

CryoElec 4-8GHz High Linearity

Cryogenic LNA

11/2023

LNA SN#107



Hamdi Mani
CryoElec LLC
Chandler, Arizona, USA

Phone: (626) 676 0143

Email: info@CryoElec.com hamdi.mani@gmail.com

Web: www.CryoElec.com

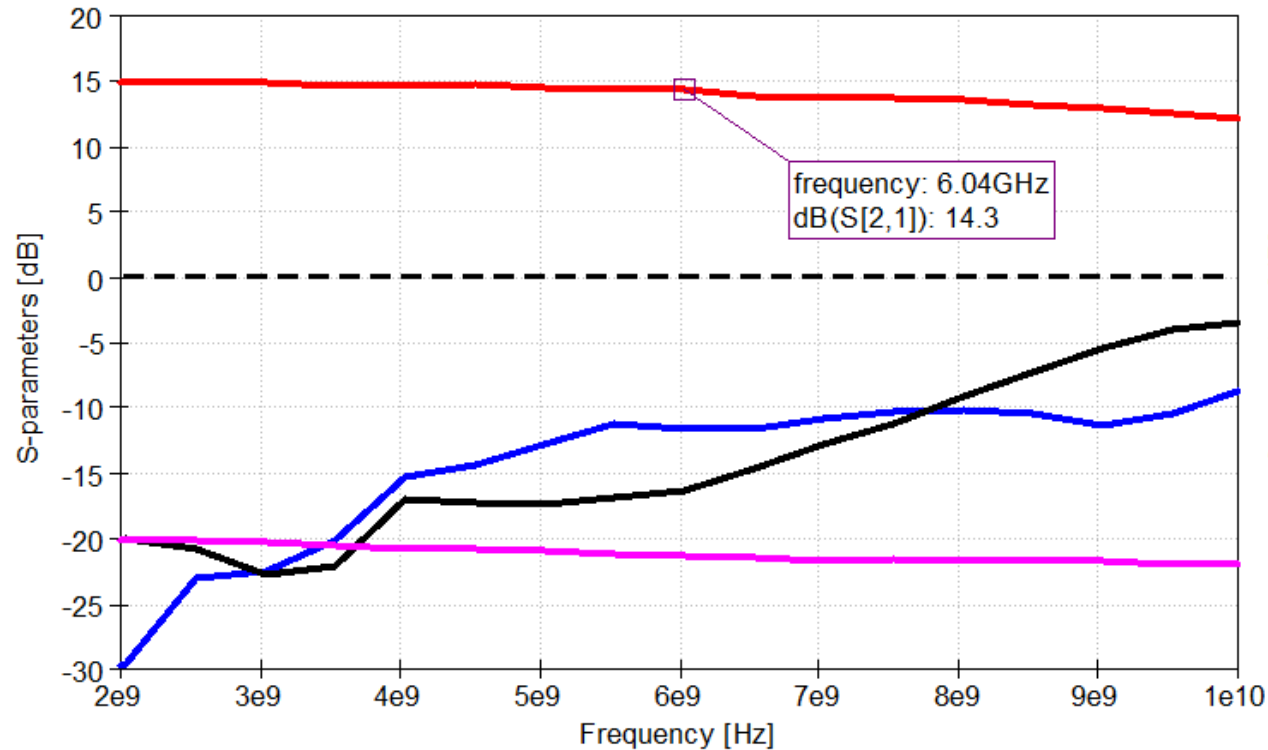
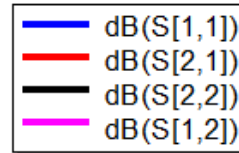
Input P1dB: -2.85dBm @ 2.5V/20mA (50mW Power Consumption)

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S-parameters at 50 Kelvin

Bias: $V_d = 2.5V$ $V_g = 0.645V$ @ $I_d = 20mA$

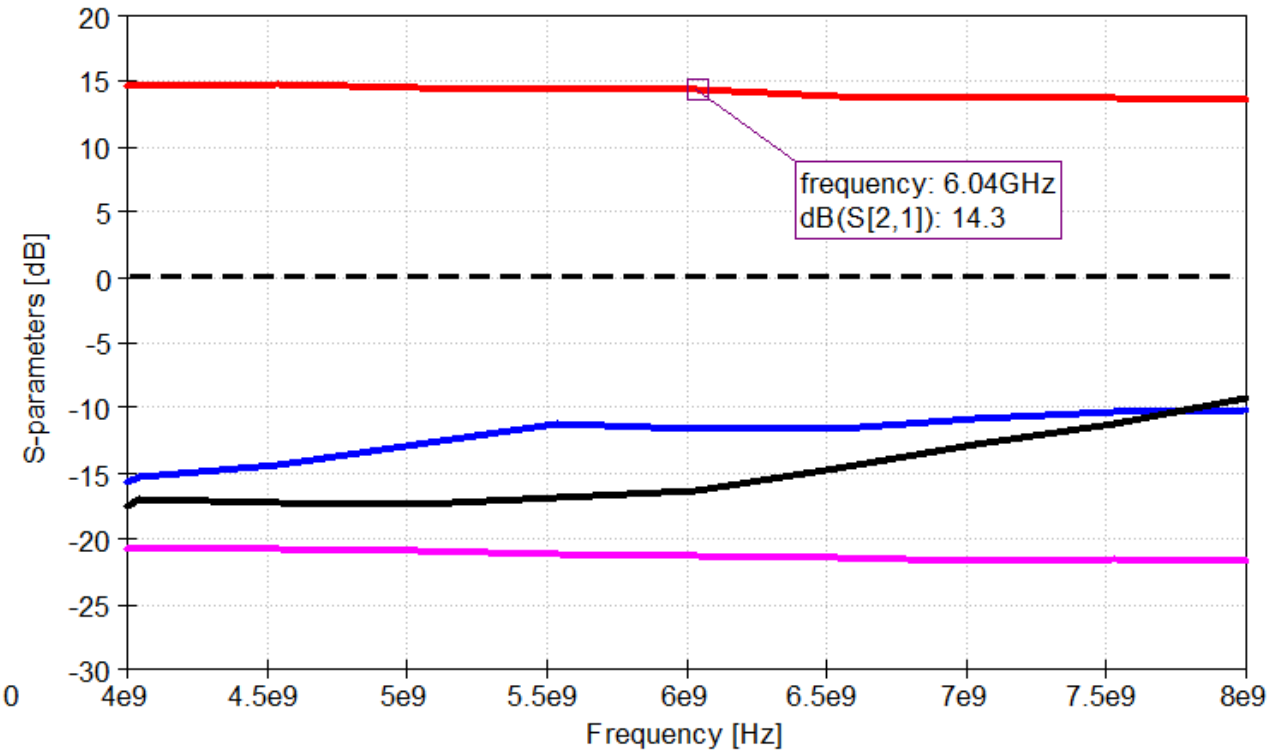
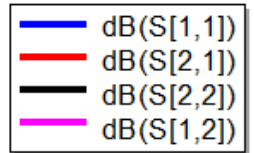


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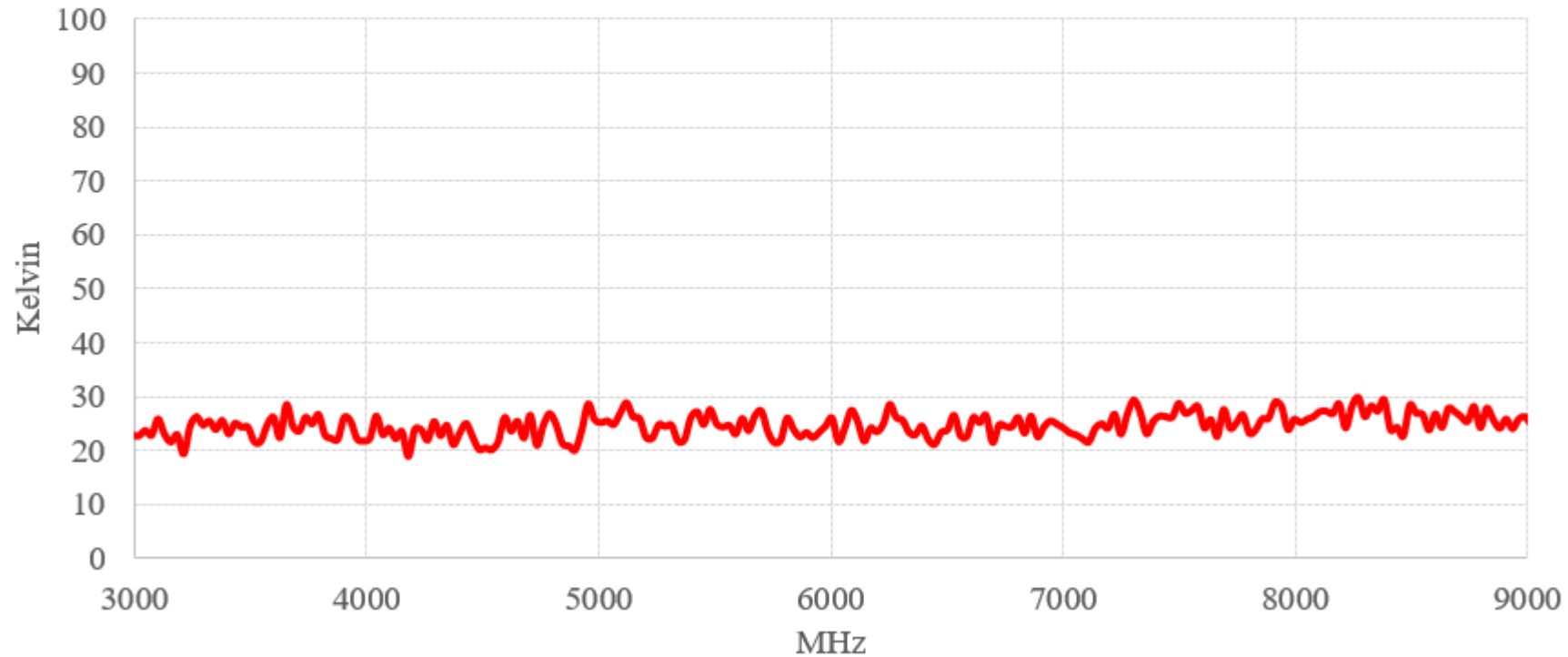
S-parameters at 50 Kelvin

Bias: $V_d = 2.5V$ $V_g = 0.645V$ @ $I_d = 20mA$



CryoElec 4-8GHz Amplifier SN#107
Noise Temperature Measurement @ 50 Kelvin
Bias: $V_d = 2.5V$ @ $I_d = 20mA$ $V_g = 0.645V$

— T DUT Corr [K]



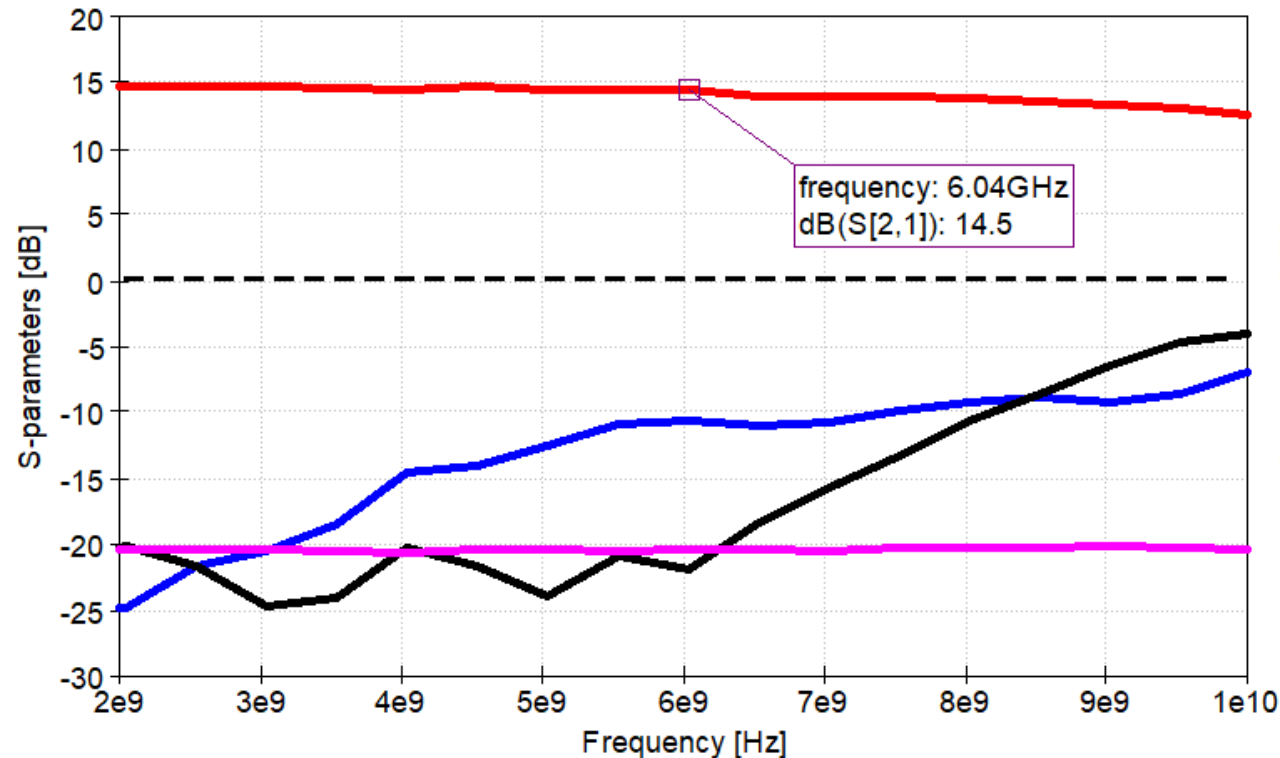
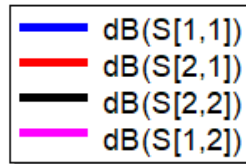
Input P1dB: -2.85dBm @ 2.5V/20mA (50mW Power Consumption)

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S-parameters at 20 Kelvin

Bias: $V_d = 2.5V$ $V_g = 0.645V$ @ $I_d = 20mA$

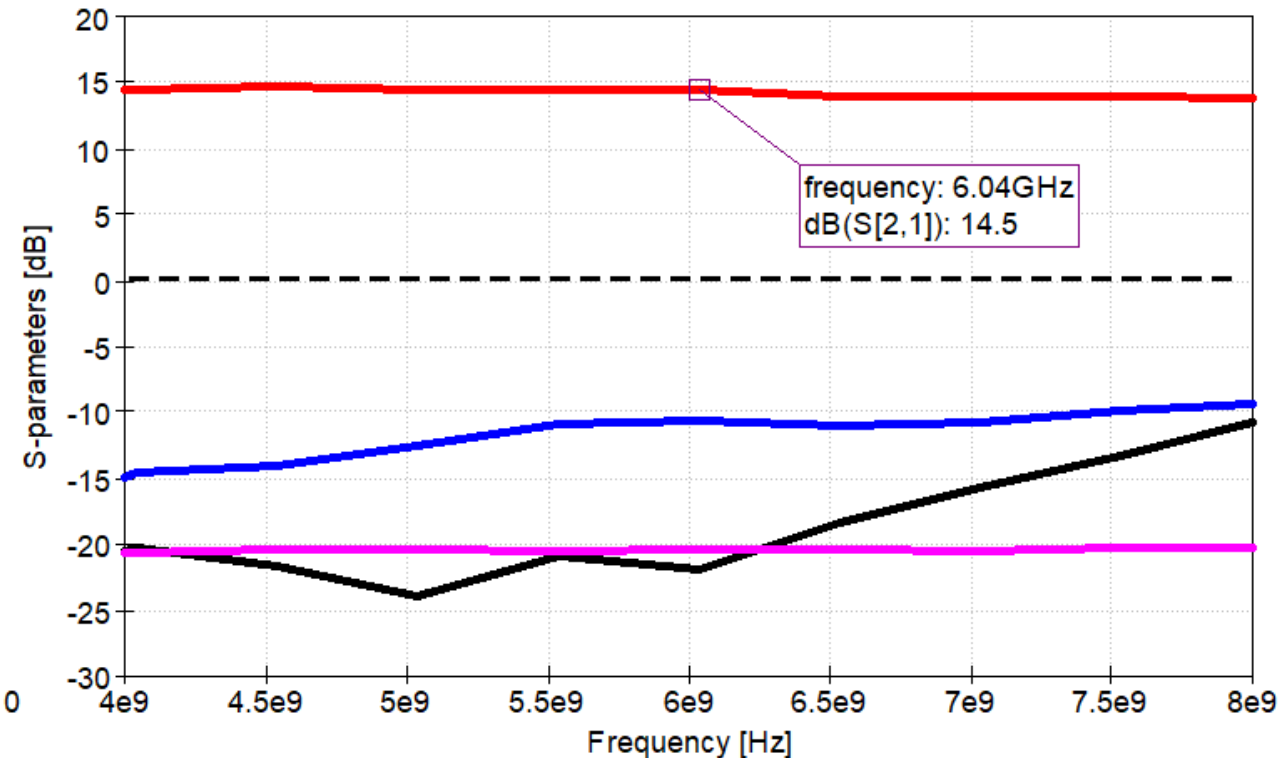
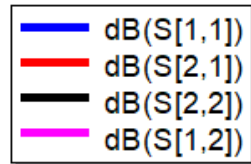


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S-parameters at 20 Kelvin

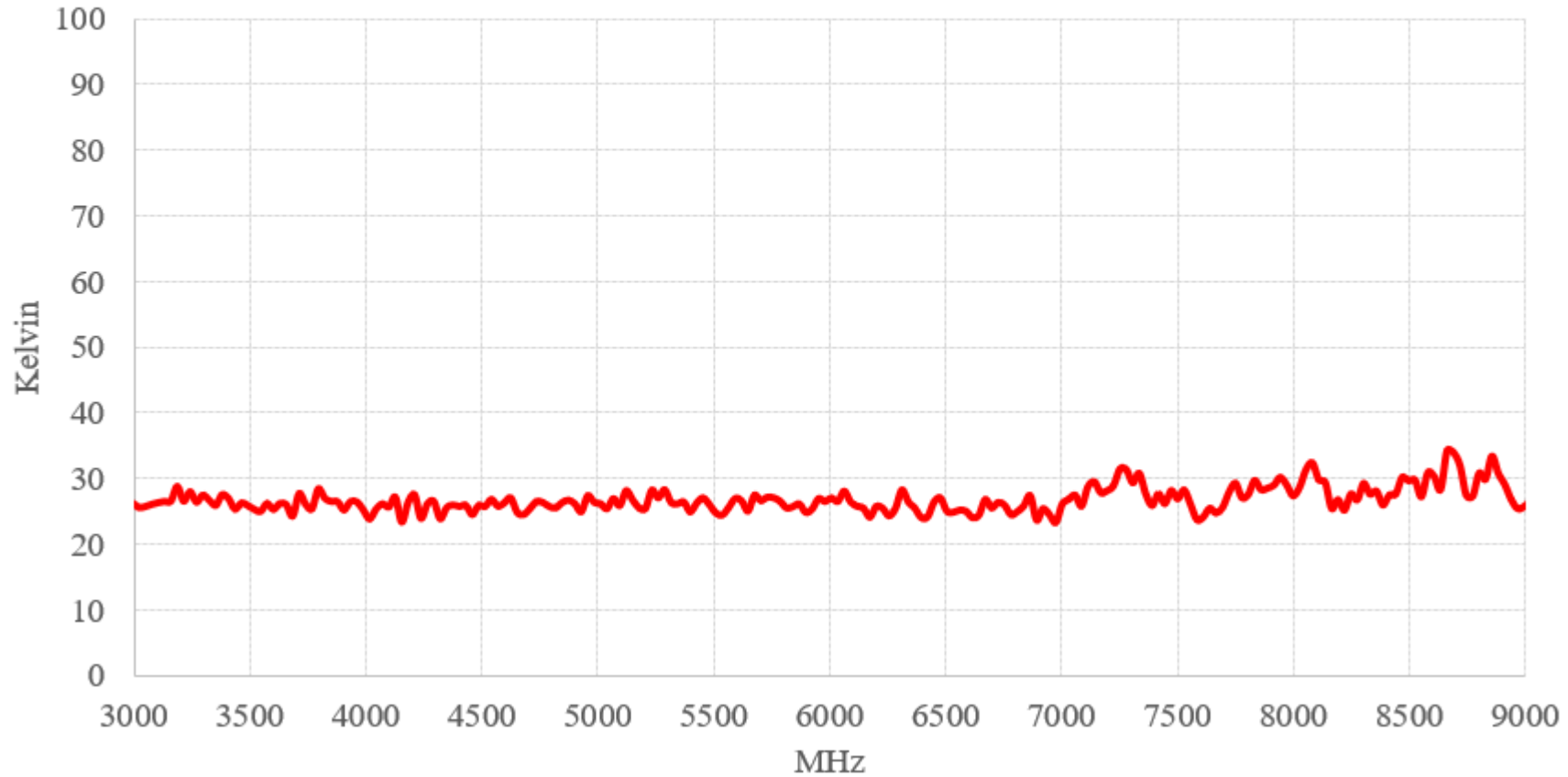
Bias: $V_d = 2.5V$ $V_g = 0.645V$ @ $I_d = 20mA$



Noise Temperature @ 20 Kelvin

CryoElec 4-8GHz Amplifier SN#107
Noise Temperature Measurement @ 20 Kelvin
Bias: $V_d = 2.5V$ @ $I_d = 20mA$ $V_g = 0.645 V$

— T DUT Corr [K]



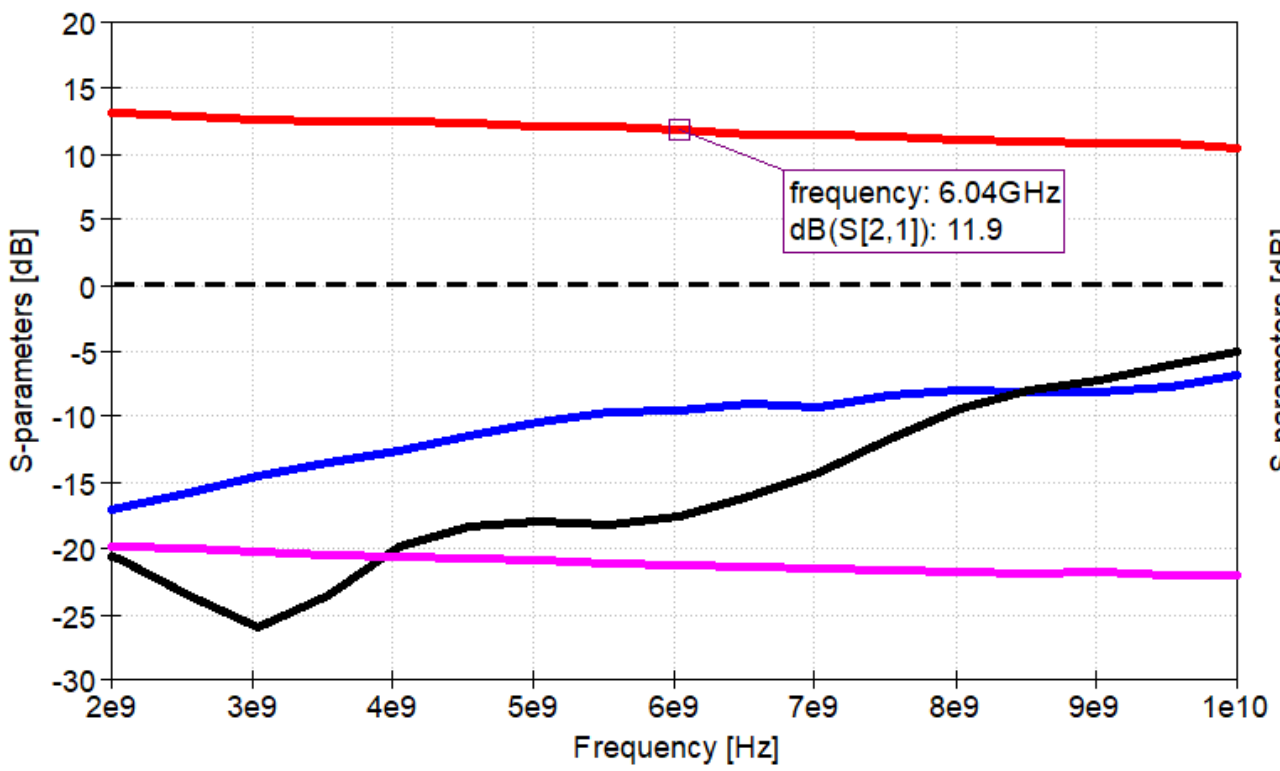
Input P1dB: -2.4dBm @ 2.5V/20mA (50mW Power Consumption)

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S-parameters at 300 Kelvin

Bias: Vd = 2.5V Vg = 0.61 V @ Id = 20mA

- dB(S[1,1])
- dB(S[2,1])
- dB(S[2,2])
- dB(S[1,2])

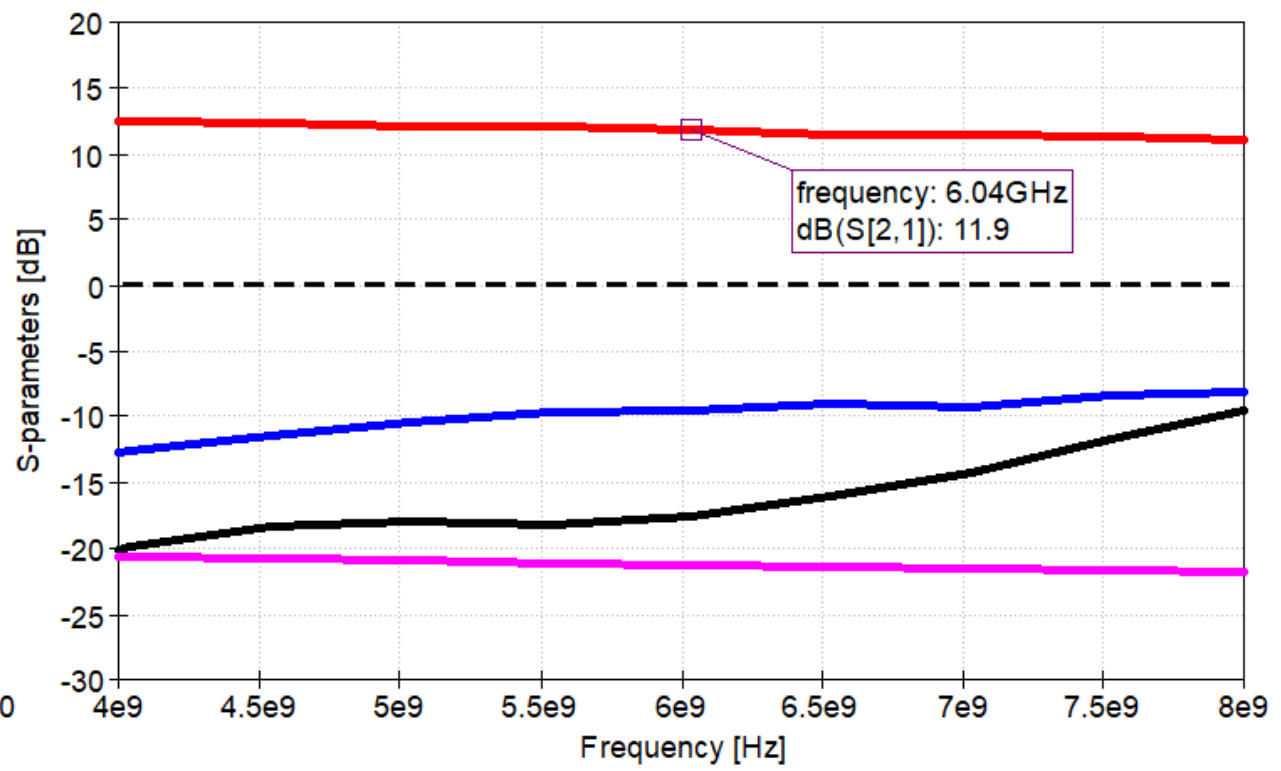


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S-parameters at 300 Kelvin

Bias: Vd = 2.5V Vg = 0.61 V @ Id = 20mA

- dB(S[1,1])
- dB(S[2,1])
- dB(S[2,2])
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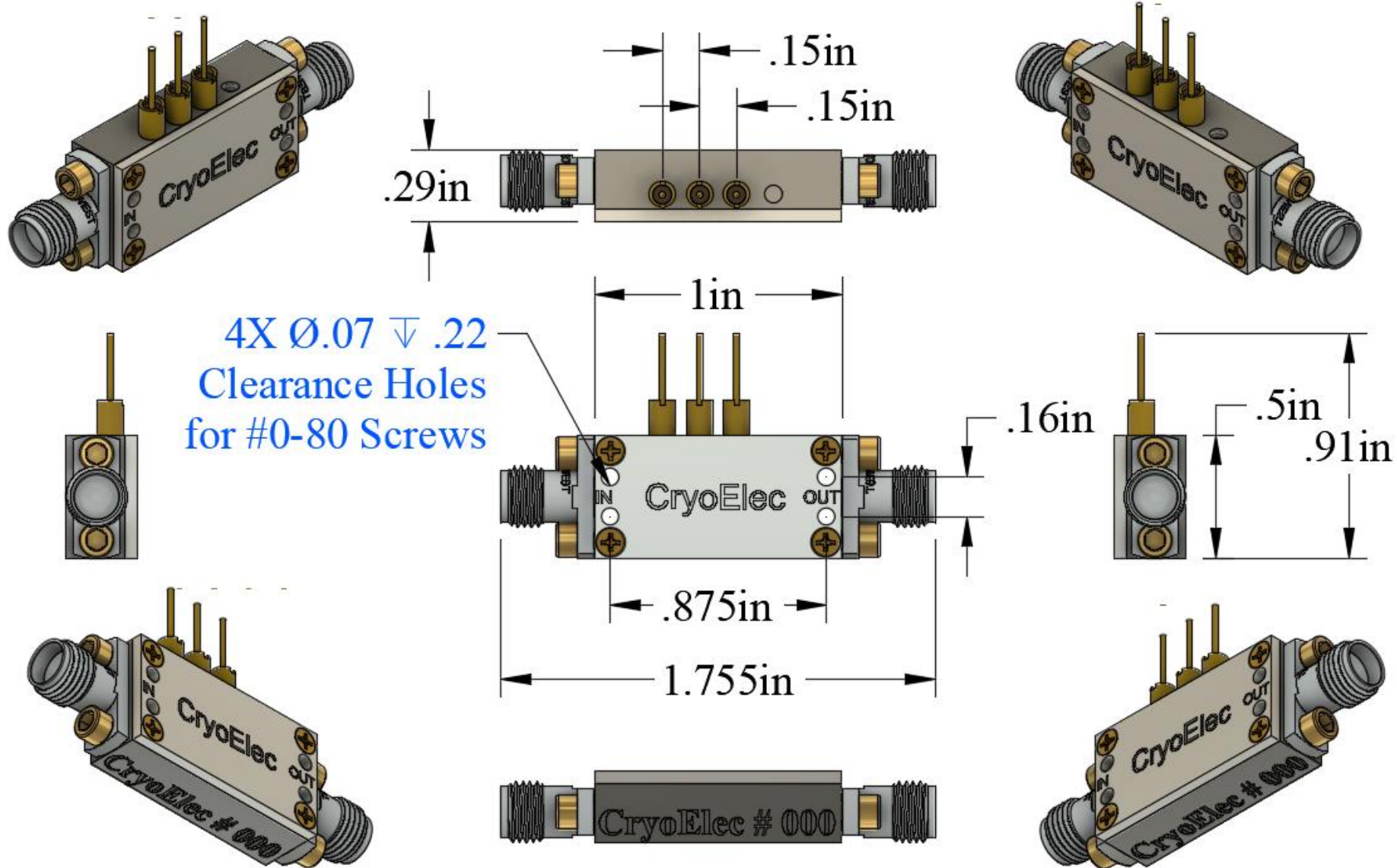
Key Features of the LNA

- Ultra Flat Gain on the 4-8GHz Bandwidth
- High linearity cryogenic LNA with an input P1dB of about -1dBm at 50mW power consumption
- (Higher P1dB at higher bias voltage/current)
- Input IP3 is at least 10dB higher than the P1dB point
- LNA useable on the entire wide bandwidth: 1-14GHz
- LNA can be used at wide range of temperatures: from 300K down to 4 Kelvin
- LNA is impedance matched at the input and output: $|S_{11}|$ and $|S_{22}|$ are both $< -10\text{dB}$ over the band
- The LNA is unconditionally stable on the 1-10GHz band
- No Negative gate voltages is required, only 2 x constant positive bias voltages needed (V_d and V_g)
- ESD Robust design
- RFI tight chassis
- Field replaceable Input and Output SMA connectors
- Compact and light weight Aluminum Package: 1x0.5x0.3in

Maximum Ratings

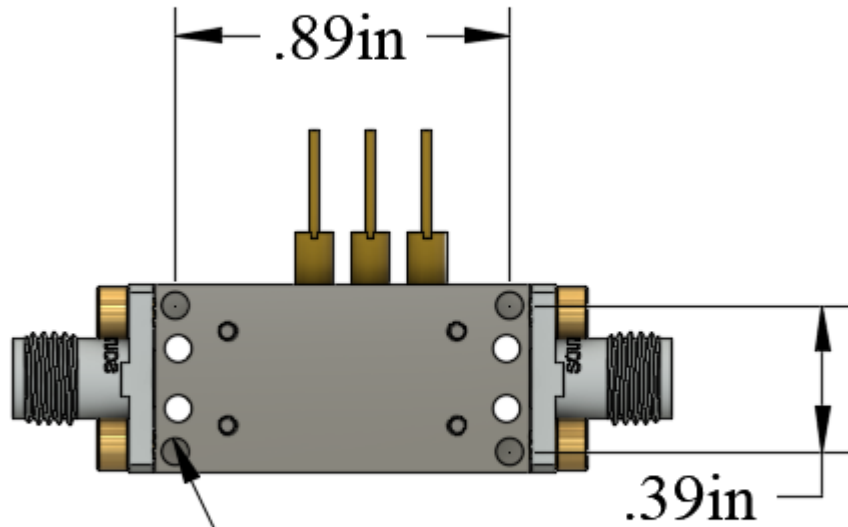
- Maximum input / Output signal power: +13dBm
- Maximum DC Bias Voltages: +5V
- Maximum Storage and Operating Temperature: 140 C / 280 F
- Maximum torque on SMA connectors: 5 in-lb (56 N-cm)

Mechanical Drawing

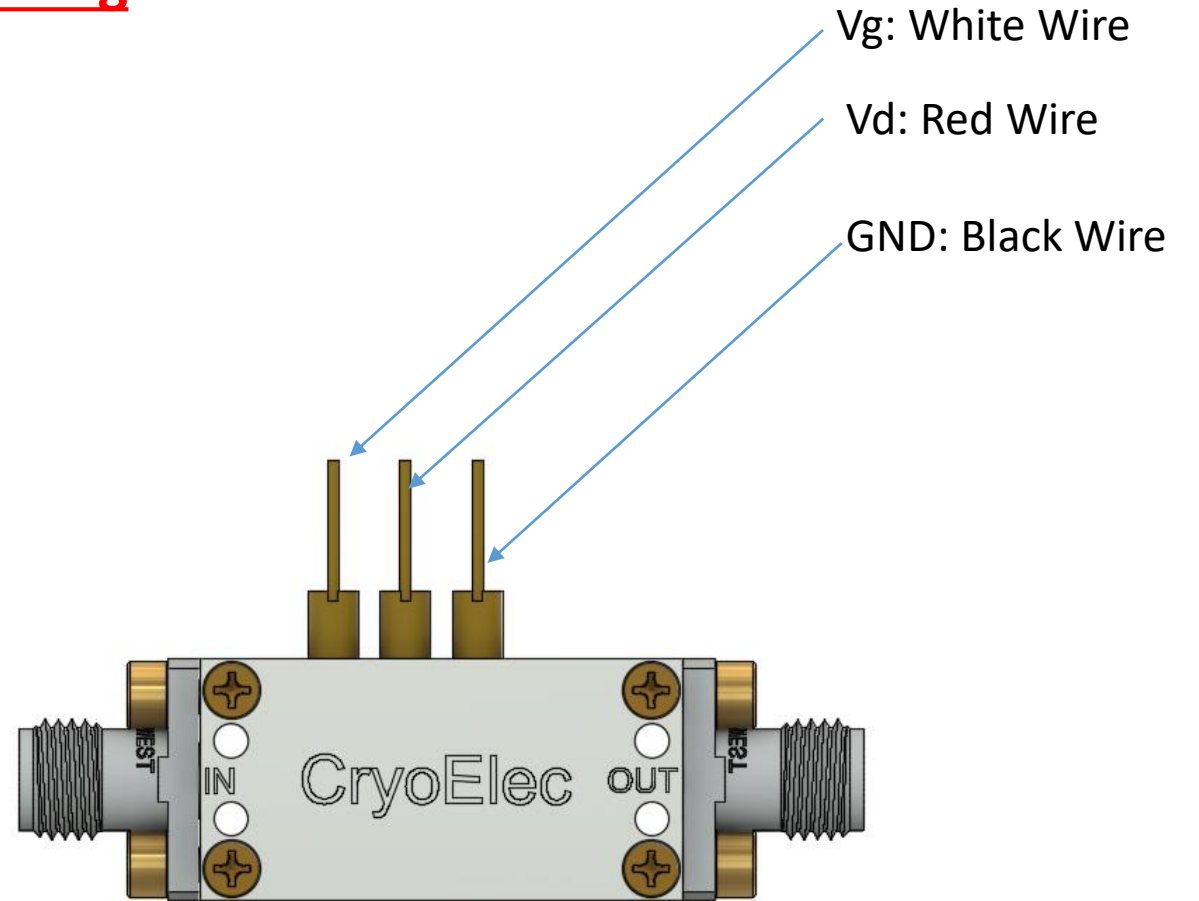


Mechanical Drawing

Bottom View /
Mounting Holes



4 X Tapped Holes
#2-56 $\frac{1}{16}$ " Deep





Contact Information

Hamdi Mani
Engineer
CryoElec LLC

Chandler, Arizona 85225
Phone: 626-676-0143

www.CryoElec.com

Info@CryoElec.com

Hamdi.mani@gmail.com