

May 20, 2022

NT1192FAAE1S

Lower L-band GNSS LNA

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

s2p file at $V_{DD}=2.8V$: NT1192FAAE1S_2r8v_v0.s2p

s2p file at $V_{DD}=1.8V$: NT1192FAAE1S_1r8v_v0.s2p

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Approved by Susumu Takagi

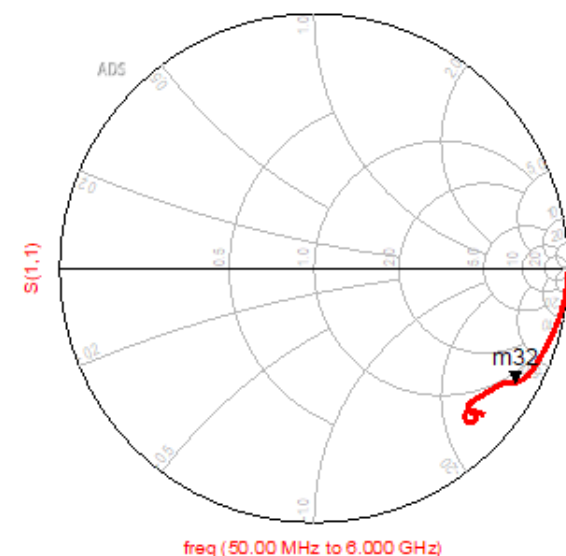
Nisshinbo Micro Devices Inc.

Electronic Devices Business Headquarters
Technology Development Division
RF Product Development Department
RFIC Design Section



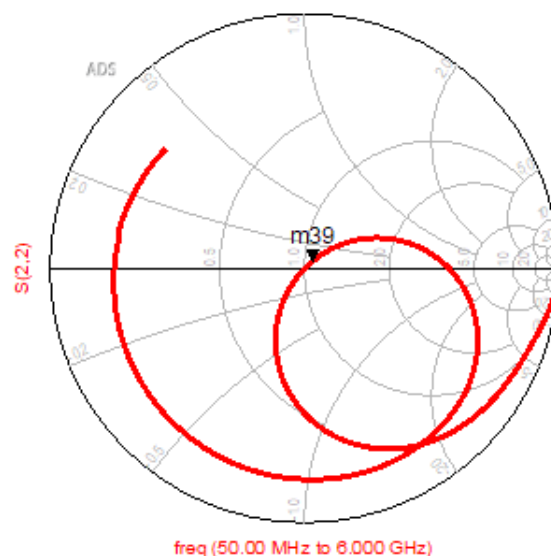
■ S-parameter simulation data 1

Condition: $f=50\text{MHz}\sim 6\text{GHz}$, $V_{DD}=2.8\text{V}$, $V_{CTL}=1.8\text{V}$, $T_a=+25^\circ\text{C}$, $Z_s=Z_l=50\text{ohm}$



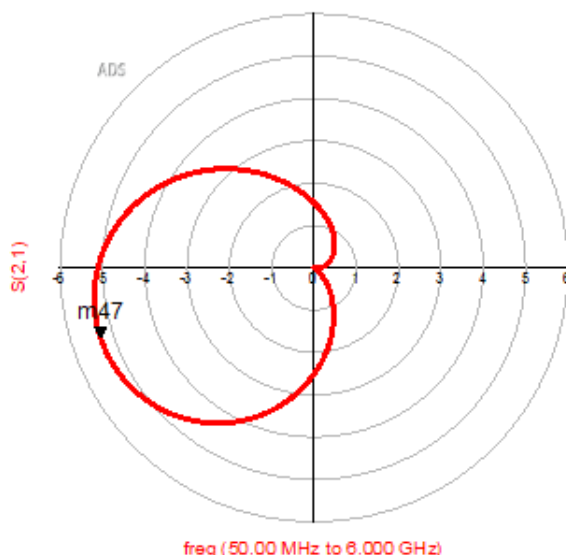
m32
freq=1.225 GHz
S(1,1)=0.911 / -29.515
impedance = Z0 * (0.700 - j3.672)

S11



m39
freq=1.225 GHz
S(2,2)=0.043 / 39.970
impedance = Z0 * (1.067 + j0.059)

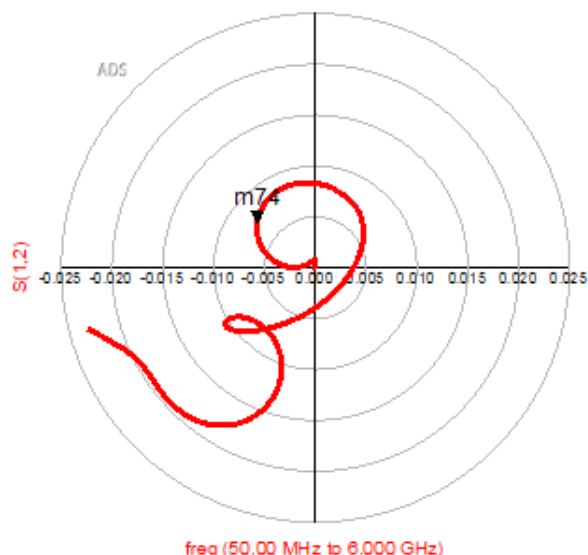
S22



freq (50.00 MHz to 6.000 GHz)

m47
freq=1.225 GHz
S(2,1)=5.297 / -161.898

S21



freq (50.00 MHz to 6.000 GHz)

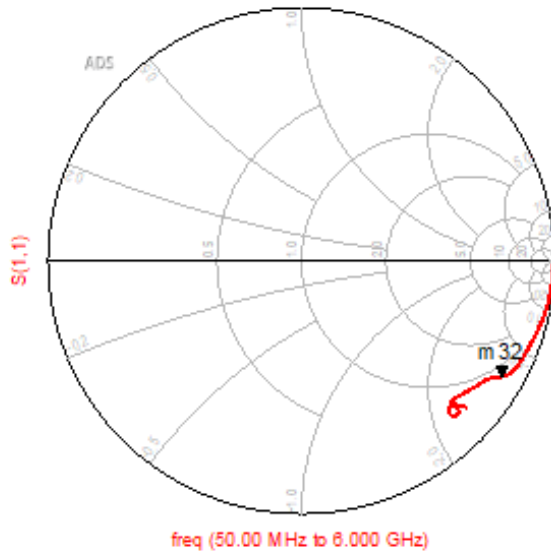
m74
freq=1.225 GHz
S(1,2)=0.007 / 142.120

S12



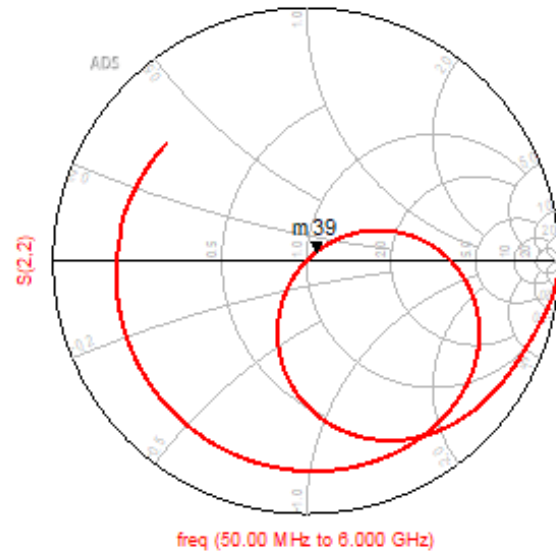
■ S-parameter simulation data 2

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



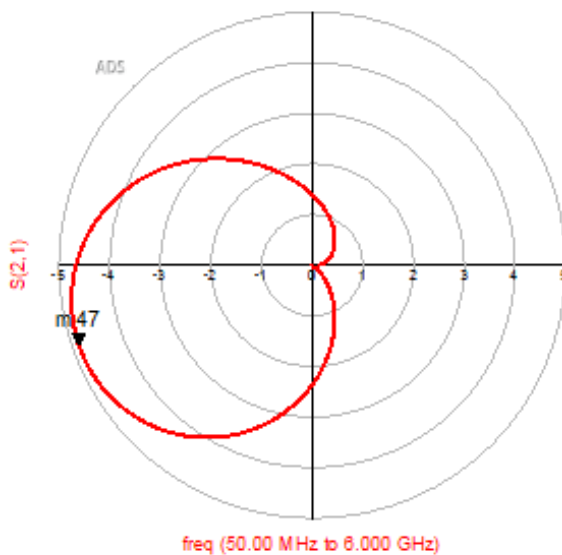
m32
freq=1.225 GHz
S(1,1)=0.915 / -30.042
impedance = $Z_0 \cdot (0.647 - j3.619)$

S11



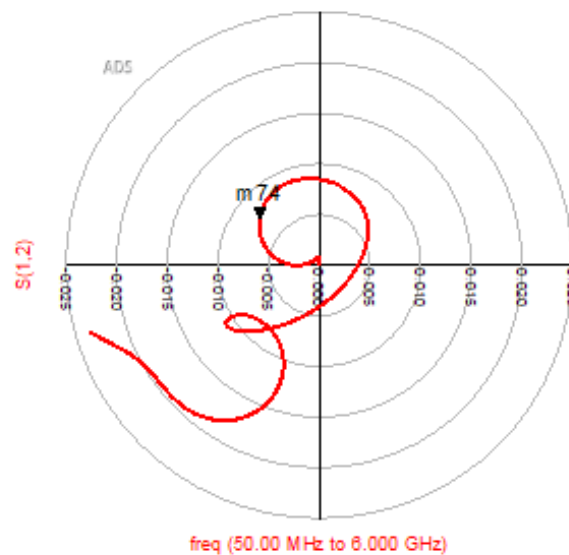
m39
freq=1.225 GHz
S(2,2)=0.051 / 40.908
impedance = $Z_0 \cdot (1.078 + j0.073)$

S22



m47
freq=1.225 GHz
S(2,1)=4.869 / -161.114

S21

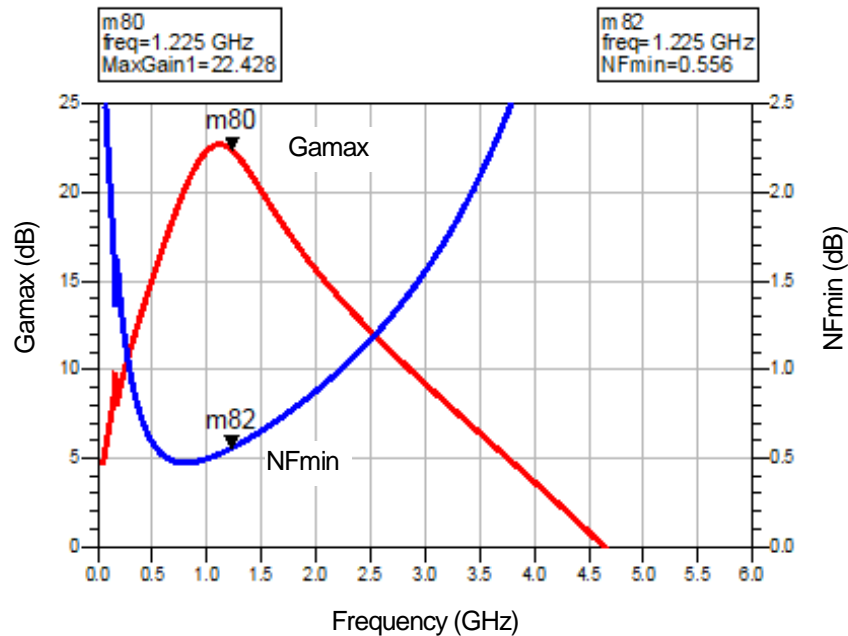


m74
freq=1.225 GHz
S(1,2)=0.007 / 141.703

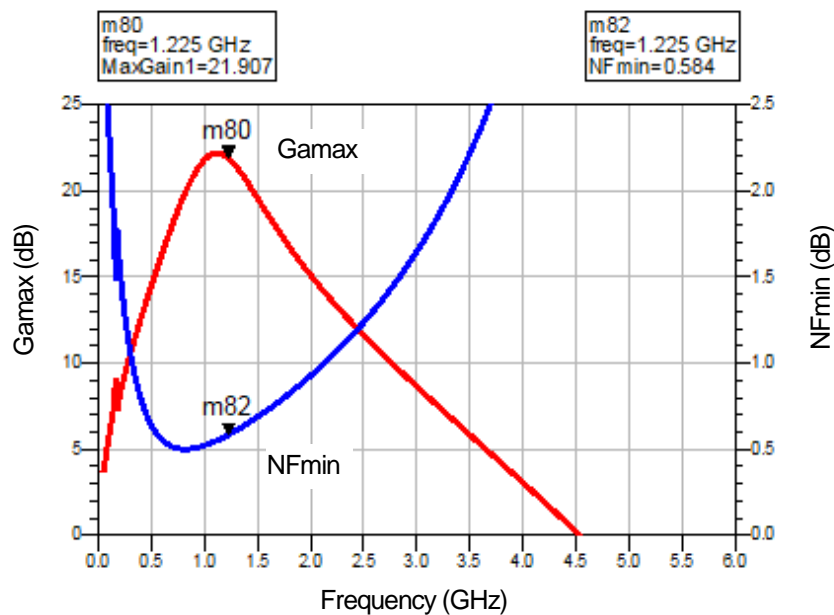
S12

■ Max gain, NFmin simulation data

Condition: f=50MHz~6GHz, $V_{DD}=2.8V$, $V_{CTL}=1.8V$, $T_a=+25^{\circ}C$, $Z_s=Z_l=50\Omega$

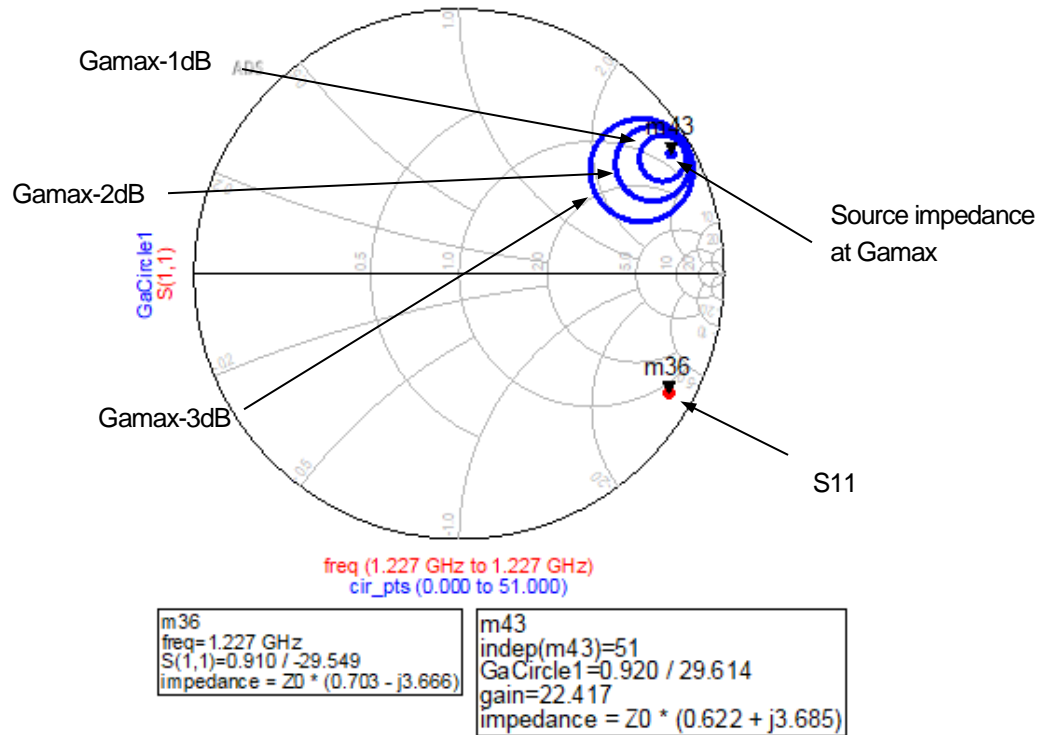


Condition: f=50MHz~6GHz, $V_{DD}=1.8V$, $V_{CTL}=1.8V$, $T_a=+25^{\circ}C$, $Z_s=Z_l=50\Omega$

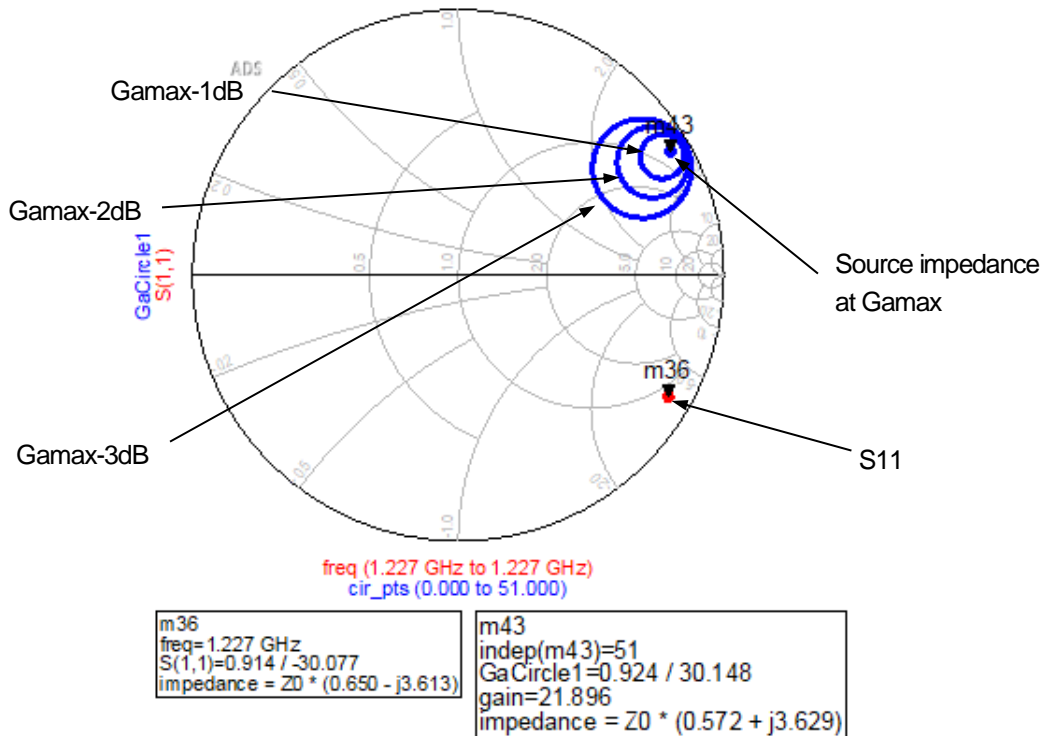


■ Gain circle simulation data (Source impedance)

Condition: $f=1.227\text{GHz}$, $V_{DD}=2.8\text{V}$, $V_{CTL}=1.8\text{V}$, $T_a=+25^\circ\text{C}$, $Z_s=Z_l=50\text{ohm}$

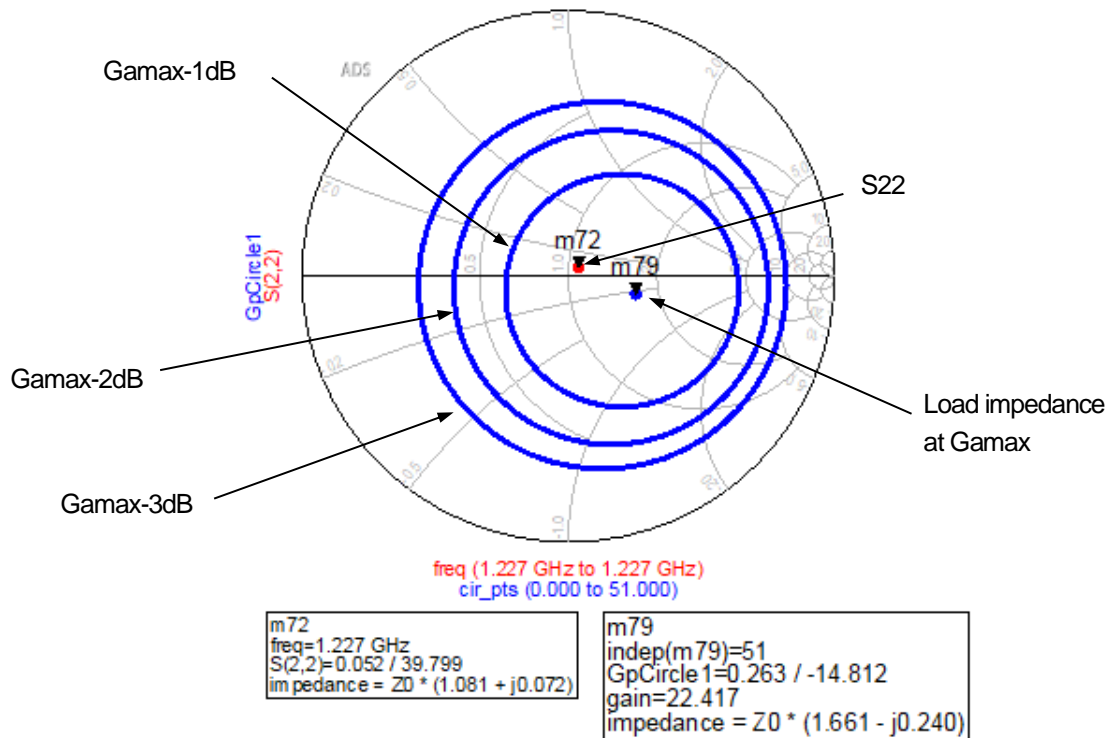


Condition: $f=1.227\text{GHz}$, $V_{DD}=1.8\text{V}$, $V_{CTL}=1.8\text{V}$, $T_a=+25^\circ\text{C}$, $Z_s=Z_l=50\text{ohm}$

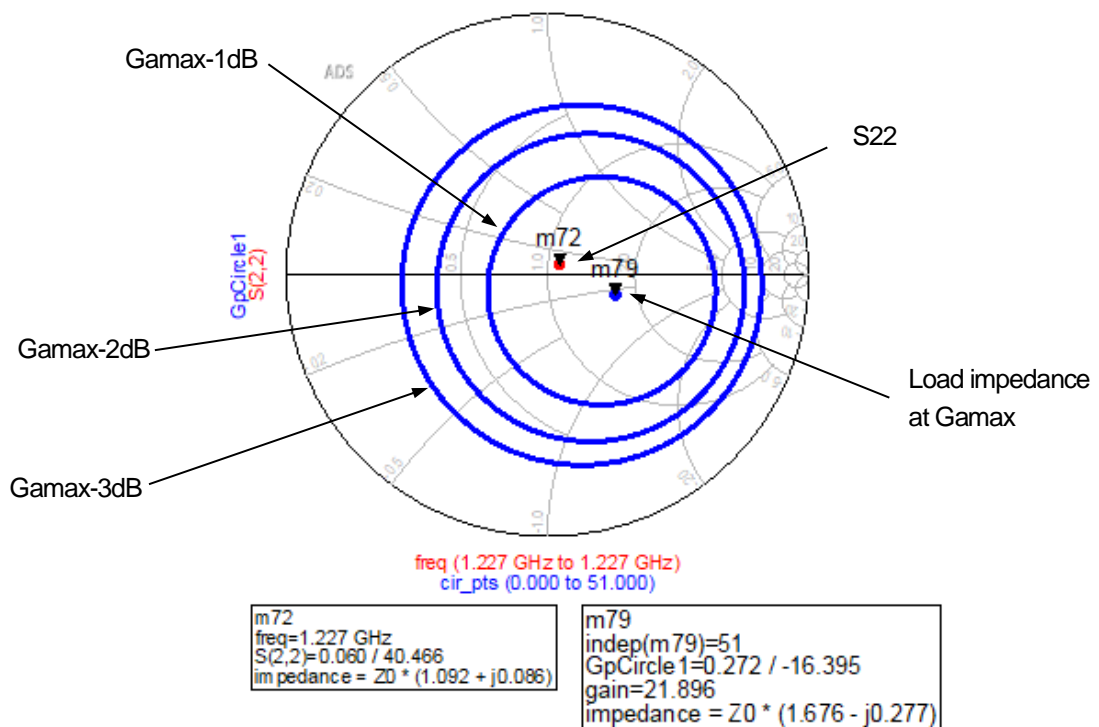


■ Gain circle simulation data (Load impedance)

Condition: $f=1.227\text{GHz}$, $V_{DD}=2.8\text{V}$, $V_{CTL}=1.8\text{V}$, $T_a=+25^\circ\text{C}$, $Z_s=Z_l=50\text{ohm}$

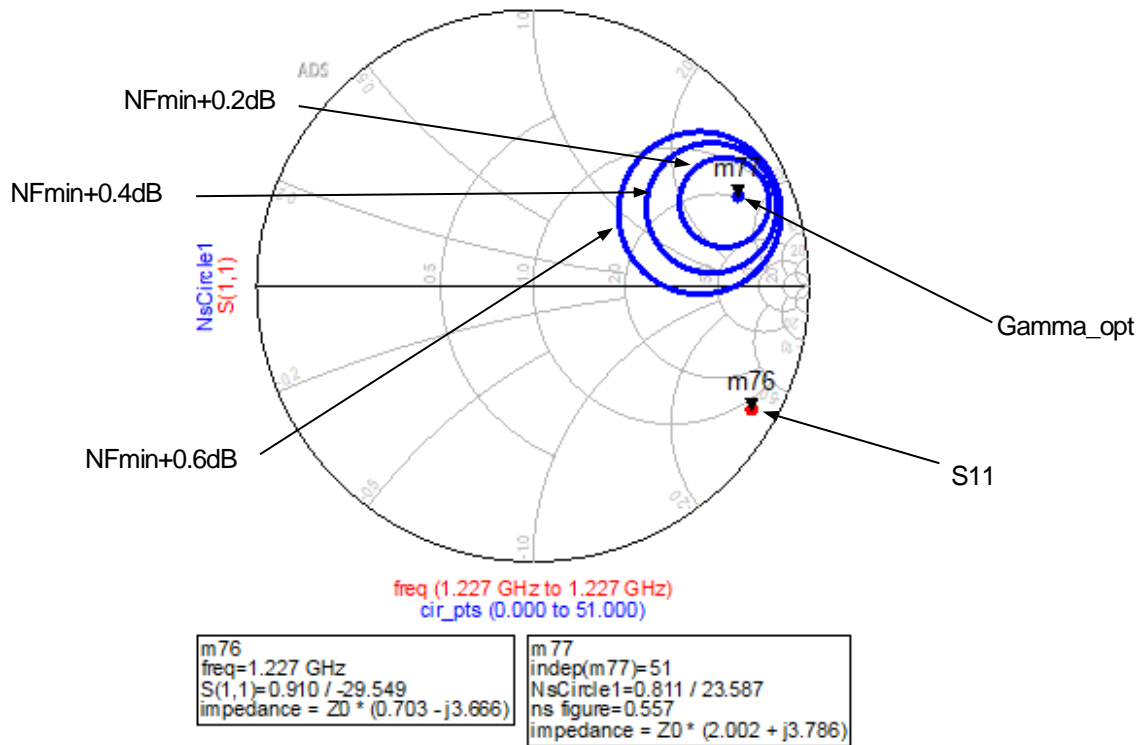


Condition: $f=1.227\text{GHz}$, $V_{DD}=1.8\text{V}$, $V_{CTL}=1.8\text{V}$, $T_a=+25^\circ\text{C}$, $Z_s=Z_l=50\text{ohm}$

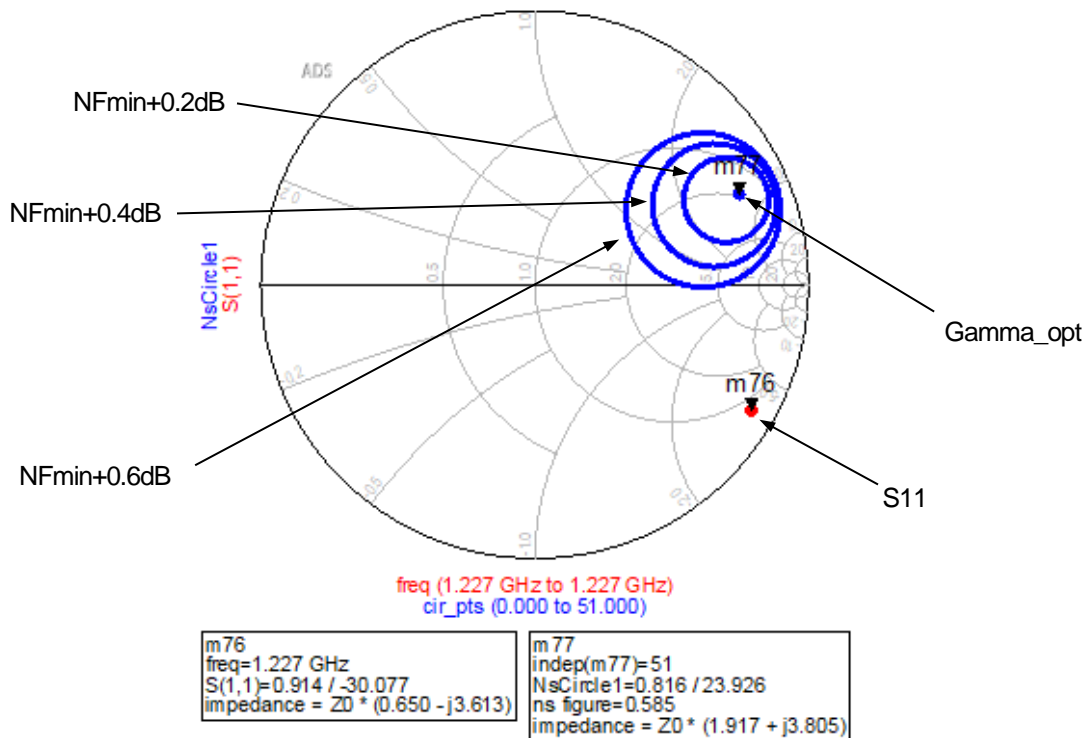


■ NF circle simulation data

Condition: $f=1.227\text{GHz}$, $V_{DD}=2.8\text{V}$, $V_{CTL}=1.8\text{V}$, $T_a=+25^\circ\text{C}$, $Z_s=Z_l=50\text{ohm}$



Condition: $f=1.227\text{GHz}$, $V_{DD}=1.8\text{V}$, $V_{CTL}=1.8\text{V}$, $T_a=+25^\circ\text{C}$, $Z_s=Z_l=50\text{ohm}$



■ **Simulation condition**

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

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

$Z_s = Z_l = 50 \text{ ohm}$

s2p file at $V_{DD}=2.8\text{V}$: NT1192FAAE1S_2r8v_v0.s2p

s2p file at $V_{DD}=1.8\text{V}$: NT1192FAAE1S_1r8v_v0.s2p

■ **Simulation circuit**

