

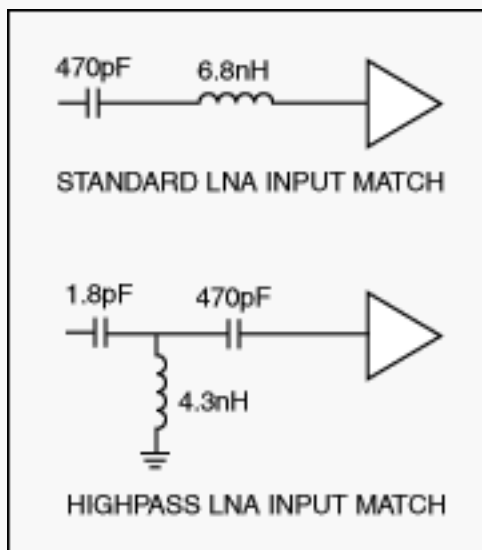
APPLICATION NOTE 4286

Providing Additional Low-Frequency Rejection with the MAX2659 GSP Low-Noise Amplifier (LNA)

Abstract: This application note explains how to achieve additional immunity to GPS and cellular band signals when GPS is included in a wireless handset. Additional low-frequency rejection can be added to the design by altering the MAX2659 low-noise amplifier's (LNA) input match. The article explains how to adjust the LNA topology, and advises what performance tradeoffs to expect.

GPS receivers are increasingly included in wireless handsets. This collocation with the handset's transmitter can present a strong jamming signal at the LNA input in the GSP path. It is possible to achieve additional immunity to GSM and cellular band signals, if the [MAX2659](#) low-noise amplifier (LNA) is used in the design. One simply needs to alter the LNA's input match from the standard match referenced in the data sheet. By adding one additional component, the input match can be changed from a lowpass topology to a highpass topology to knock down the GSM or cellular signals. The extra low-band rejection provided by the new match comes at a tradeoff of gain and noise figure.

The matching network listed below offers an additional 10dB of attenuation at the upper end of the E-GSM-900 band. The noise figure only degrades by 0.1dB and gain decreases by 0.3dB.



Match	In-Band Gain (dB)	Noise Figure (dB)	915MHz Suppression Relative to In-Band (dB)	849MHz Suppression Relative to In-Band (dB)
Standard	20.5	0.8	11.6	13.3
Highpass	20.2	0.9	21.6	25.0

Application note 4286: www.maxim-ic.com/an4286

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