

October 21, 2022

# **NT1189GDAE3S**

## **Low Noise Amplifier for 5G BTS (Sub-6GHz)**

### **S-parameter, noise parameter simulation data Standard Condition ver.0**

- S-parameter simulation data
- Max gain, NFmin simulation data
- Gain circle simulation data (Source/Load impedance)
- NF circle simulation data
- Simulation condition
- Simulation circuit
- s2p file

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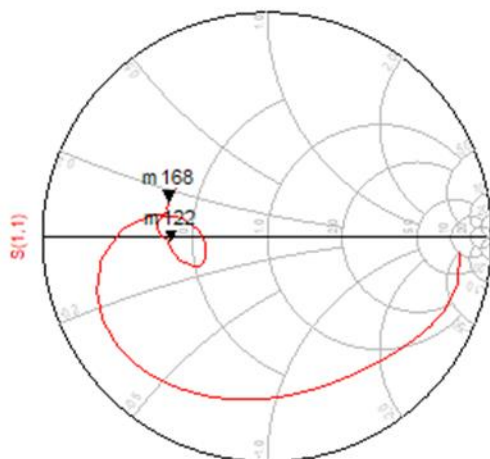
## ■ REVISION HISTORY

REVISION	DATE	DESCRIPTION
0	21 October. 2022	Initial version.



■ S-parameter simulation data

Condition:  $f = 50 \text{ MHz} \sim 6 \text{ GHz}$ ,  $V_{DD} = 5.0 \text{ V}$ ,  $V_{CTL} = 1.8 \text{ V}$ ,  $T_a = +25^\circ\text{C}$ ,  $Z_s = Z_l = 50 \Omega$

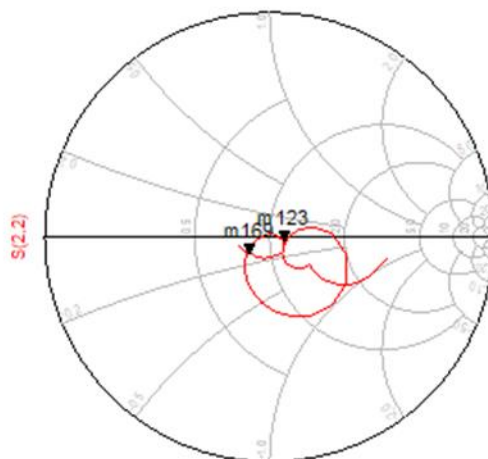


freq (50.00 MHz to 6.000 GHz)

m122  
freq=3.300 GHz  
 $S(1,1)=0.429 / -178.275$   
impedance =  $Z_0 \cdot (0.399 - j0.013)$

m168  
freq=5.000 GHz  
 $S(1,1)=0.466 / 159.836$   
impedance =  $Z_0 \cdot (0.375 + j0.154)$

**S11**

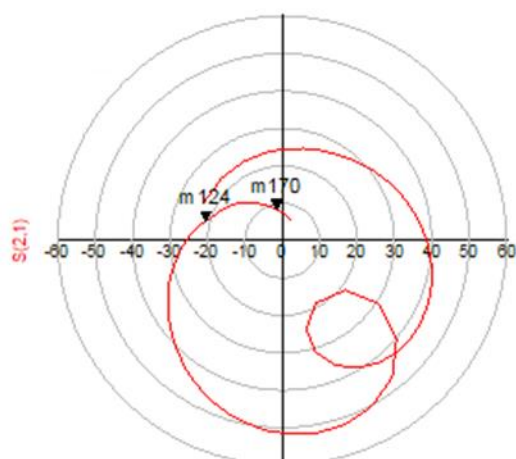


freq (50.00 MHz to 6.000 GHz)

m123  
freq=3.300 GHz  
 $S(2,2)=0.066 / -15.852$   
impedance =  $Z_0 \cdot (1.136 - j0.041)$

m169  
freq=5.000 GHz  
 $S(2,2)=0.116 / -140.233$   
impedance =  $Z_0 \cdot (0.828 - j0.124)$

**S22**

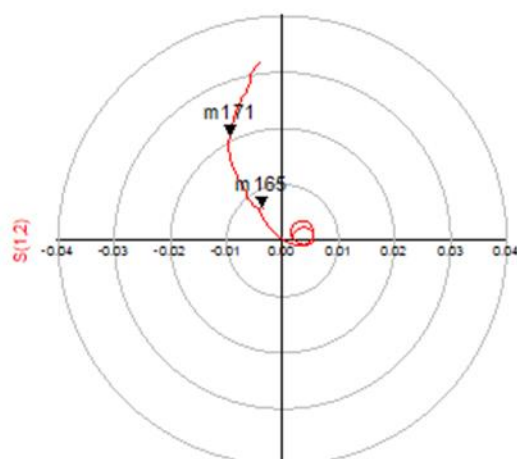


freq (50.00 MHz to 6.000 GHz)

m124  
freq=3.300 GHz  
 $S(2,1)=21.076 / 165.430$

m170  
freq=5.000 GHz  
 $S(2,1)=8.528 / 99.930$

**S21**



freq (50.00 MHz to 6.000 GHz)

m165  
freq=3.300 GHz  
 $S(1,2)=0.007 / 121.501$

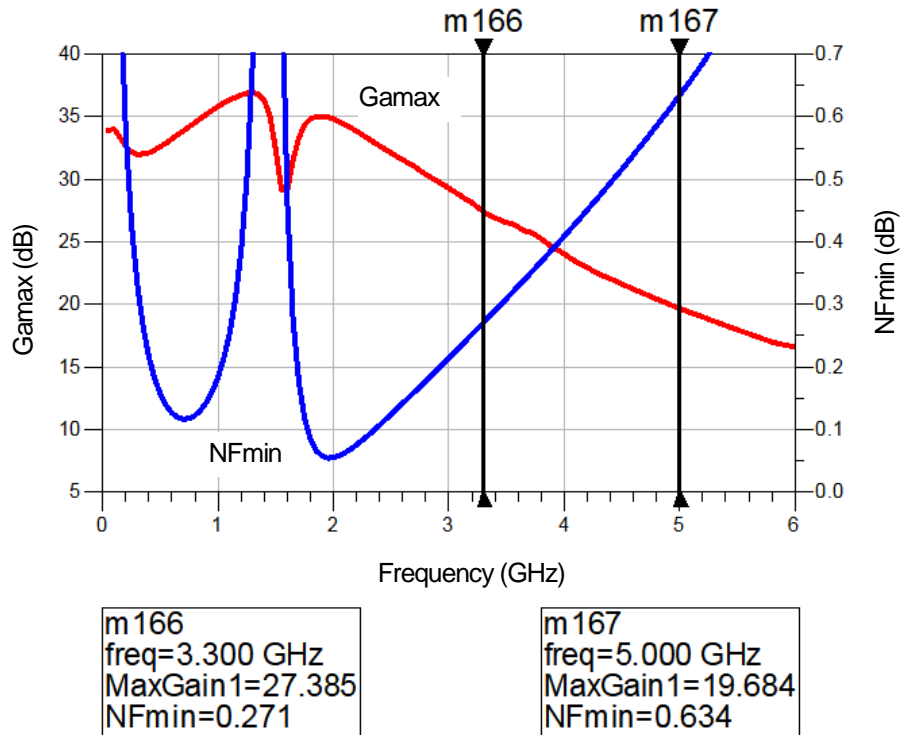
m171  
freq=5.000 GHz  
 $S(1,2)=0.021 / 116.682$

**S12**



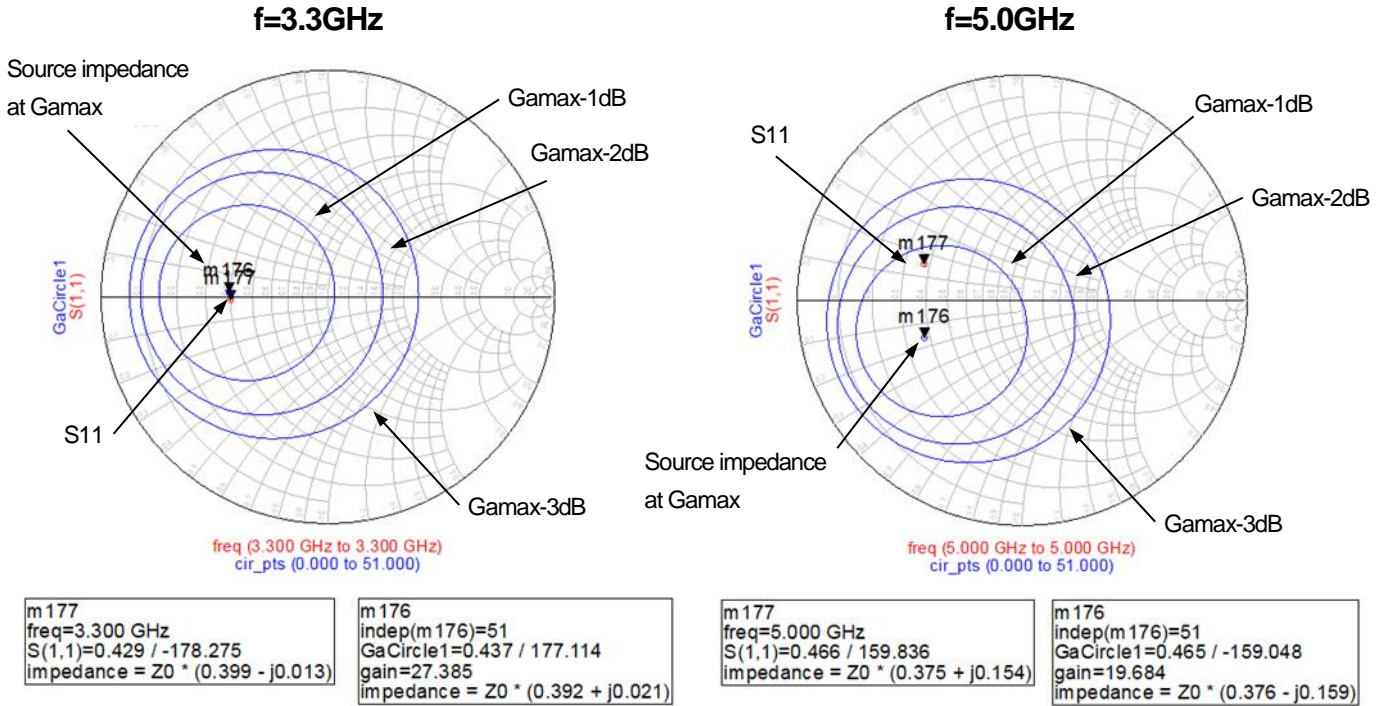
■ Max gain, NFmin simulation data

Condition:  $f = 50 \text{ MHz} \sim 6 \text{ GHz}$ ,  $V_{DD} = 5.0 \text{ V}$ ,  $V_{CTL} = 1.8 \text{ V}$ ,  $T_a = +25^\circ\text{C}$ ,  $Z_s = Z_l = 50 \Omega$



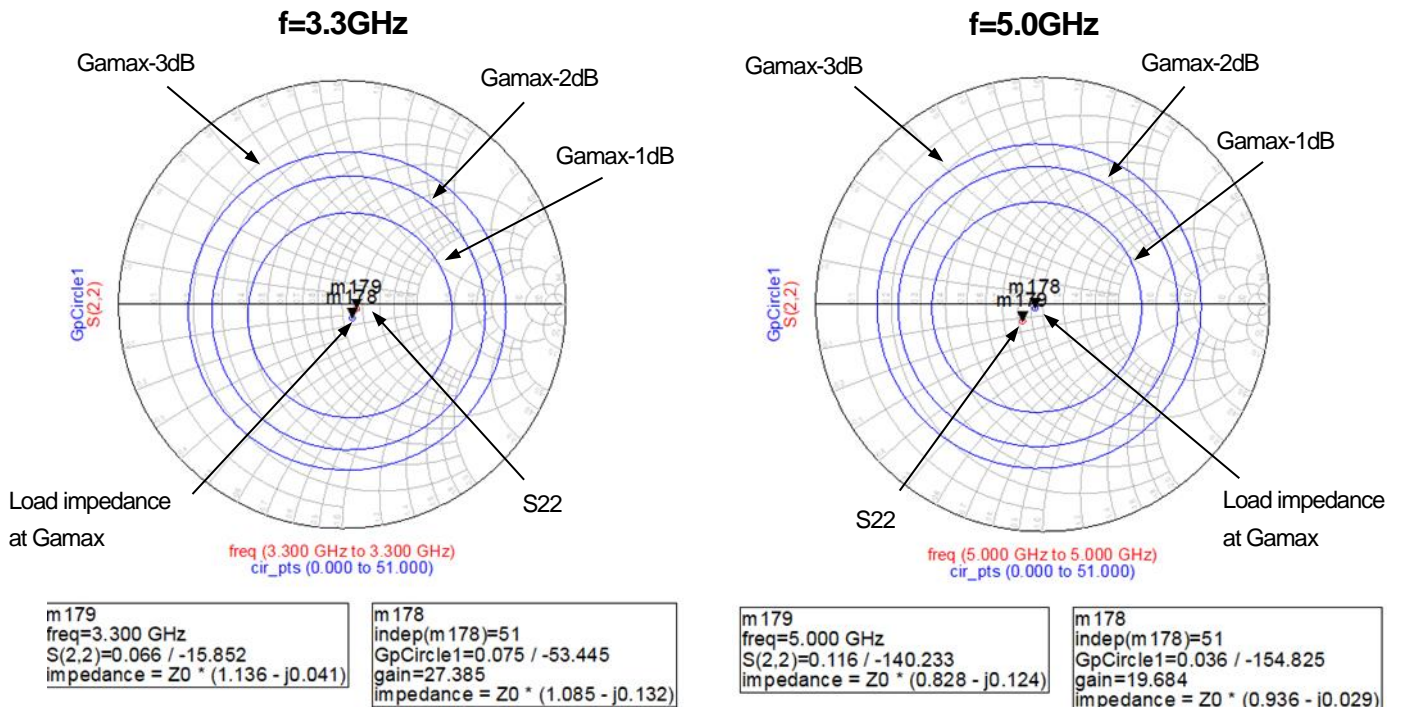
■ Gain circle simulation data (Source impedance)

Condition:  $V_{DD} = 5.0\text{ V}$ ,  $V_{CTL} = 1.8\text{ V}$ ,  $T_a = +25^\circ\text{C}$ ,  $Z_s = Z_l = 50\ \Omega$



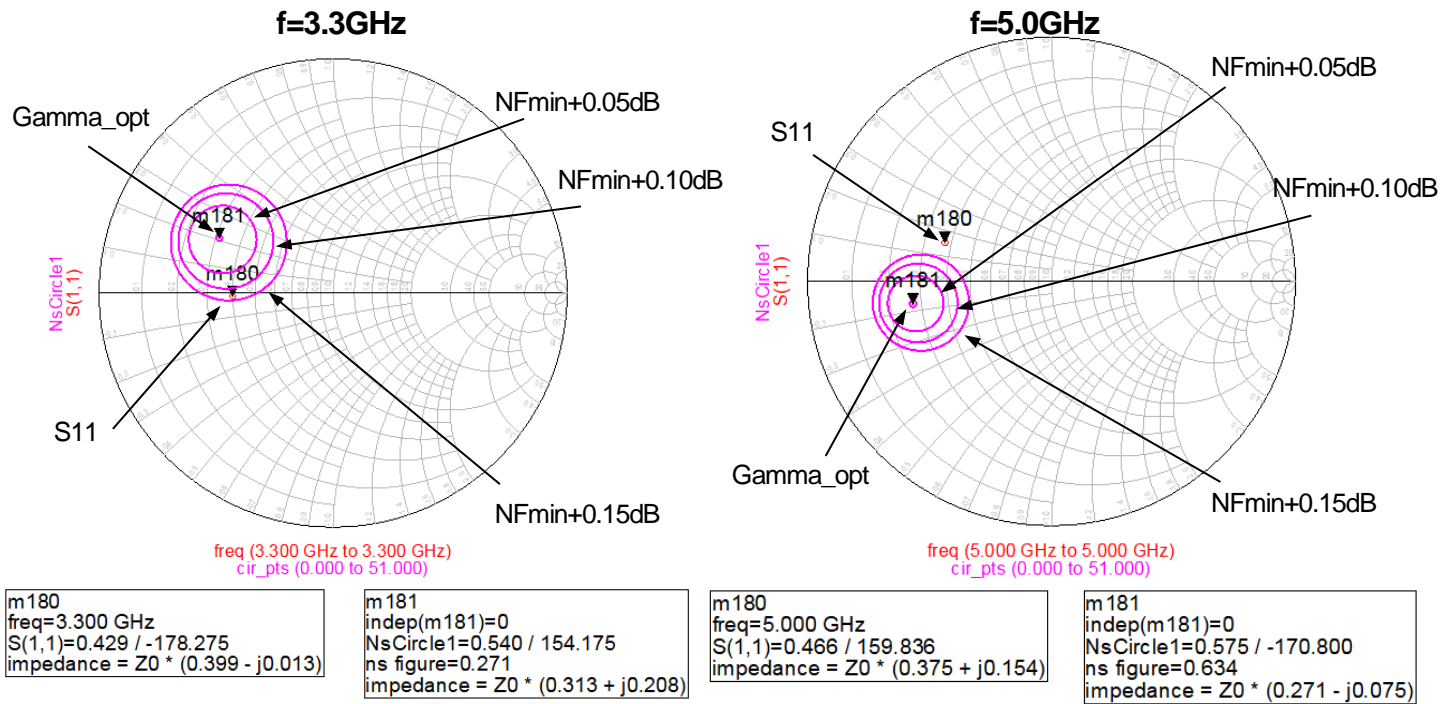
■ Gain circle simulation data (Load impedance)

Condition:  $V_{DD} = 5.0\text{ V}$ ,  $V_{CTL} = 1.8\text{ V}$ ,  $T_a = +25^\circ\text{C}$ ,  $Z_s = Z_l = 50\ \Omega$



■ NF circle simulation data

Condition:  $V_{DD} = 5.0\text{ V}$ ,  $V_{CTL} = 1.8\text{ V}$ ,  $T_a = +25^\circ\text{C}$ ,  $Z_s = Z_l = 50\ \Omega$



**■ Simulation condition**

$f = 50 \text{ MHz to } 6\text{GHz}$ , Step = 5 MHz

$T_a = +25^\circ\text{C}$ ,

$Z_s = Z_l = 50 \Omega$

s2p file : NT1189\_SparaSN.s2p

**■ Simulation circuit**