

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)
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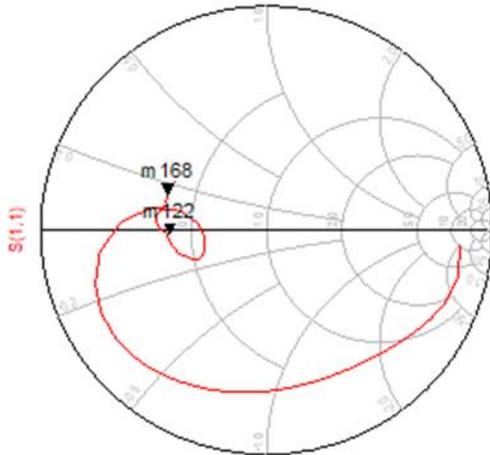
■ REVISION HISTORY

REVISION	DATE	DESCRIPTION
0	21 October. 2022	Initial version.



■ S-parameter simulation data

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

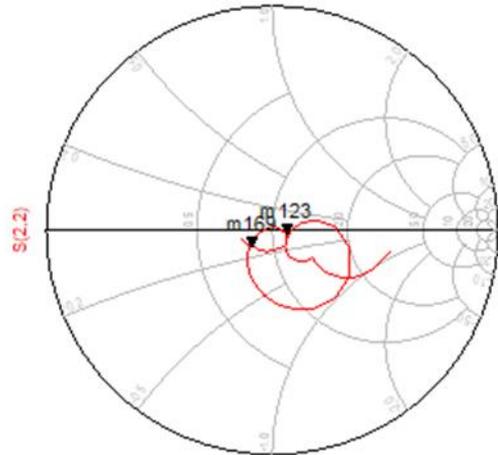


freq (50.00 MHz to 6.000 GHz)

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

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

S11

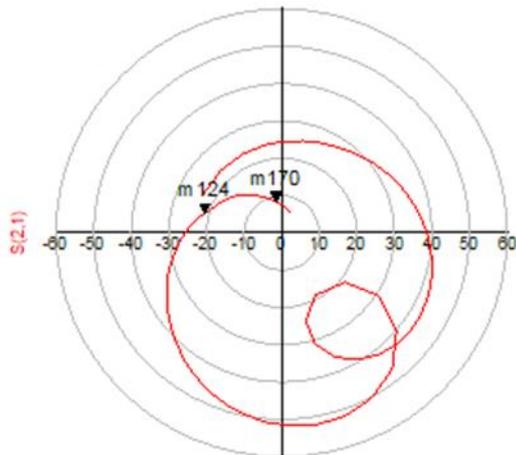


freq (50.00 MHz to 6.000 GHz)

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

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

S22

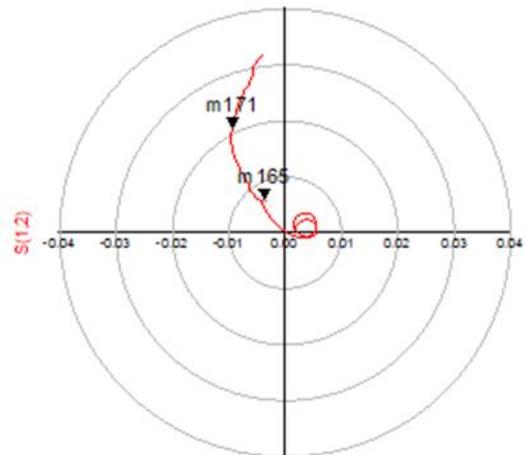


freq (50.00 MHz to 6.000 GHz)

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

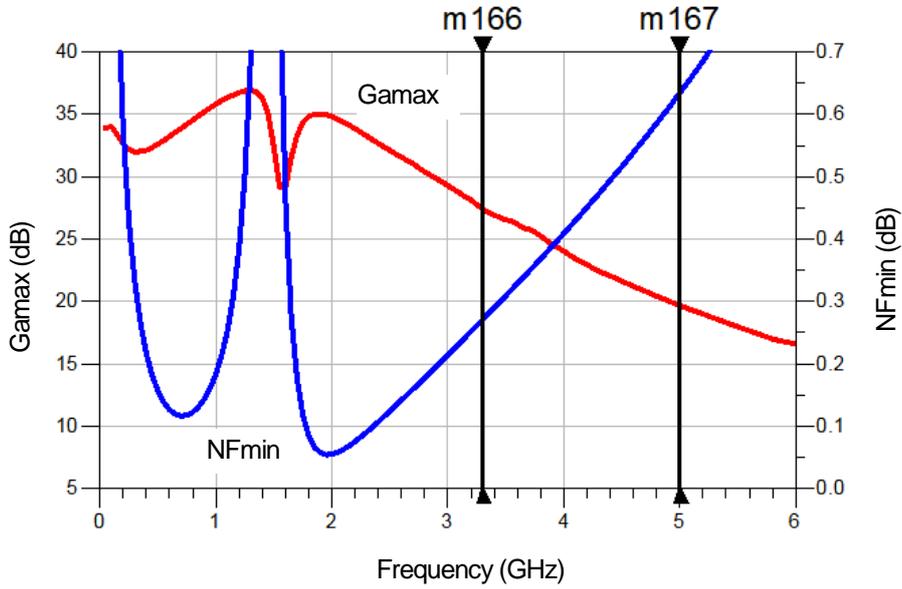
m171
freq=5.000 GHz
S(1,2)=0.021 / 116.682

S12



■ Max gain, NFmin simulation data

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



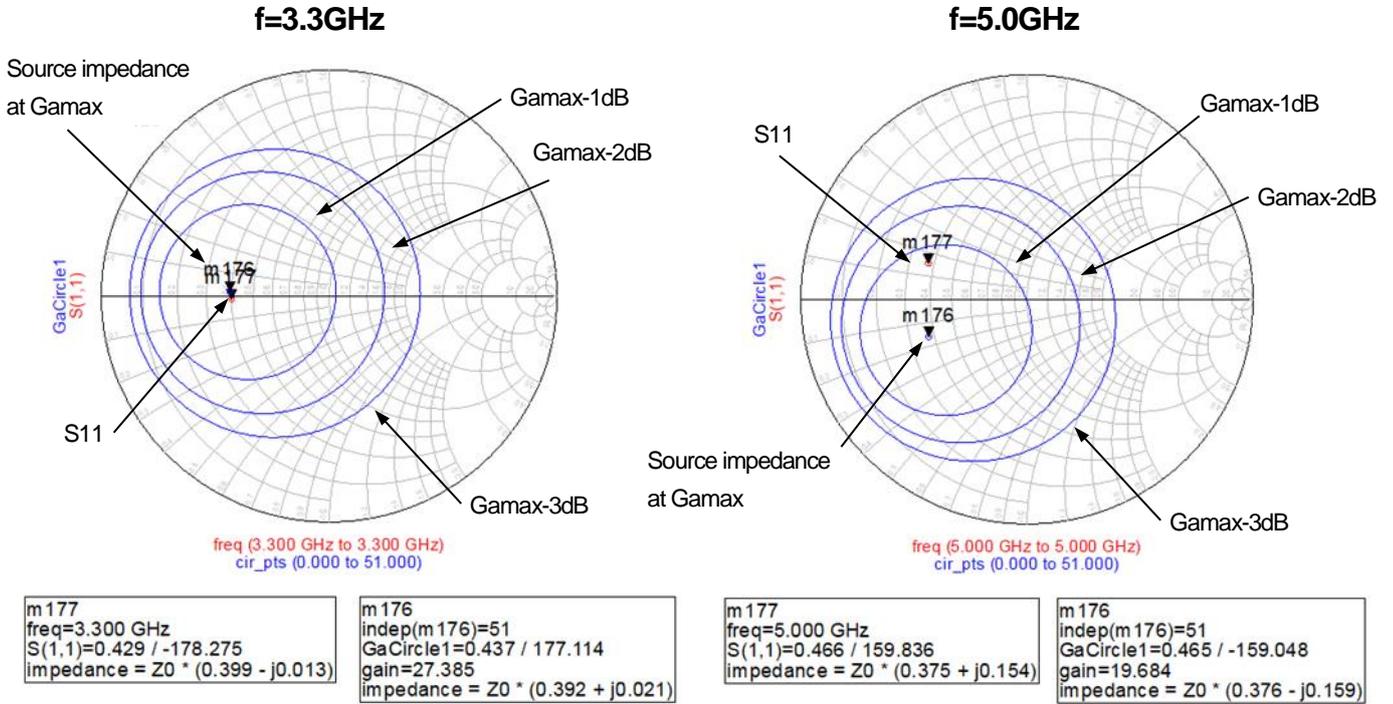
m 166
freq=3.300 GHz
MaxGain1=27.385
NFmin=0.271

m 167
freq=5.000 GHz
MaxGain1=19.684
NFmin=0.634



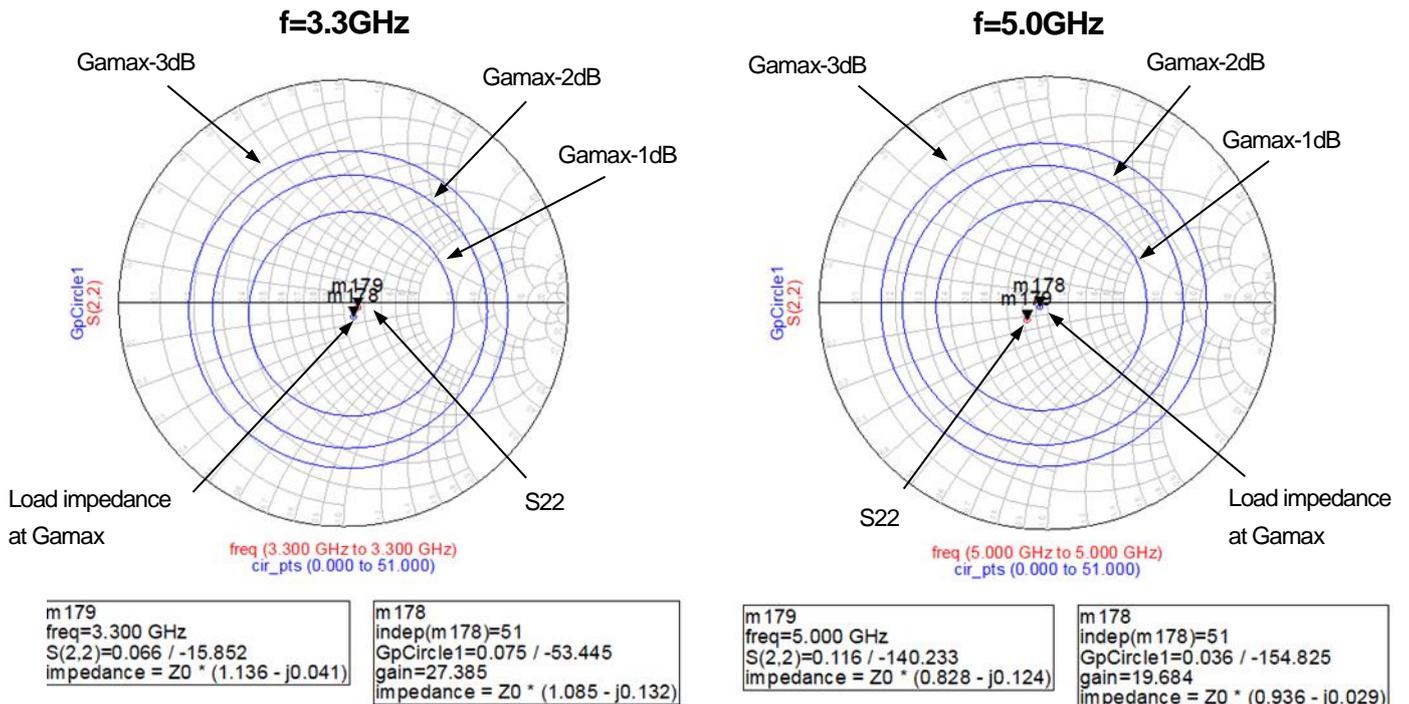
■ **Gain circle simulation data (Source impedance)**

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



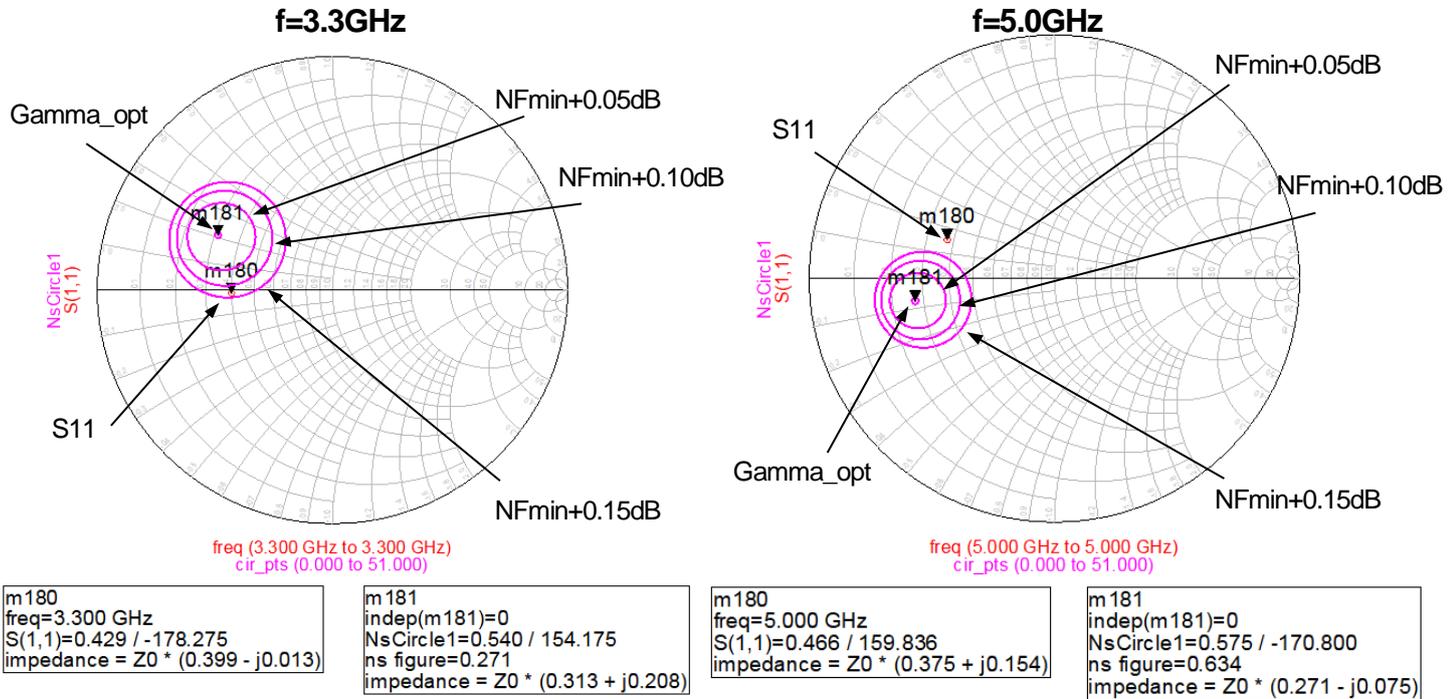
■ **Gain circle simulation data (Load impedance)**

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 MHz to 6GHz, Step = 5 MHz

Ta = +25°C,

Zs = Zl = 50 Ω

s2p file : NT1189_SparaSN.s2p

■ **Simulation circuit**

