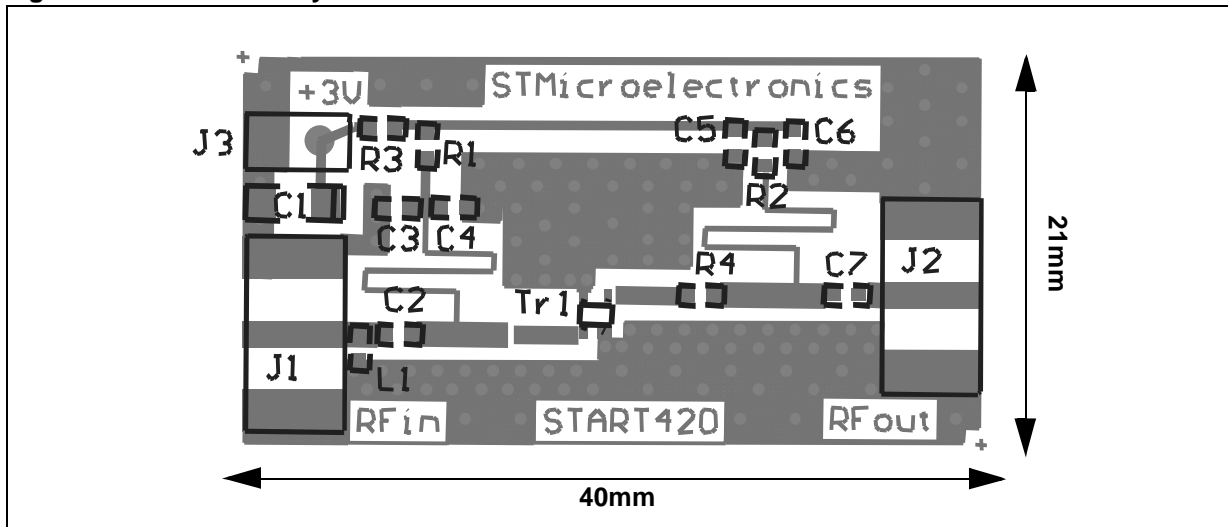




## AN1438 - APPLICATION NOTE

This amplifier is realized with a microstrip line as matching elements and a small number of surface-mount components. A single pin ( $V_{CC}=3V$ ) for voltage supply is used. A  $1\mu F$  bypass capacitor to filter the supply at the common  $V_{CC}$  node is also used. The transistor's base is connected to the power supply through a choke inductor (microstrip line TrL3) and the transistor's collector is connected to the voltage supply through a choke inductor (microstrip line TrL4). The collector's voltage is 2V. The input matching is realized with a 60 Ohm series transmission line of  $15^\circ$  electrical length (TrL1). The L1 inductor is used to reduce the Noise Figure value. The output matching is realized with both a resistor (R4) chip-inductor (L1) and a 60 Ohm series transmission line of  $16^\circ$  electrical length (TrL2). Resistor (R2) is used to improve RF circuit stability.

**Figure 2: Demoboard Layout**



**Table 1: Bill of Materials**

Component	Value	Unit	Size
R1	47	$K\Omega$	0603
R2	15	$\Omega$	0603
R3	180	$\Omega$	0603
R4	10	$\Omega$	
C1	1	$\mu F$	0603
C2	4	pF	0603
C3	100	pF	0603
C4	10	nF	0603
C5	100	pF	0603
C6	10	nF	0603
C7	10	pF	0603
L1	8.2	nH	0603
Tr1			SOT-343
TrL1			
TrL2			
TrL3			
TrL4			
TrL5			
TrL6			
J1			
J2			
J3			

3. LNA PERFORMANCE.

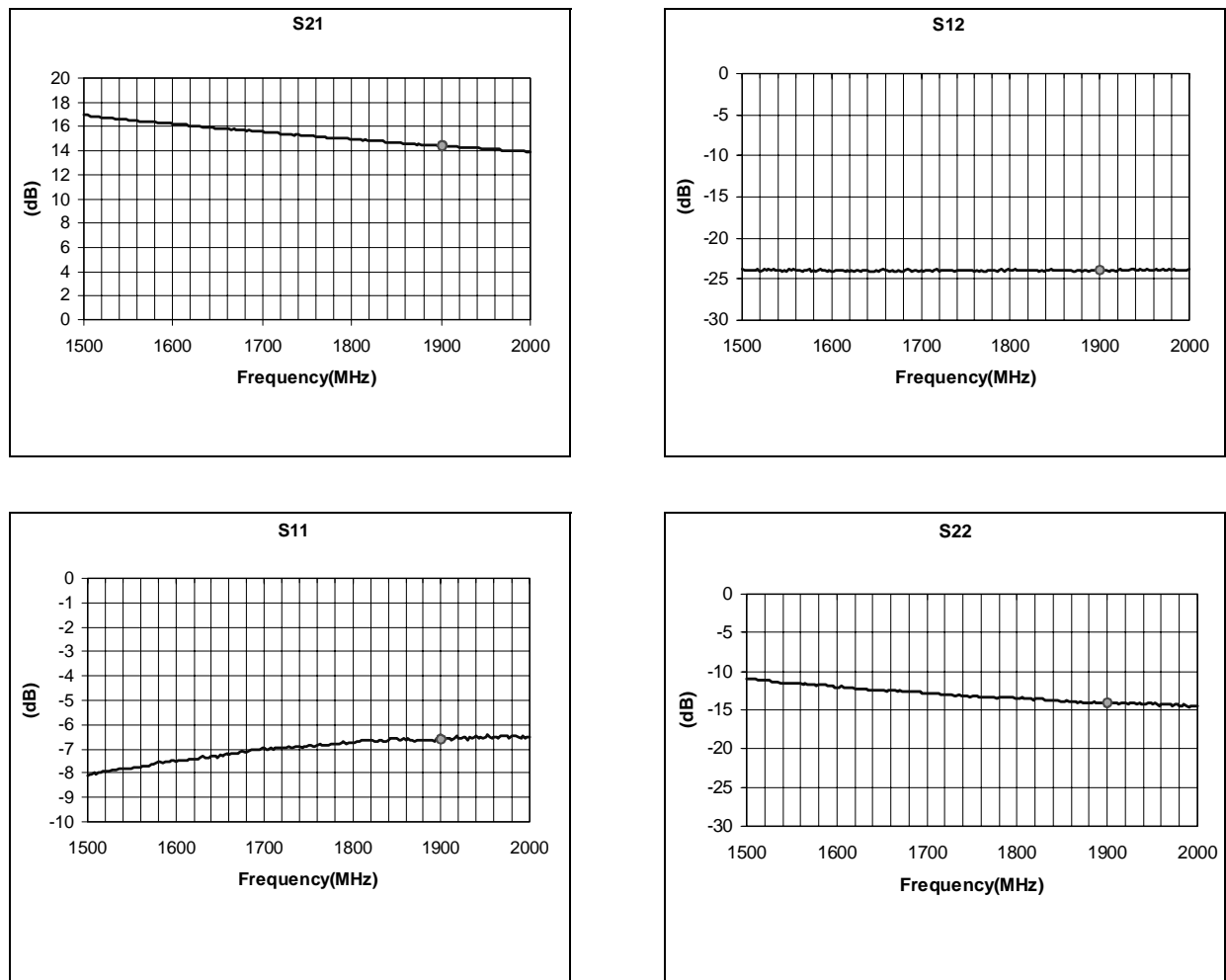
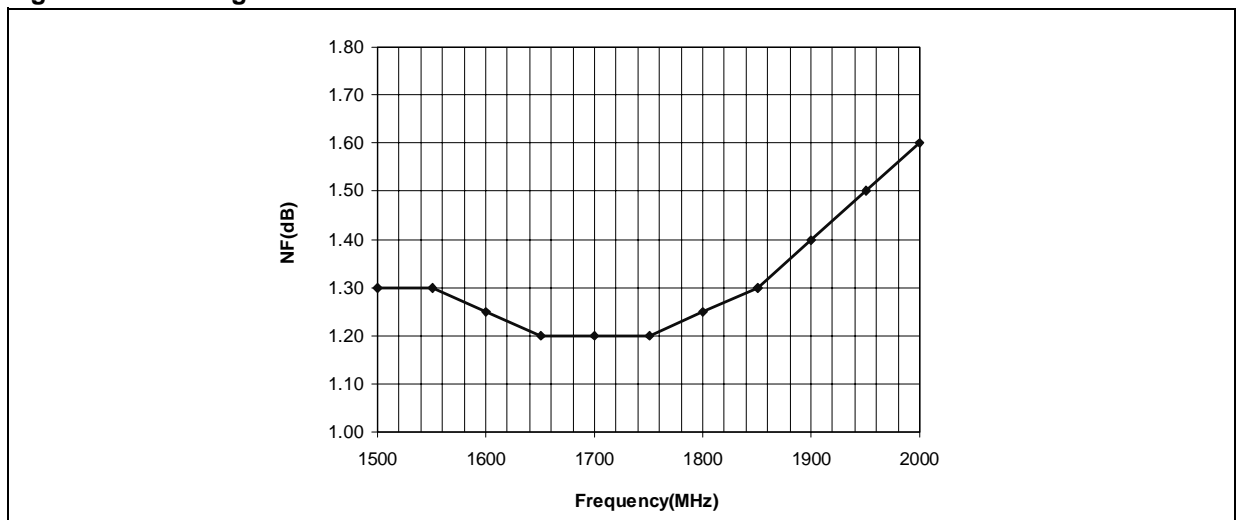


Figure 3: Noise Figure



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