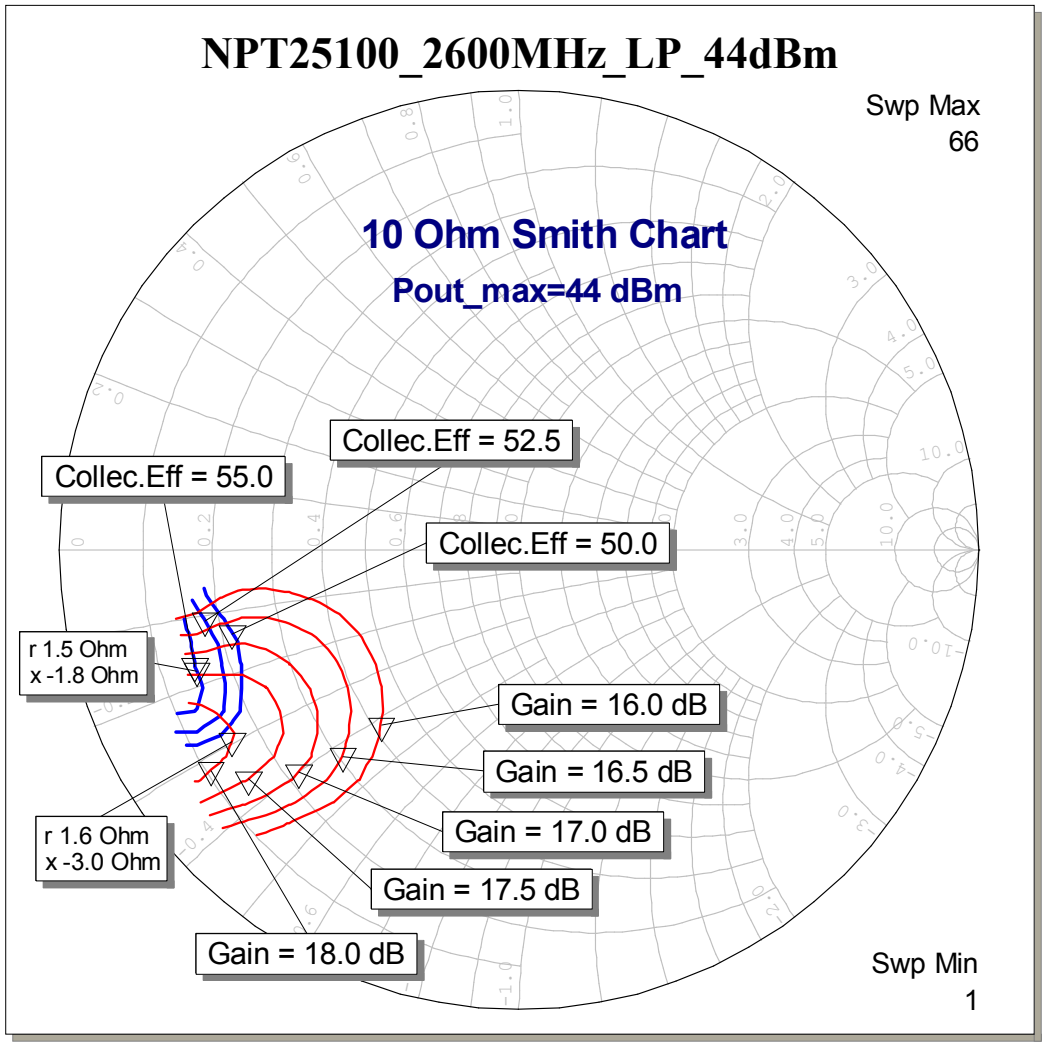
ZS=9.0-j3.0 ohms



2.6 GHz Load-Pull

DC bias is 28V and 700mA
Pout=44 dBm

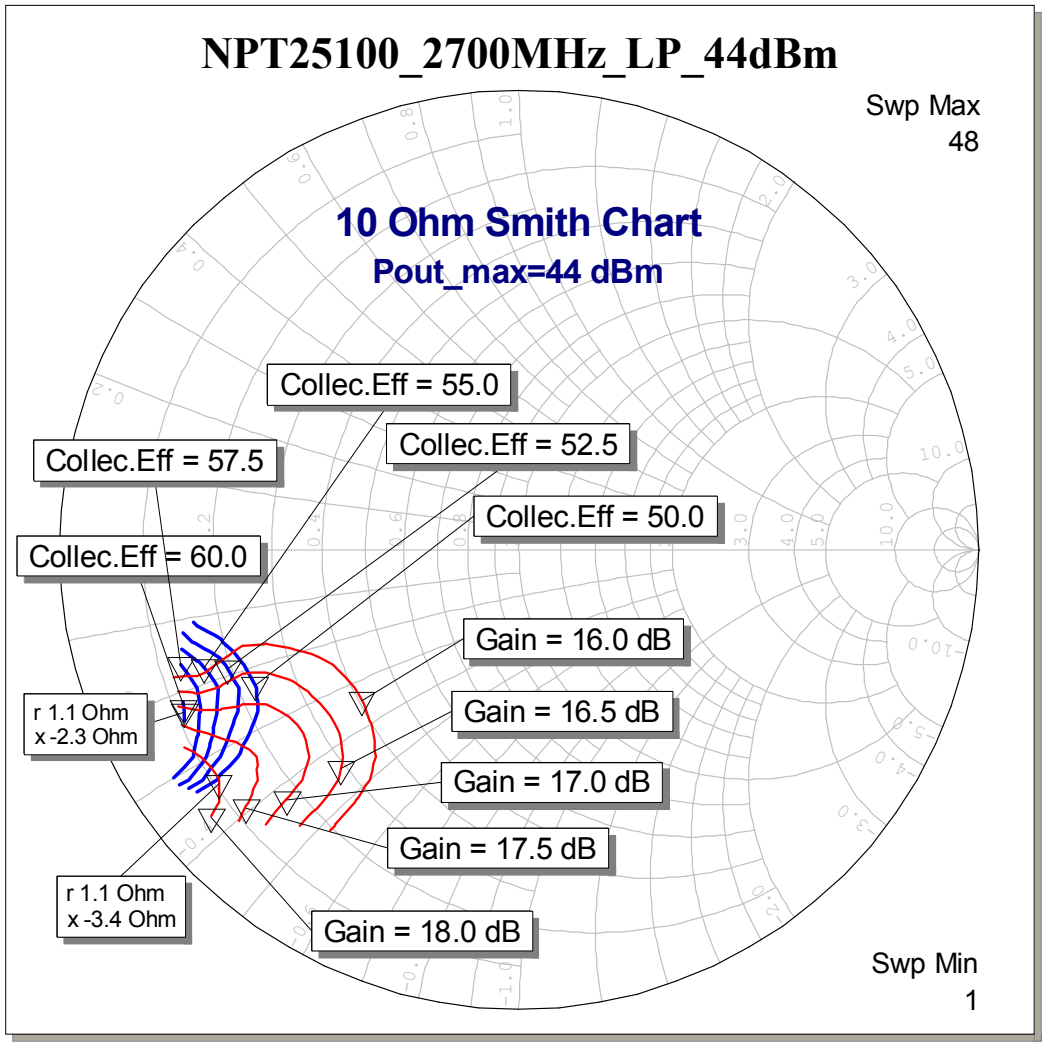
ZS=8.5-j3.0 ohms



2.7 GHz Load-Pull

DC bias is 28V and 700mA
Pout=44 dBm

ZS=8.0-j3.0 ohms



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2.3-2.7GHz Source-Pull Data

- Tested on Focus Load-Pull system
- Load was tuned for max CW power
  - 28V, 600mA
  - CW signal
  - Pin = 15 dBm (max Pout ~31 dBm)

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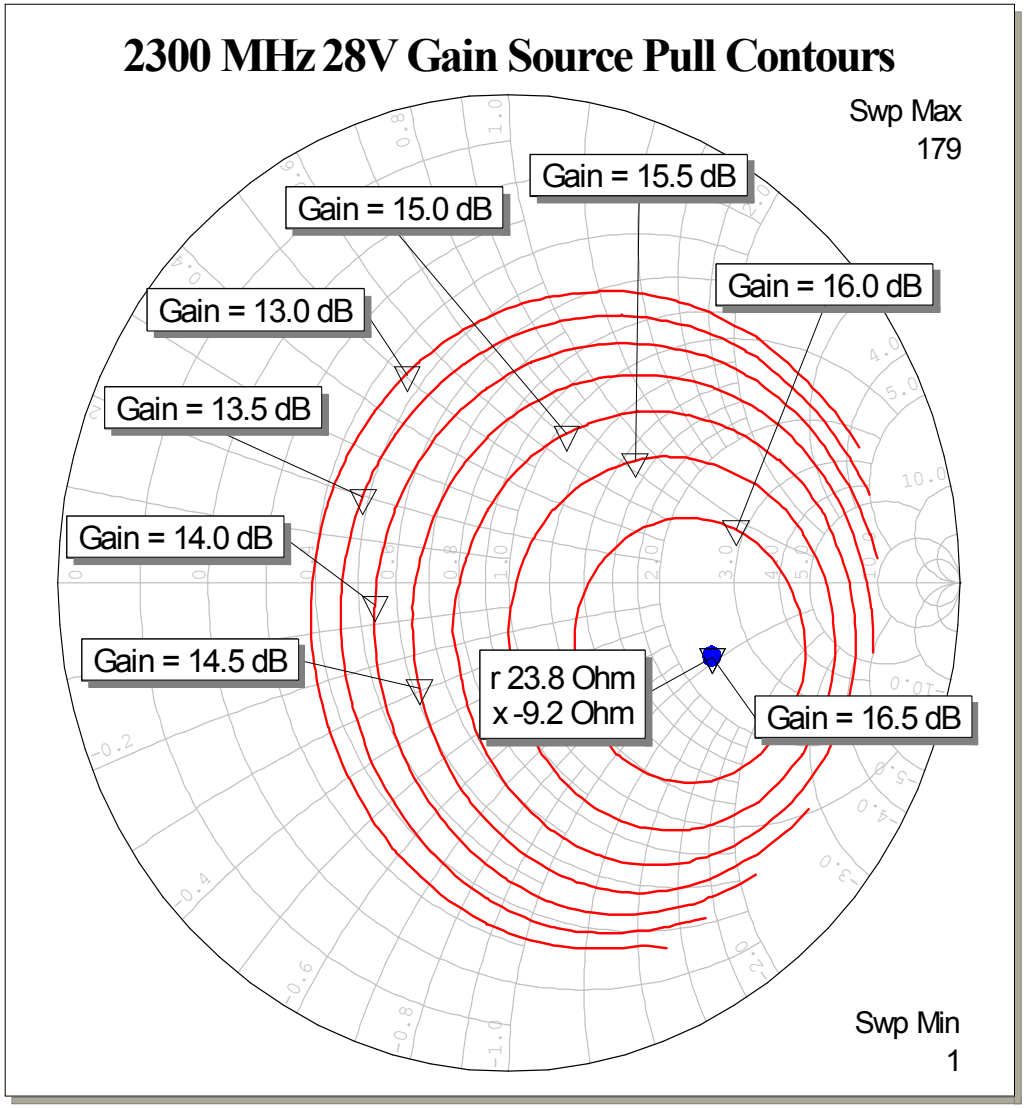
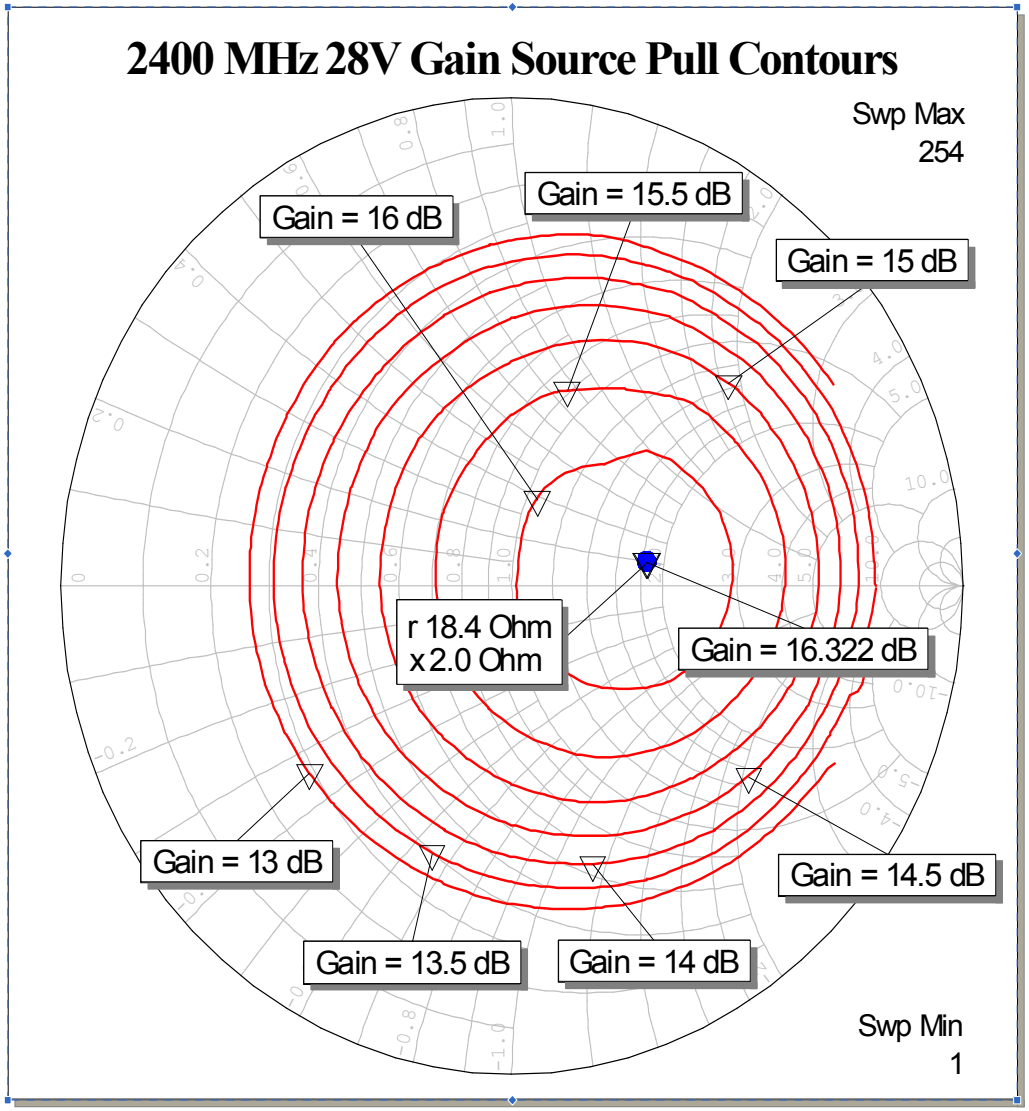
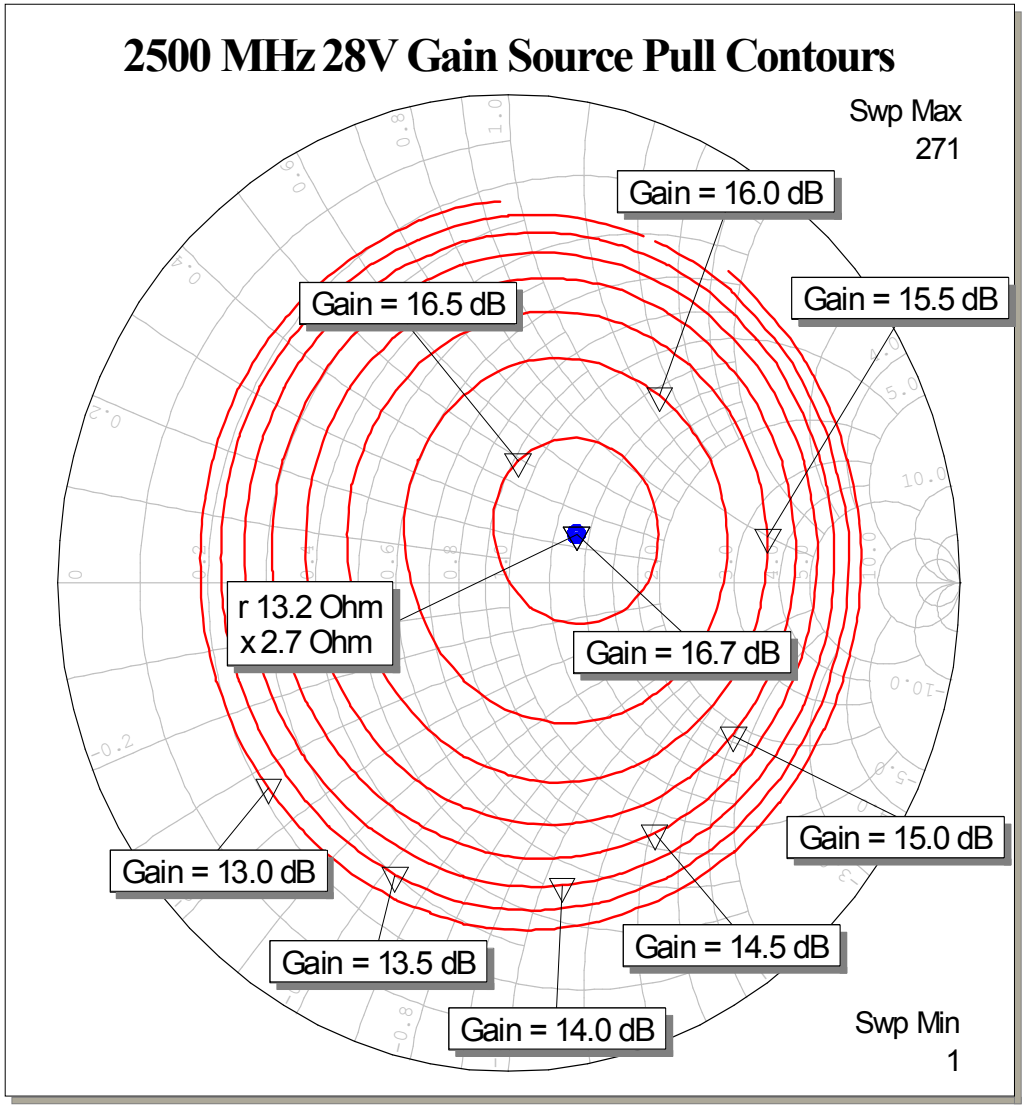
2300 MHz Source Pull



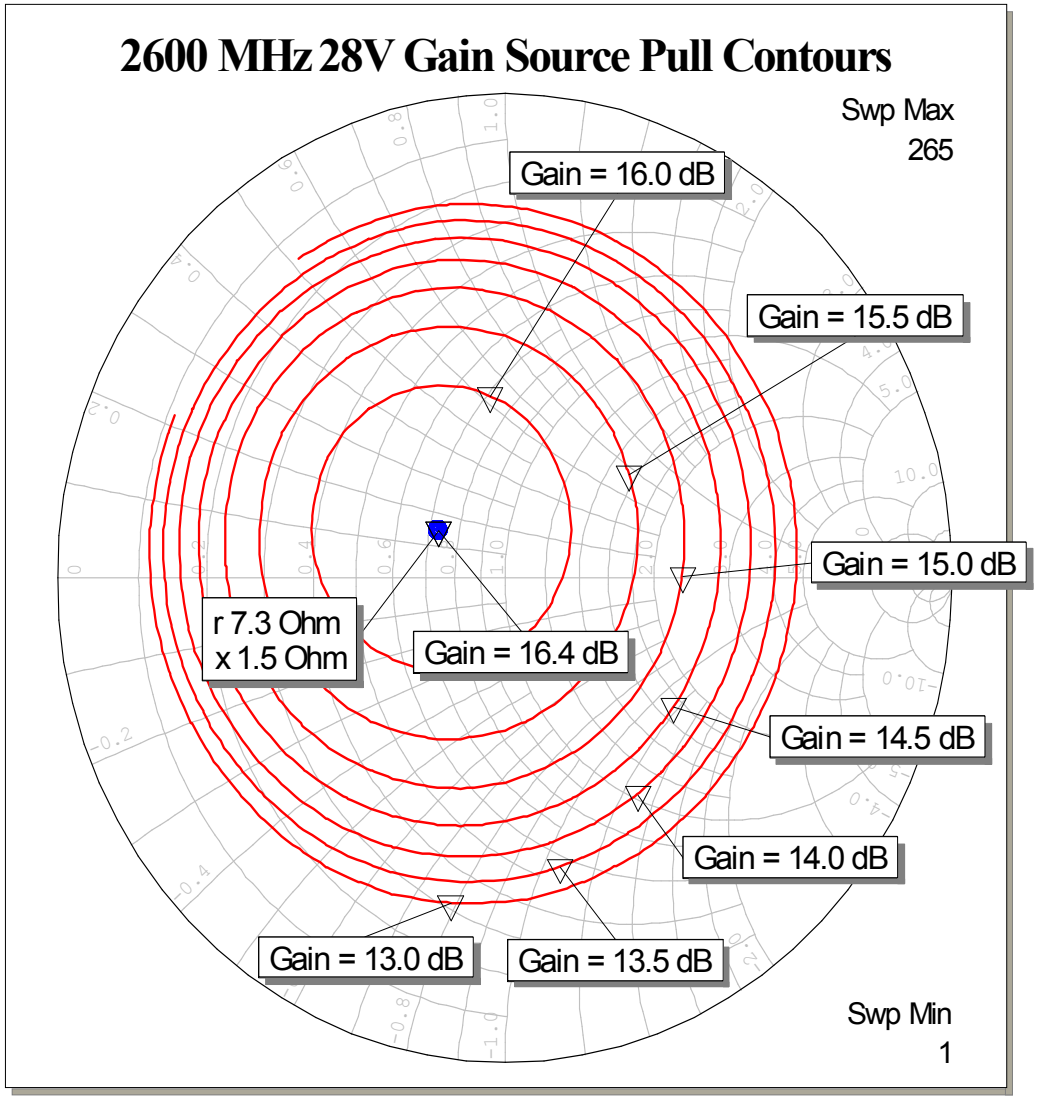
2400 MHz Source Pull



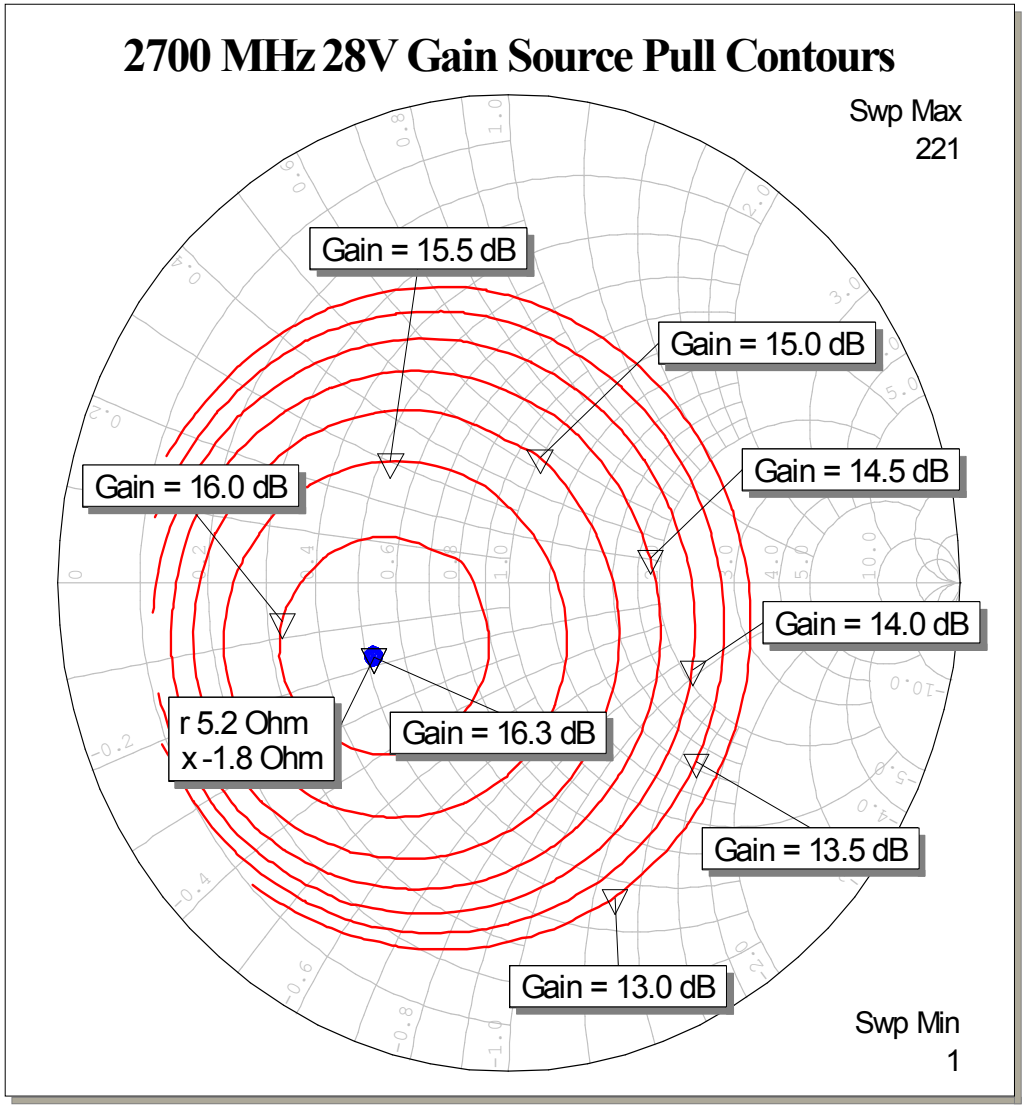
2500 MHz Source Pull



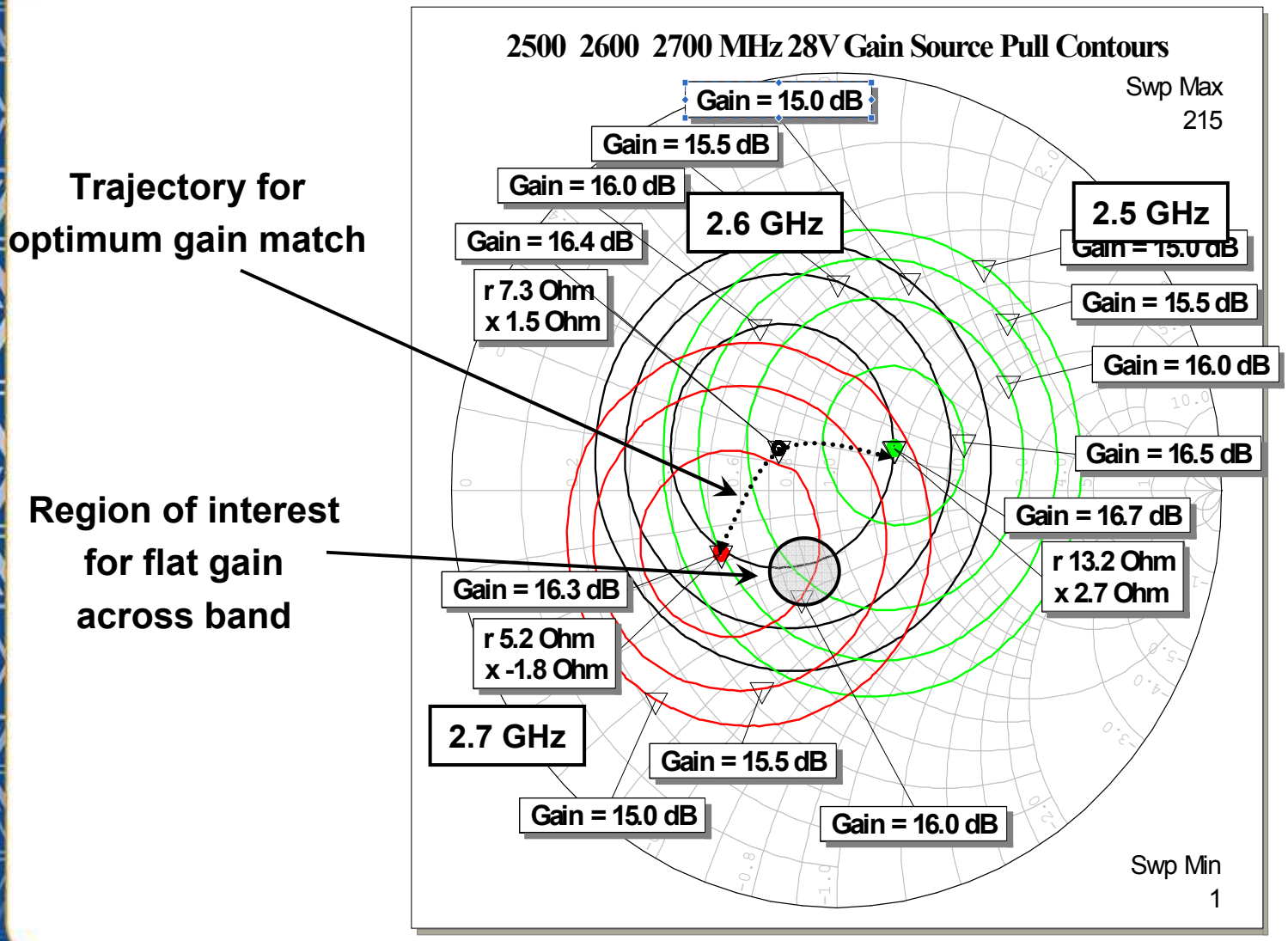
2600 MHz Source Pull



2700 MHz Source Pull



2500, 2600, 2700 MHz CW Source Pull (P_{out}~1W)



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2.11-2.17GHz Source-Pull Data

- Tested on Focus Load-Pull system
- Load was tuned for max CW power
  - 28V, 600mA
  - CW Signal
  - Pin = 13 dBm (max Pout ~30 dBm)

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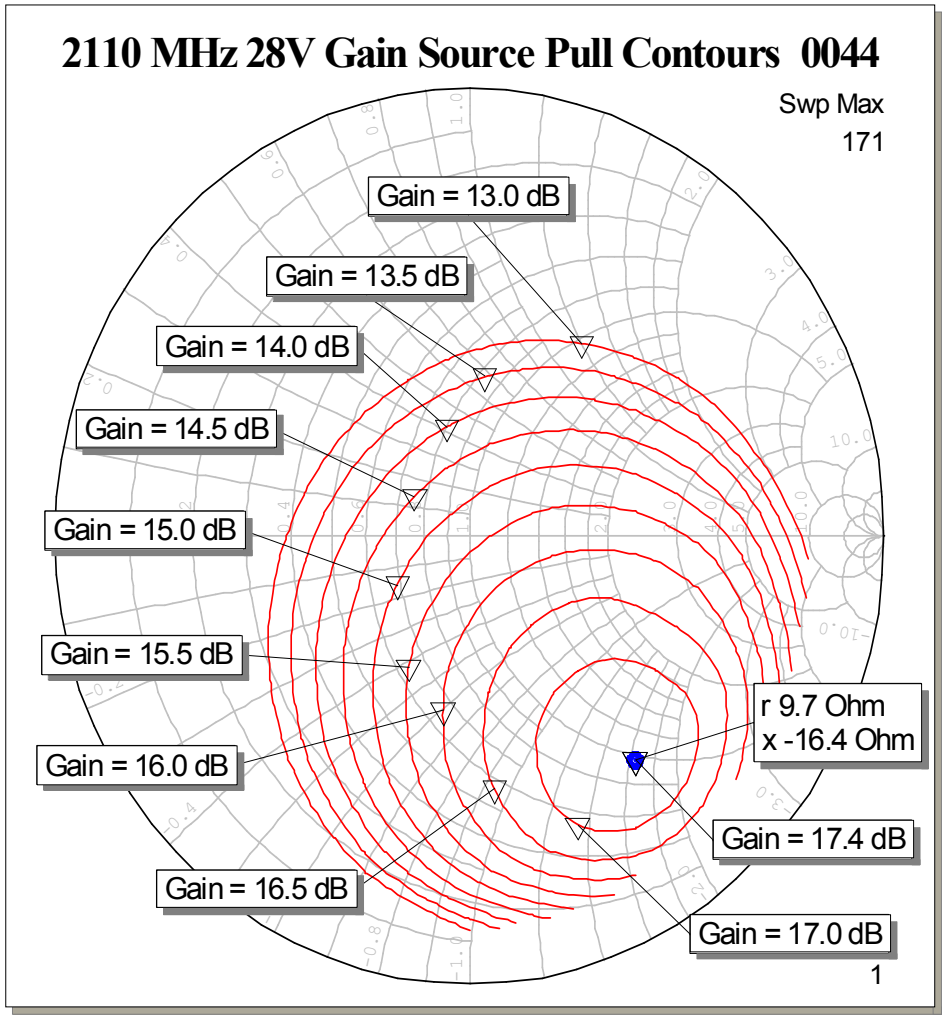
2110 MHz Source Pull



2140 MHz Source Pull

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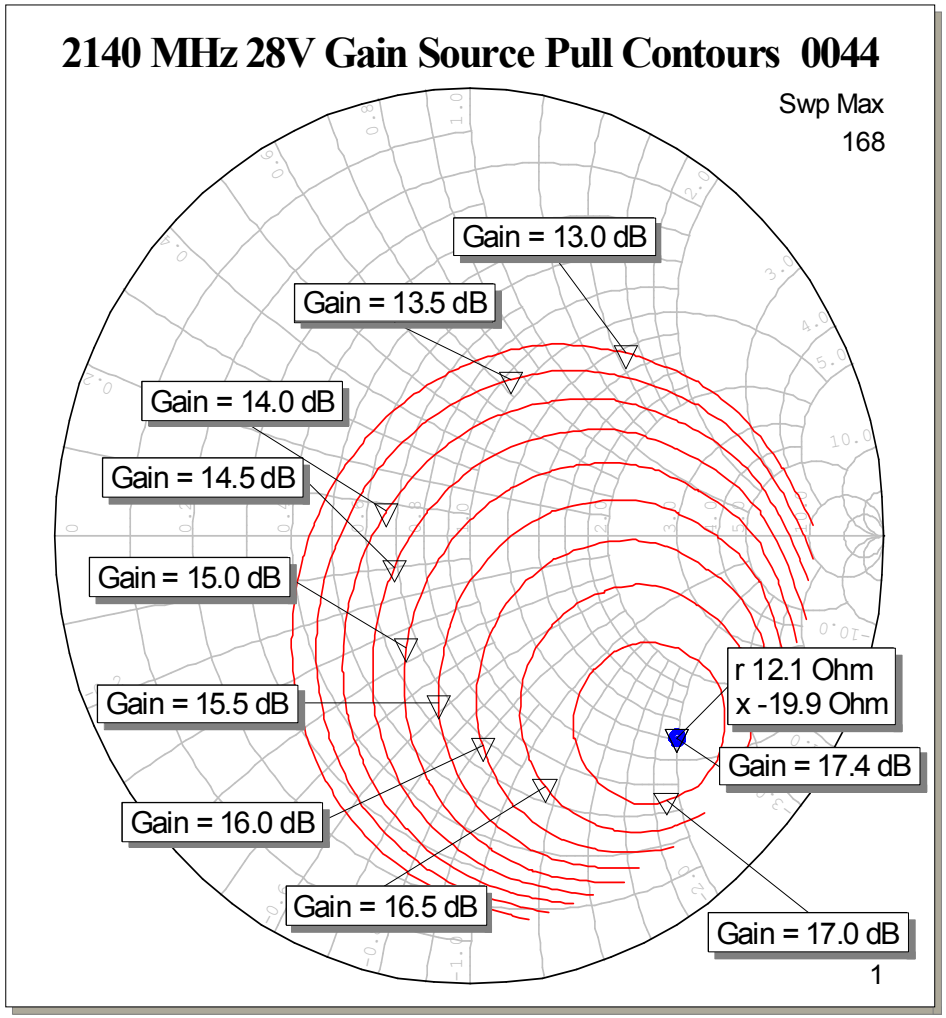
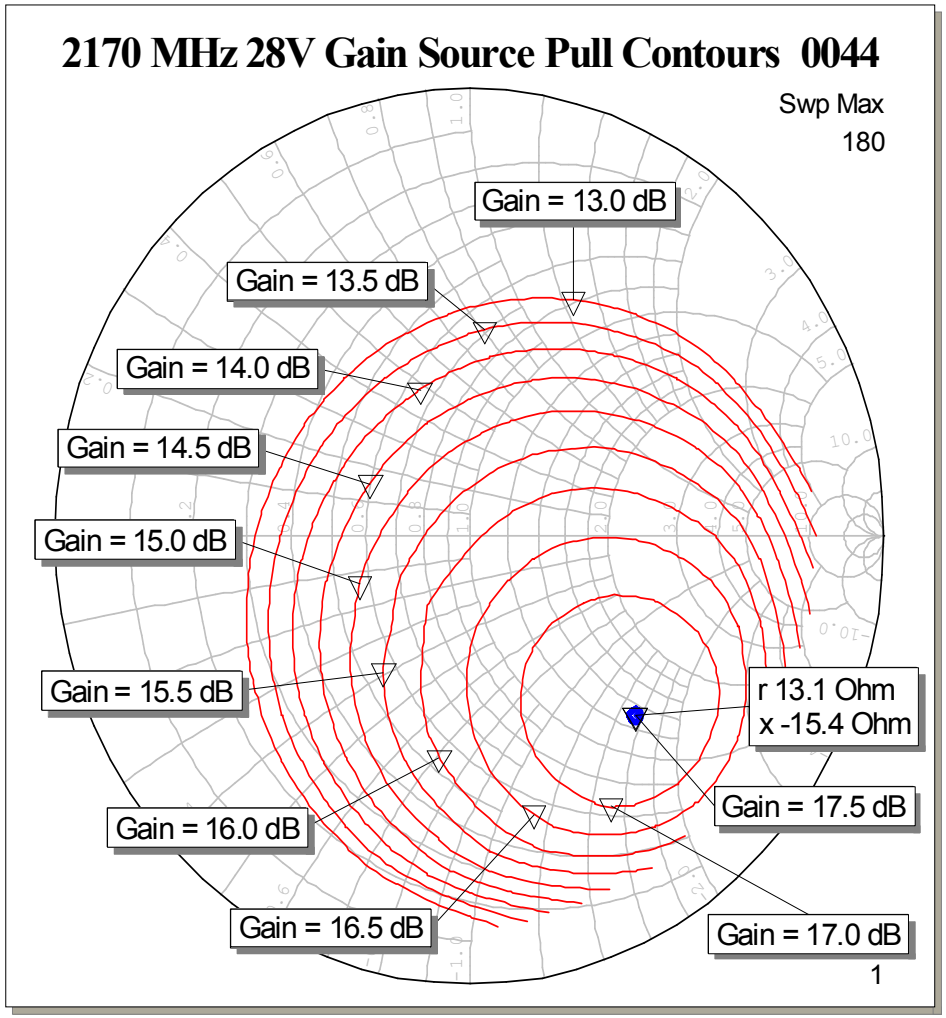


2170 MHz Source Pull



2110, 2140, 2170 MHz Source Pull

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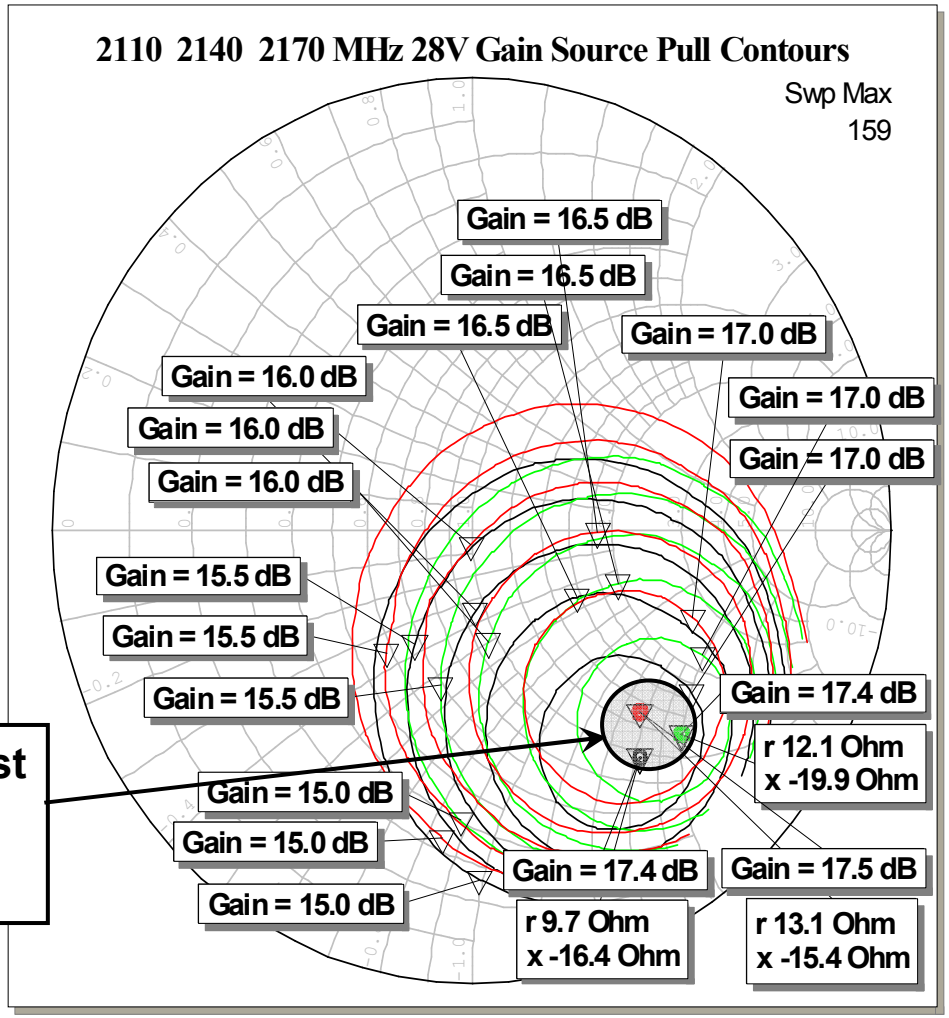
2170 MHz – Red

2140 MHz – Green

2110 MHz – Black



Region of interest for flat gain across band

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1.8-2.0GHz Source-Pull Data

Tested on Focus Load-Pull system

Load was tuned for max CW power

- 28V, 600mA
- CW Signal
- Pin = 13 dBm (max Pout ~30 dBm)

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1800 MHz Source Pull

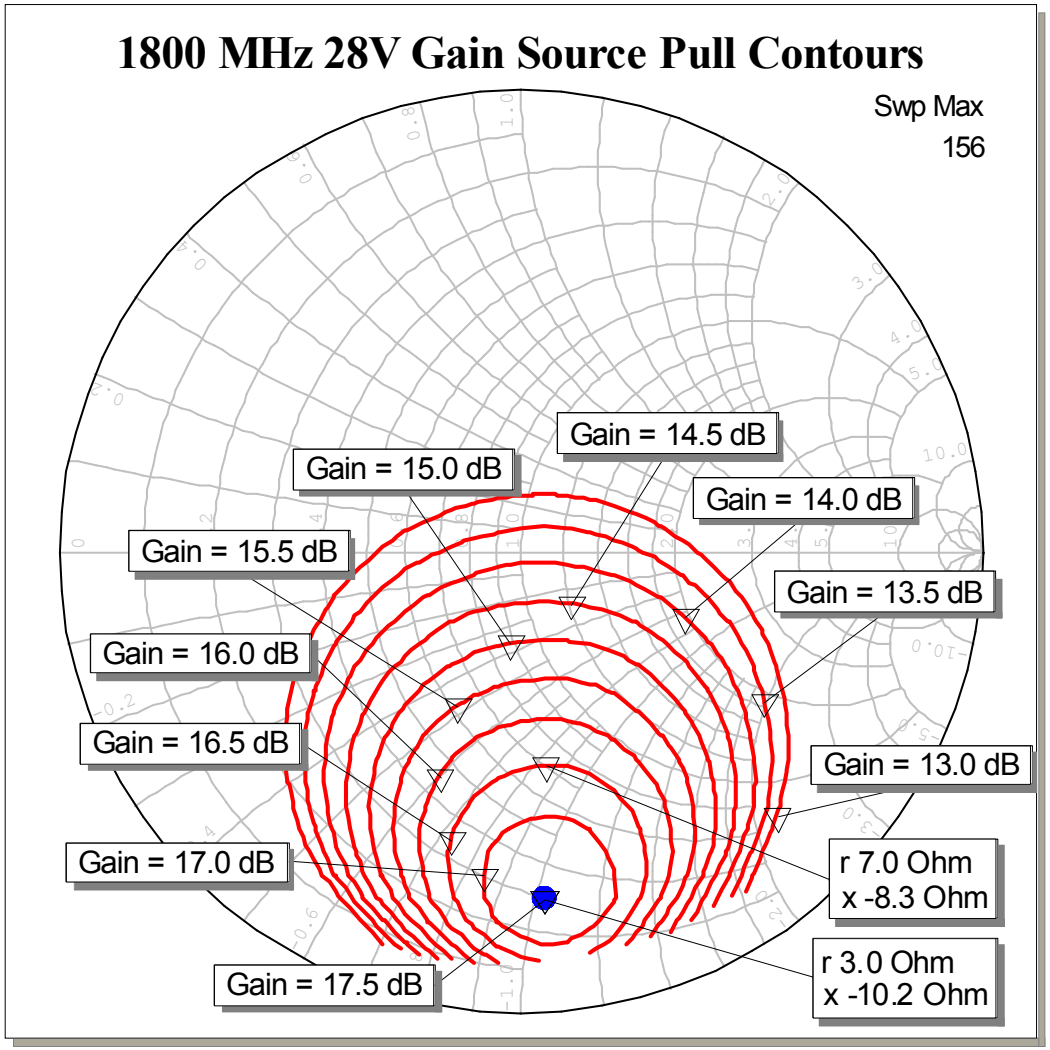
Optimum Zs is low but much more favorable Zs is obtainable with good gain

example:

G=16.5 dB

for Zs=7-j8.3 ohms

ZL=2.9-j1.1 ohms



1900 MHz Source Pull

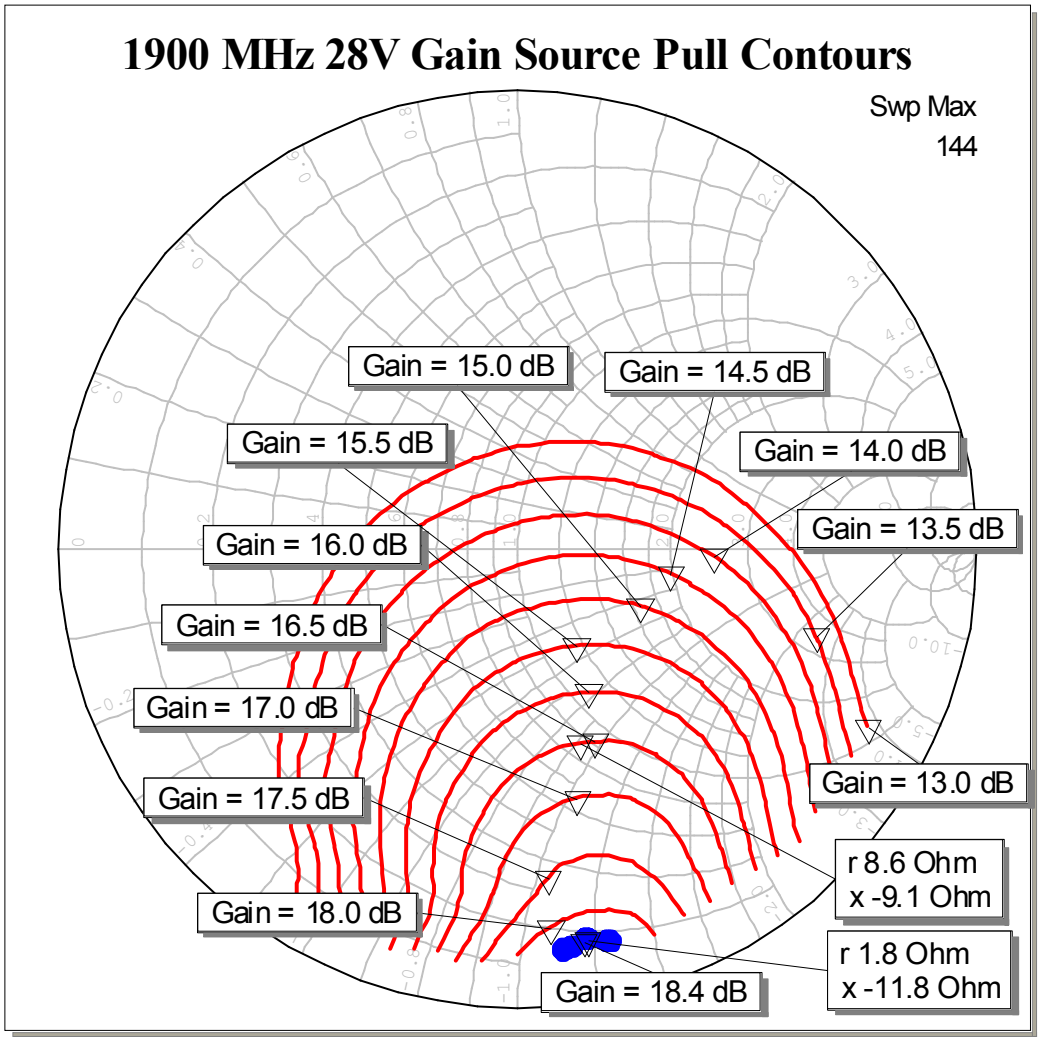
Optimum Zs is low but much more favorable Zs is obtainable with good gain

example:

G=16.5 dB

for Zs=8.6-j9.1 ohms

ZL=3.0-j1.2 ohms



2000 MHz Source Pull

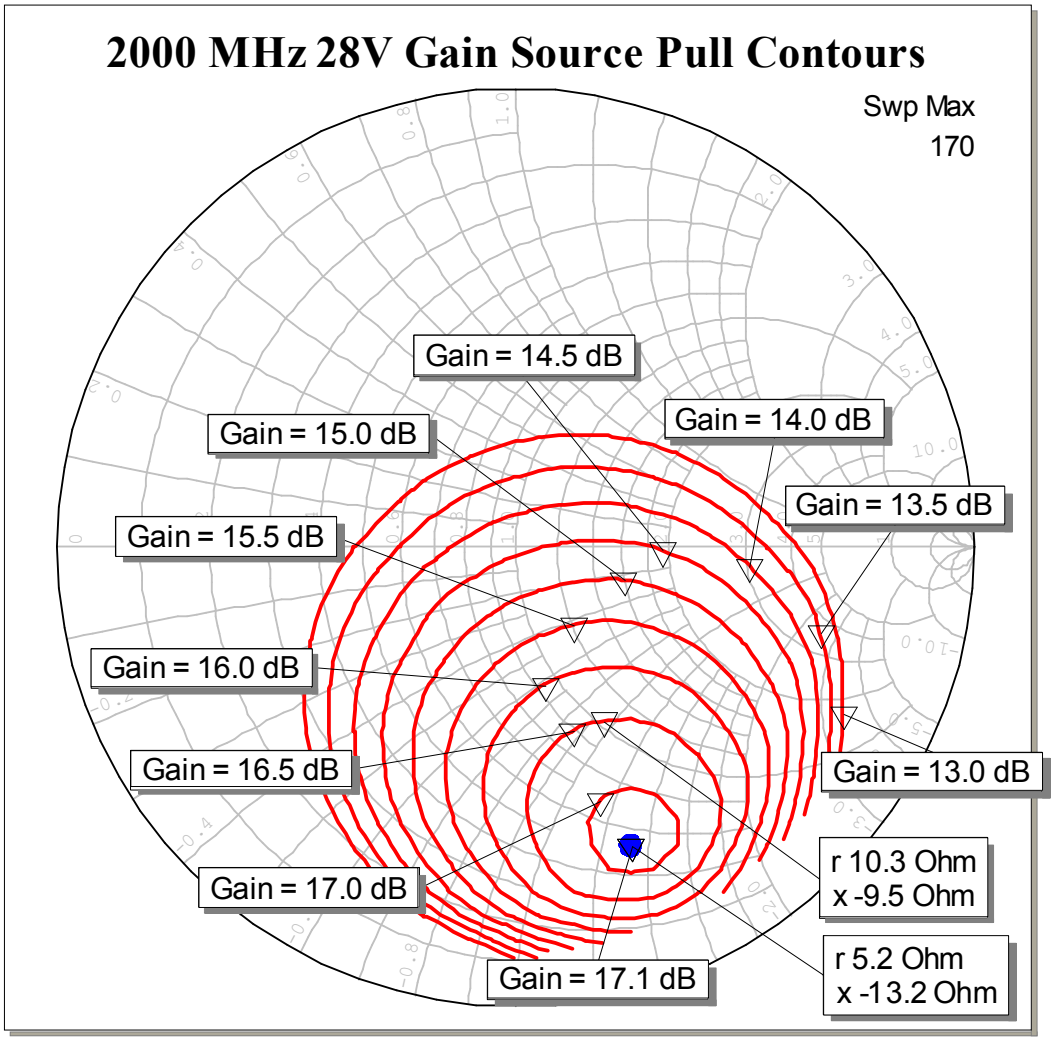
Optimum Zs is low but much more favorable Zs is obtainable with good gain

example:

G=16.5 dB

for Zs=10.3-j9.5 ohms

ZL=2.7-j1.9 ohms



1800, 2170, 2700 MHz Source Pull

NITRONEX

1800 MHz – Red

2170 MHz – Green

2700 MHz – Black