

### Device Characterization Data

#### Source Pull and Load Pull Data

RF performance of the TGA4906-SM is optimum when placed in the impedance environment specified below. These impedances are NOT the impedances of the device; they are the impedances presented to the device via an RF circuit or load pull system.

$Z_{SOURCE}$  is the source impedance presented at pin 4.  $Z_{LOAD}$  is the load impedance presented at pin 21. This data was used to design the input and output structures shown in 'PC Board Tuning Layout'. For load and source pull contours, refer to the [TGA4906-SM Product Information page](#).

The gain and power shown below were measured in a load pull system. The gain and power shown in 'Typical Performance' were measured using the input and output structures shown in 'PC Board Tuning Layout' and can vary from the load pull measurements.

**Test Conditions:**  $V_d = 6.0$  V,  $I_{dq} = 1600$  mA,  $25^\circ\text{C}$

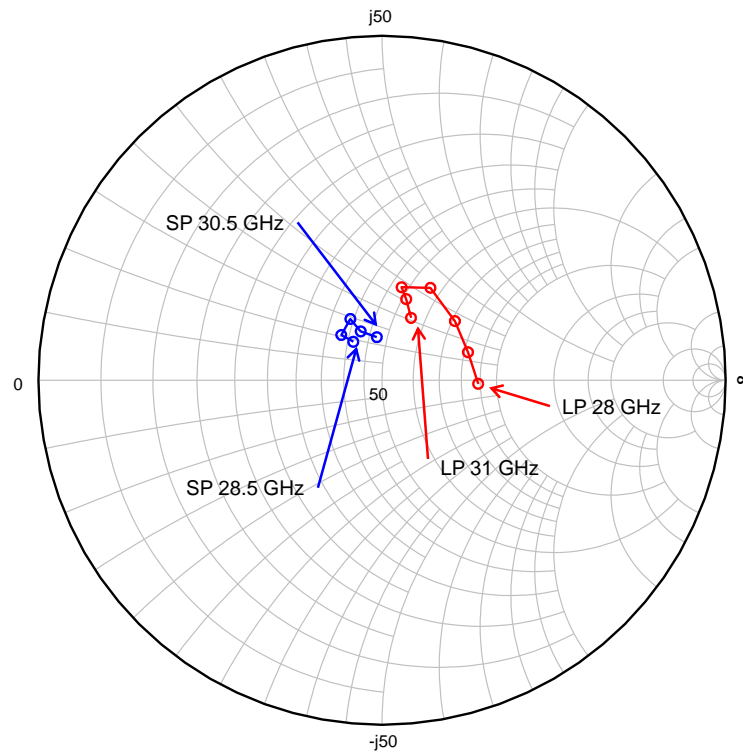
Input power for load pull: +18 dBm.

$Z_{SOURCE}$  for load pull:  $50 + j0$

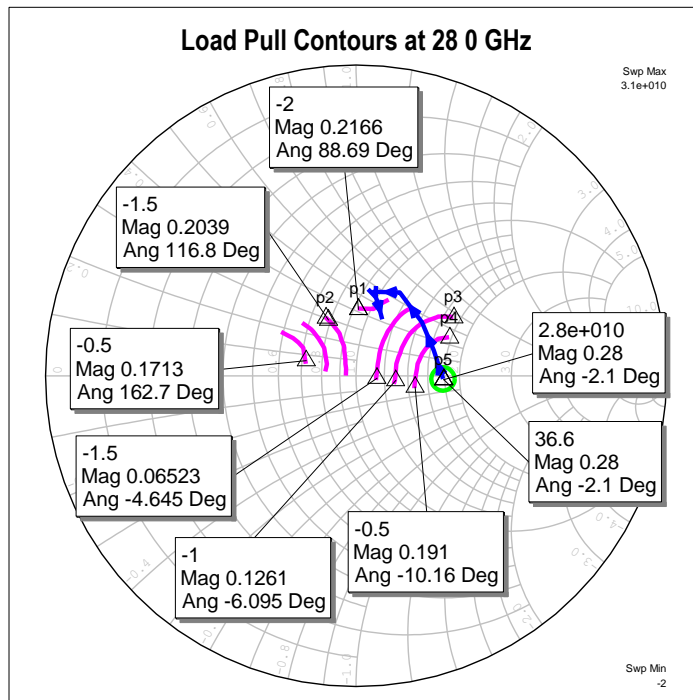
Input power for source pull: +10 dBm,

$Z_{LOAD}$  for source pull:  $Z_{OPT}$  for maximum power

Freq (GHz)	$\Gamma_{SOURCE}$	$Z_{SOURCE} (\Omega)$	Gain (dB)		$\Gamma_{LOAD}$	$Z_{LOAD} (\Omega)$	Output Power (dBm)
28.0					$0.280 - j0.010$	$88.8 - j2.0$	36.6
28.5	$-0.084 + j0.112$	$41.3 + j9.4$	25.6		$0.250 + j0.082$	$81.8 + j14.4$	36.3
29.0	$-0.119 + j0.132$	$38.2 + j10.4$	25.6		$0.212 + j0.172$	$71.2 + j26.4$	36.6
29.5	$-0.092 + j0.178$	$39.2 + j14.6$	23.8		$0.141 + j0.269$	$56.1 + j33.1$	36.5
30.0	$-0.062 + j0.142$	$42.5 + j12.4$	21.1		$0.057 + j0.270$	$48.0 + j28.1$	35.9
30.5	$-0.015 + j0.125$	$47.1 + j12.0$	19.7		$0.070 + j0.236$	$51.1 + j25.7$	35.4
31.0					$0.085 + j0.181$	$55.1 + j20.8$	35.0



### Device Characterization Data - Load Pull Contours at 28 GHz



p1: Pout\_Norm = -2 dB

p2: Pout\_Norm = -1.5 dB

p3: Pout\_Norm = -1 dB

p4: Pout\_Norm = -0.5 dB

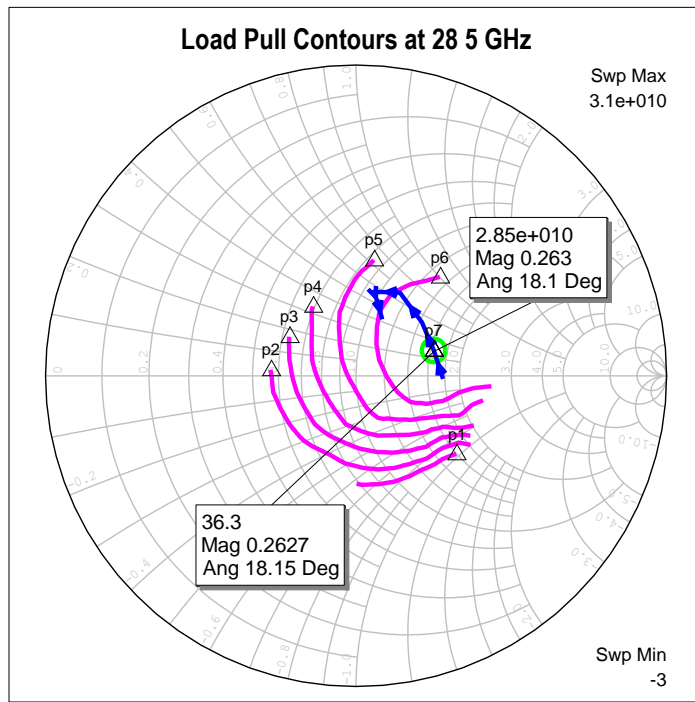
p5: Pout = 36.6 dBm

— S(1,1)  
2011CuCoinData\_Load\_AvgOverGamma\_FOR DS.\$FSWP1

⊖ LPCMMAX(2,1,50,0)  
LP\_CC\_28d0GHz

— LPCM(0,-3,0.5,3,1,50,0)  
LP\_CC\_28d0GHz

### Device Characterization Data - Load Pull Contours at 28.5 GHz



p1: Pout\_Norm = -3 dB

p2: Pout\_Norm = -2.5 dB

p3: Pout\_Norm = -2 dB

p4: Pout\_Norm = -1.5 dB

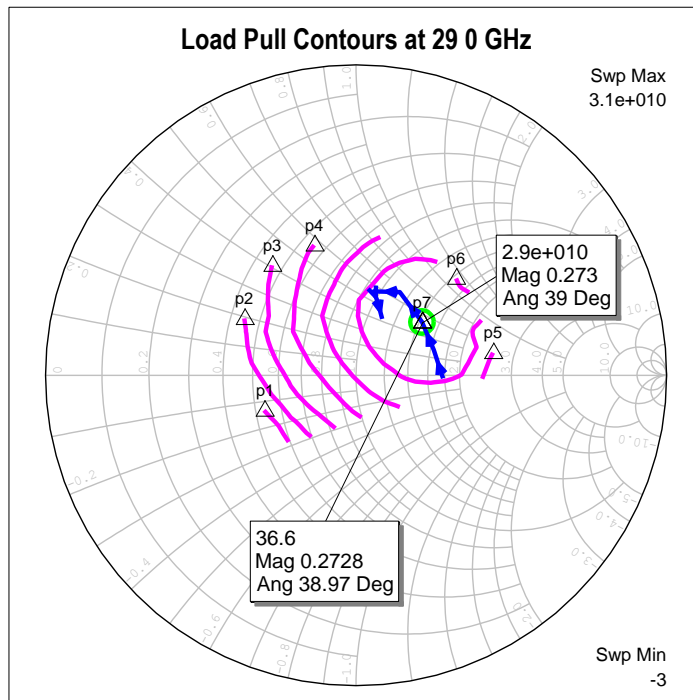
p5: Pout\_Norm = -1 dB

p6: Pout\_Norm = -0.5 dB

p7: Pout = 36.3 dBm

— S(1,1)  
2011CuCoinData\_Load\_AvgOverGamma\_FOR DS.\$FSWP1  
● LPCMMAX(2,1,50,0)  
LP\_CC\_28d5GHz  
— LPCM(0,-3,0.5,3,1,50,0)  
LP\_CC\_28d5GHz

### Device Characterization Data - Load Pull Contours at 29 GHz



p1: Pout\_Norm = -3 dB

p2: Pout\_Norm = -2.5 dB

p3: Pout\_Norm = -2 dB

p4: Pout\_Norm = -1.5 dB

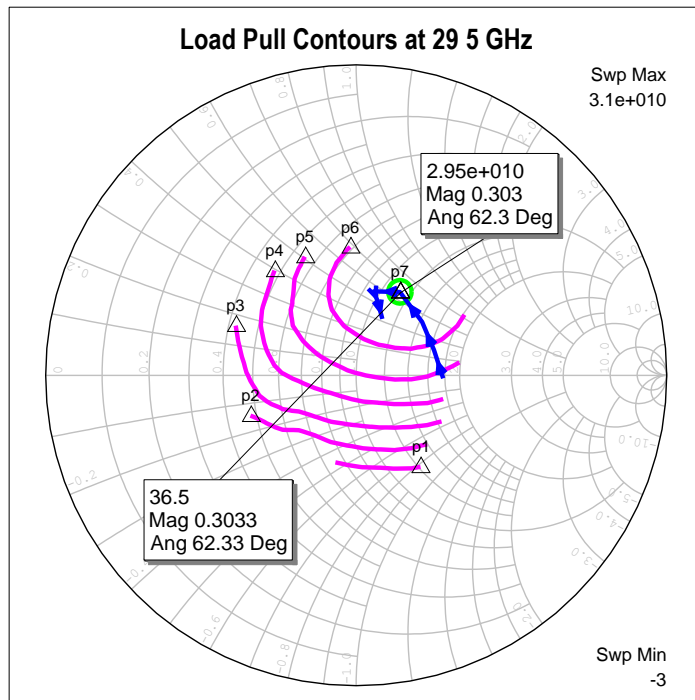
p5: Pout\_Norm = -1 dB

p6: Pout\_Norm = -0.5 dB

p7: Pout = 36.6 dBm

— S(1,1)  
2011CuCoinData\_Load\_AvgOverGamma\_FOR DS.\$FSWP1  
⊖ LCM(2,1,50,0)  
LP\_CC\_29d0GHz  
— LCM(0,-3,0.5,3,1,50,0)  
LP\_CC\_29d0GHz

### Device Characterization Data - Load Pull Contours at 29.5 GHz



p1: Pout\_Norm = -3 dB

p2: Pout\_Norm = -2.5 dB

p3: Pout\_Norm = -2 dB

p4: Pout\_Norm = -1.5 dB

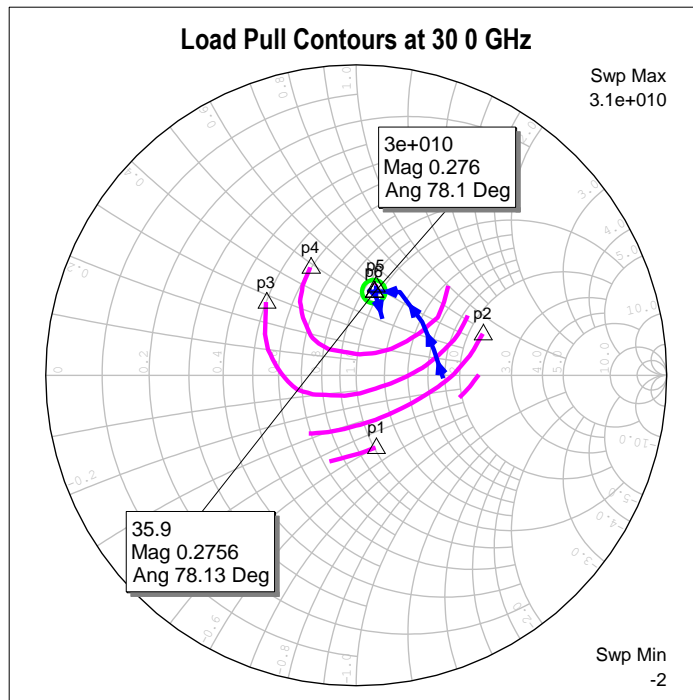
p5: Pout\_Norm = -1 dB

p6: Pout\_Norm = -0.5 dB

p7: Pout = 36.5 dBm

— S(1,1)  
2011CuCoinData\_Load\_AvgOverGamma\_FOR DS.\$FSWP1  
⊖ LPCMMAX(2,1,50,0)  
LP\_CC\_29d5GHz  
— LPCM(0,-3,0.5,3,1,50,0)  
LP\_CC\_29d5GHz

### Device Characterization Data - Load Pull Contours at 30 GHz



p1: Pout\_Norm = -2 dB

p2: Pout\_Norm = -1.5 dB

p3: Pout\_Norm = -1 dB

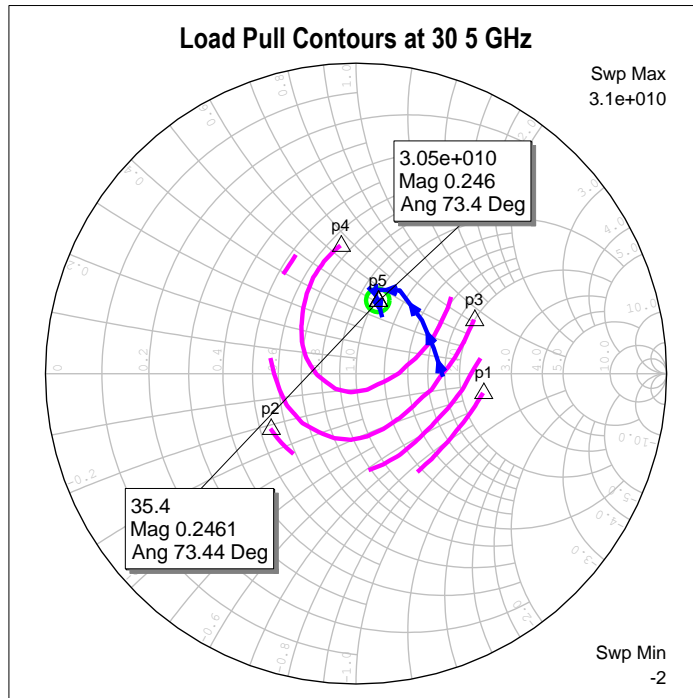
p4: Pout\_Norm = -0.5 dB

p5: Pout\_Norm = 0 dB

p6: Pout = 35.9 dBm

— S(1,1)  
2011CuCoinData\_Load\_AvgOverGamma\_FOR DS.\$FSWP1  
● LPCMMAX(2,1,50,0)  
LP\_CC\_30d0GHz  
— LPCM(0,-3,0.5,3,1,50,0)  
LP\_CC\_30d0GHz

### Device Characterization Data - Load Pull Contours at 30.5 GHz



p1: Pout\_Norm = -2 dB

p2: Pout\_Norm = -1.5 dB

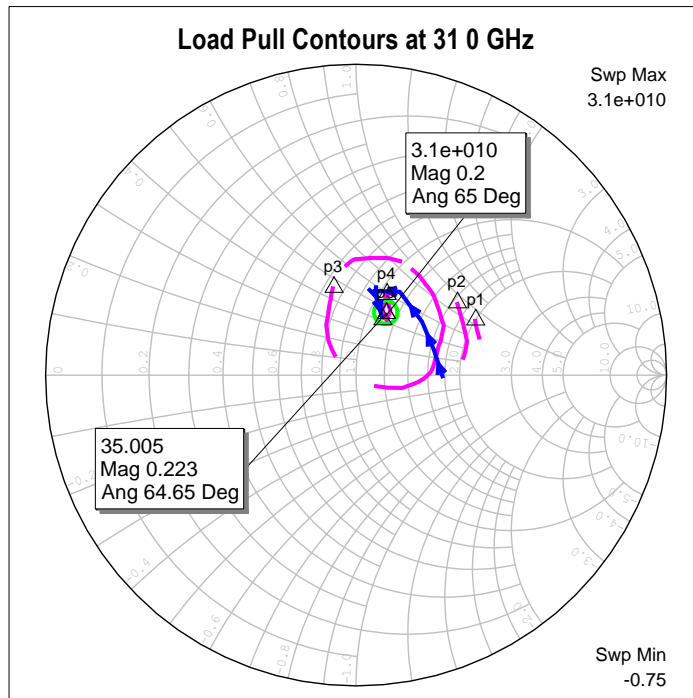
p3: Pout\_Norm = -1 dB

p4: Pout\_Norm = -0.5 dB

p5: Pout = 35.4 dBm

— S(1,1)  
2011CuCoinData\_Load\_AvgOverGamma\_FOR DS.\$FSWP1  
● LPCMMAX(2,1,50,0)  
LP\_CC\_30d5GHz  
— LPCM(0,-3,0.5,3,1,50,0)  
LP\_CC\_30d5GHz

### Device Characterization Data - Load Pull Contours at 31 GHz



— S(1,1)  
2011CuCoinData\_Load\_AvgOverGamma\_FOR DS.\$FSWP1  
● LPCM(2,1,50,0)  
LP\_CC\_31d0GHz  
— LPCM(0,-3,0.25,3,1,50,0)  
LP\_CC\_31d0GHz

p1: Pout\_Norm = -0.75 dB

p2: Pout\_Norm = -0.5 dB

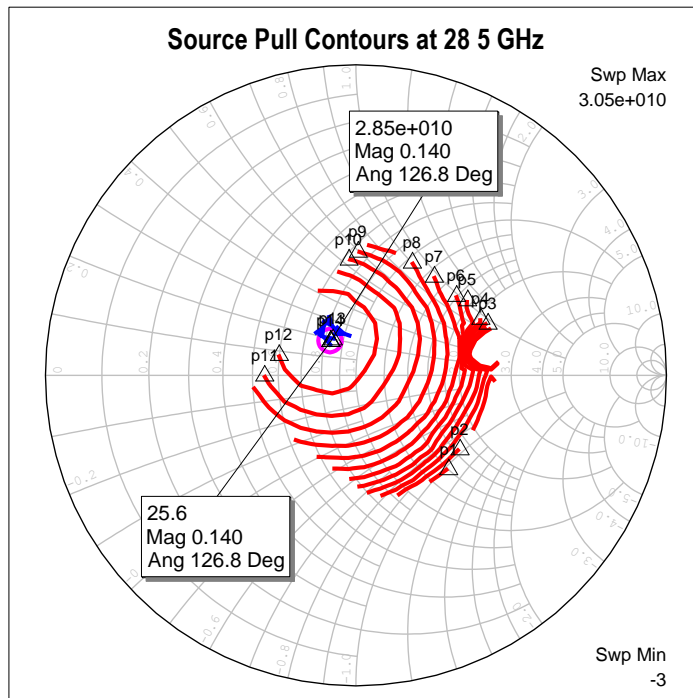
p3: Pout\_Norm = -0.25 dB

p4: Pout\_Norm = 0 dB

p5: Pout = 35.005 dBm



### Device Characterization Data - Source Pull Contours at 28.5 GHz



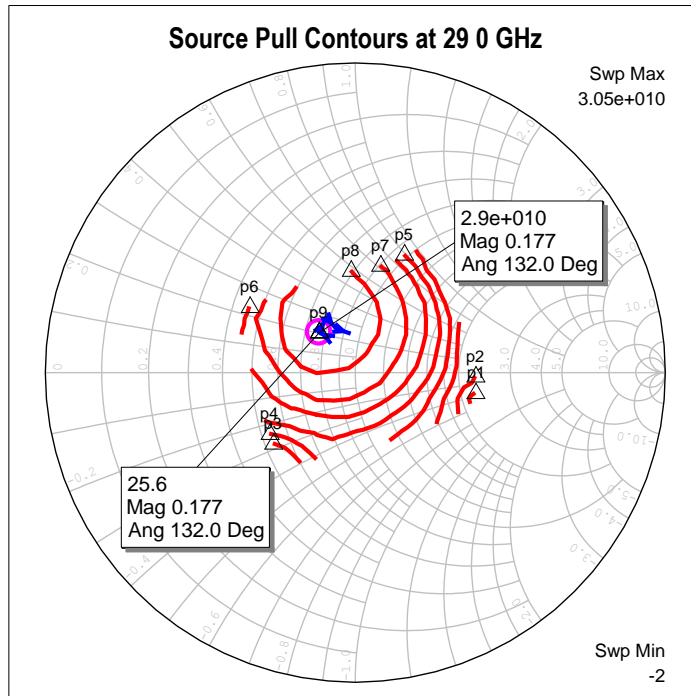
- p1: Gain\_Norm = -3 dB
- p2: Gain\_Norm = -2.75 dB
- p3: Gain\_Norm = -2.5 dB
- p4: Gain\_Norm = -2.25 dB
- p5: Gain\_Norm = -2 dB
- p6: Gain\_Norm = -1.75 dB
- p7: Gain\_Norm = -1.5 dB
- p8: Gain\_Norm = -1.25 dB
- p9: Gain\_Norm = -1 dB
- p10: Gain\_Norm = -0.75 dB
- p11: Gain\_Norm = -0.5 dB
- p12: Gain\_Norm = -0.25 dB
- p13: Gain\_Norm = 0 dB
- p14: Gain = 25.6 dB

— S(1,1)  
2011CuCoinData\_Source\_AvgOverGamma\_FOR DS.\$FSWP1

⊖ LPCMMAX(2,1,50,0)  
SP\_CC\_28d5GHz

— LPCM(0,-3,0.25,3,1,50,0)  
SP\_CC\_28d5GHz

### Device Characterization Data - Source Pull Contours at 29 GHz



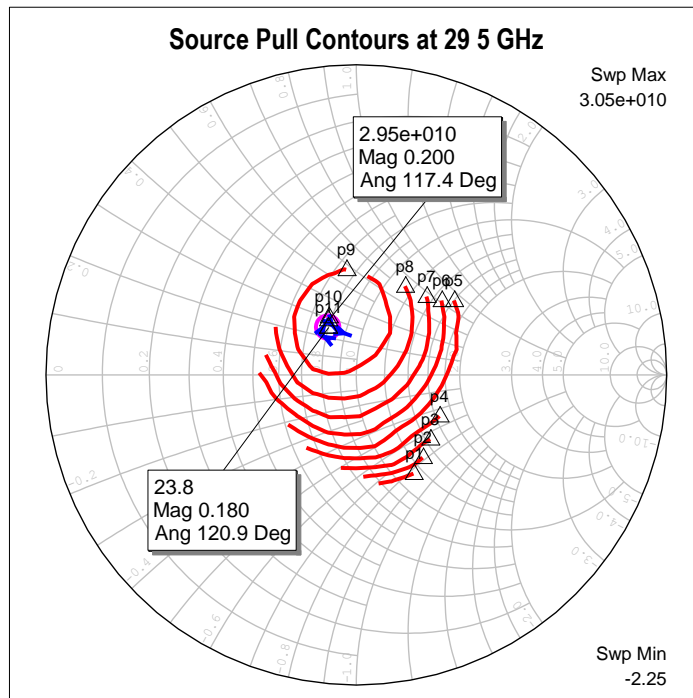
p1: Gain\_Norm = -2 dB  
 p2: Gain\_Norm = -1.75 dB  
 p3: Gain\_Norm = -1.5 dB  
 p4: Gain\_Norm = -1.25 dB  
 p5: Gain\_Norm = -1 dB  
 p6: Gain\_Norm = -0.75 dB  
 p7: Gain\_Norm = -0.5 dB  
 p8: Gain\_Norm = -0.25 dB  
 p9: Gain = 25.6 dB

— S(1,1)  
2011CuCoinData\_Source\_AvgOverGamma\_FOR DS.\$FSWP1

⊖ LPCMMAX(2,1,50,0)  
SP\_CC\_29d0GHz

— LPCM(0,-3,0.25,3,1,50,0)  
SP\_CC\_29d0GHz

### Device Characterization Data - Source Pull Contours at 29.5 GHz



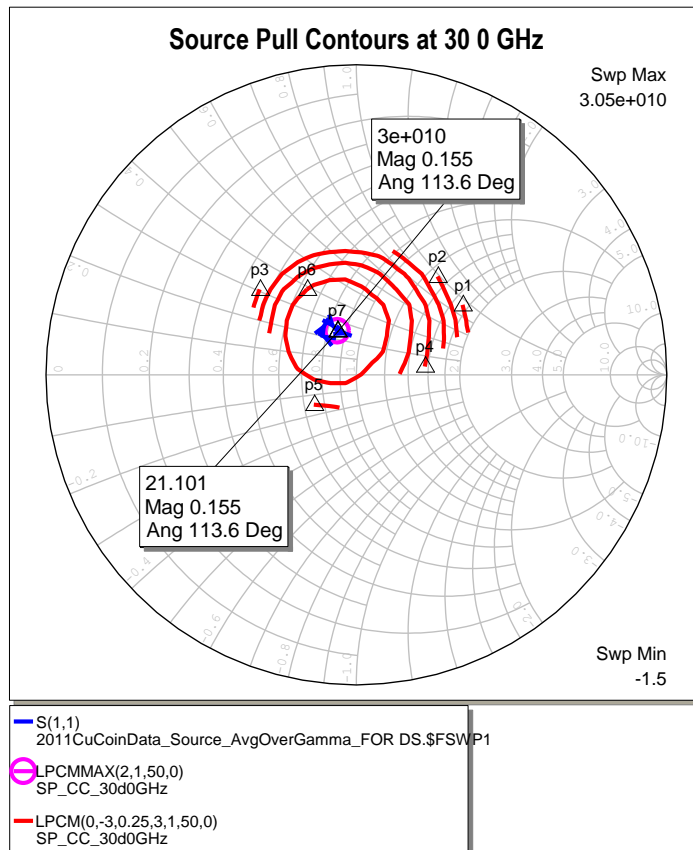
- p1: Gain\_Norm = -2.25 dB
- p2: Gain\_Norm = -2 dB
- p3: Gain\_Norm = -1.75 dB
- p4: Gain\_Norm = -1.5 dB
- p5: Gain\_Norm = -1.25 dB
- p6: Gain\_Norm = -1 dB
- p7: Gain\_Norm = -0.75 dB
- p8: Gain\_Norm = -0.5 dB
- p9: Gain\_Norm = -0.25 dB
- p10: Gain\_Norm = 0 dB
- p11: Gain = 23.8 dB

— S(1,1)  
2011CuCoinData\_Source\_AvgOverGamma\_FOR DS.SFSWP1

⊖ LPCMMAX(2,1,50,0)  
SP\_CC\_29d5GHz

— LPCM(0,-3,0.25,3,1,50,0)  
SP\_CC\_29d5GHz

### Device Characterization Data - Source Pull Contours at 30 GHz



p1: Gain\_Norm = -1.5 dB

p2: Gain\_Norm = -1.25 dB

p3: Gain\_Norm = -1 dB

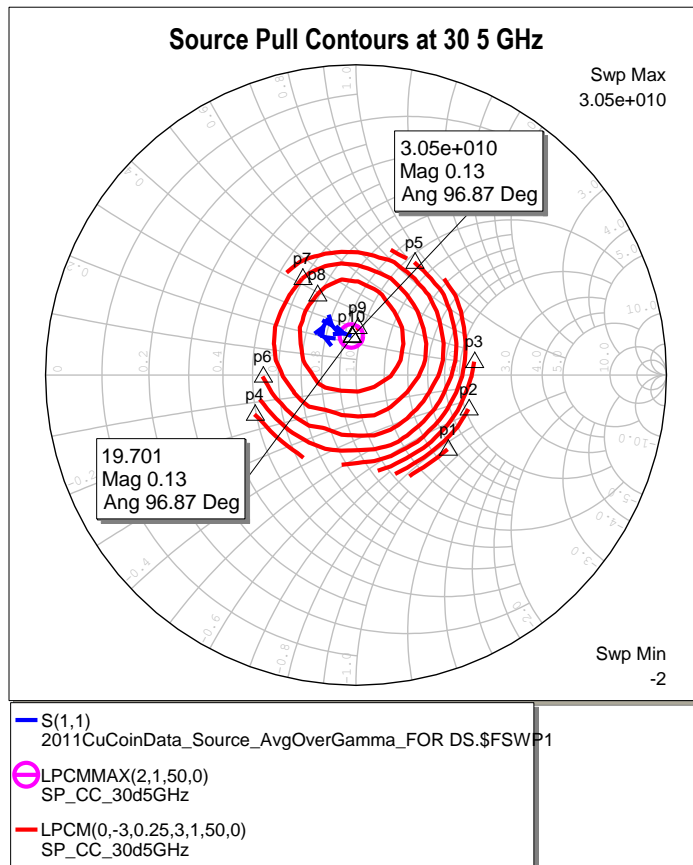
p4: Gain\_Norm = -0.75 dB

p5: Gain\_Norm = -0.5 dB

p6: Gain\_Norm = -0.25 dB

p7: Gain = 21.101 dB

### Device Characterization Data - Source Pull Contours at 30.5 GHz



p1: Gain\_Norm = -2 dB  
 p2: Gain\_Norm = -1.75 dB  
 p3: Gain\_Norm = -1.5 dB  
 p4: Gain\_Norm = -1.25 dB  
 p5: Gain\_Norm = -1 dB  
 p6: Gain\_Norm = -0.75 dB  
 p7: Gain\_Norm = -0.5 dB  
 p8: Gain\_Norm = -0.25 dB  
 p9: Gain\_Norm = 0 dB  
 p10: Gain = 19.701 dB