

Application Note

Splatch® SP610 Antenna Performance Optimization for Cellular Band 71 (617 MHz to 698 MHz)

This application note presents recommendations to extend performance of the SP610 antenna into cellular band 71 (617 MHz to 698 MHz) and L-bands (1427 MHz to 1667 MHz) on the recommended ground plane size of 102 mm x 45 mm by using the matching network components shown in Table 1.

The Linx Splatch® SP610 embedded antenna is a 1/4-wave monopole antenna which requires a ground plane on the printed circuit board (PCB) to which it is mounted. Linx recommends a 102 mm x 45 mm or larger ground plane and provision for a three-component matching network.

Refer to the ANT-LTE-SP610 datasheet for other design requirements.

To tune the SP610 antenna for cellular band 71, only two of the matching network positions are occupied, C1 and L1. Note that the performance data shown relates to use of this matching on the Linx SP610 evaluation board, AEK-SP610. Performance in user-designed circuits will vary. However, the component data in Table 1 provides a starting point. Contact Linx directly for support on custom designs.

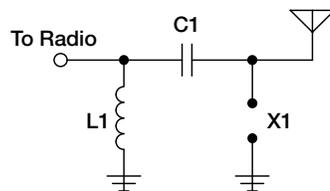


Figure 1. Matching Circuit Diagram

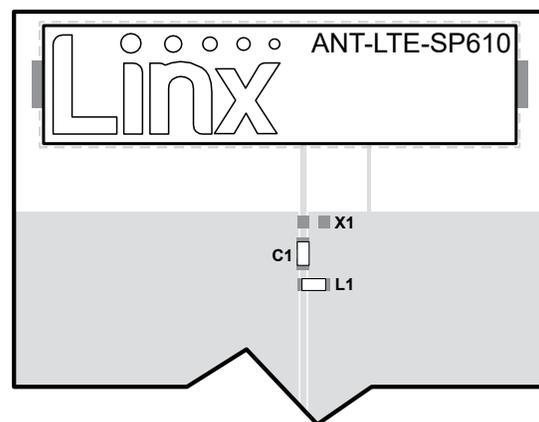


Figure 2. SP610 PCB Layout

Table 1. Matching Network Components

Component	Value	Unit
L1 (Inductor)	8.2	nH
C1 (Capacitor)	9.1	pF
X1	Not used. Do not populate	-

Performance Data with Matching Components

The 102 mm x 45 mm ground plane is the recommended minimum size for the SP610 and is the size used for the SP610 evaluation board (Linx p/n AEK-SP610). VSWR data for this ground plane is measured data and is shown in Figure 3.

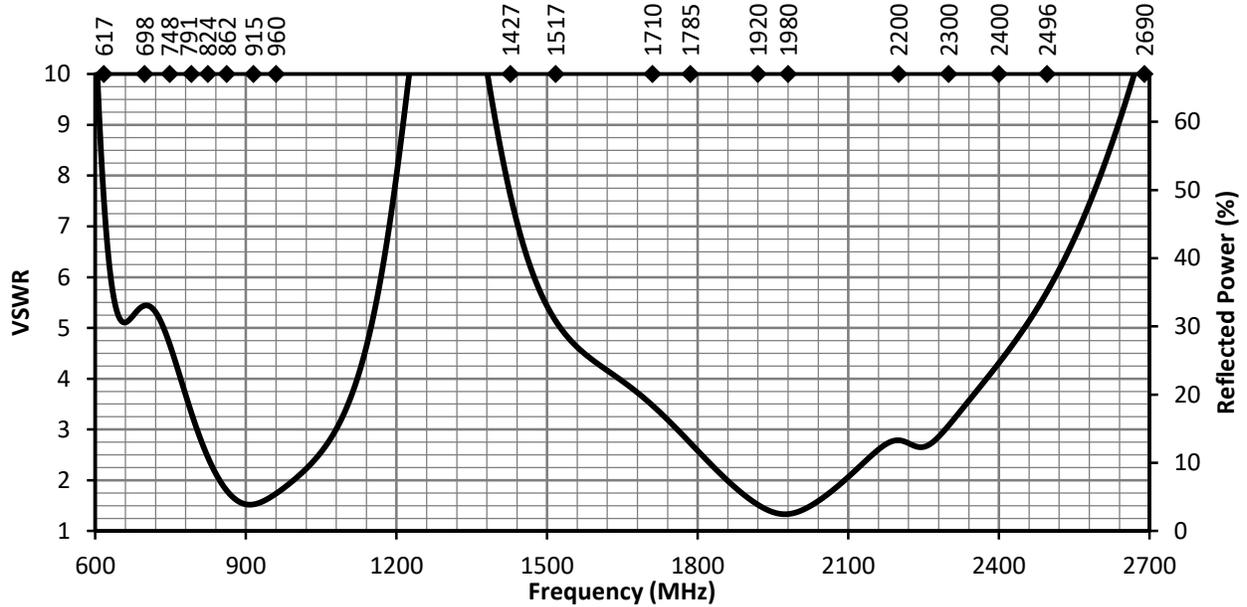


Figure 3. ANT-LTE-SP610 Antenna VSWR

Return Loss with Matching Components

The return loss for the SP610 on the PCB using the recommended matching components.

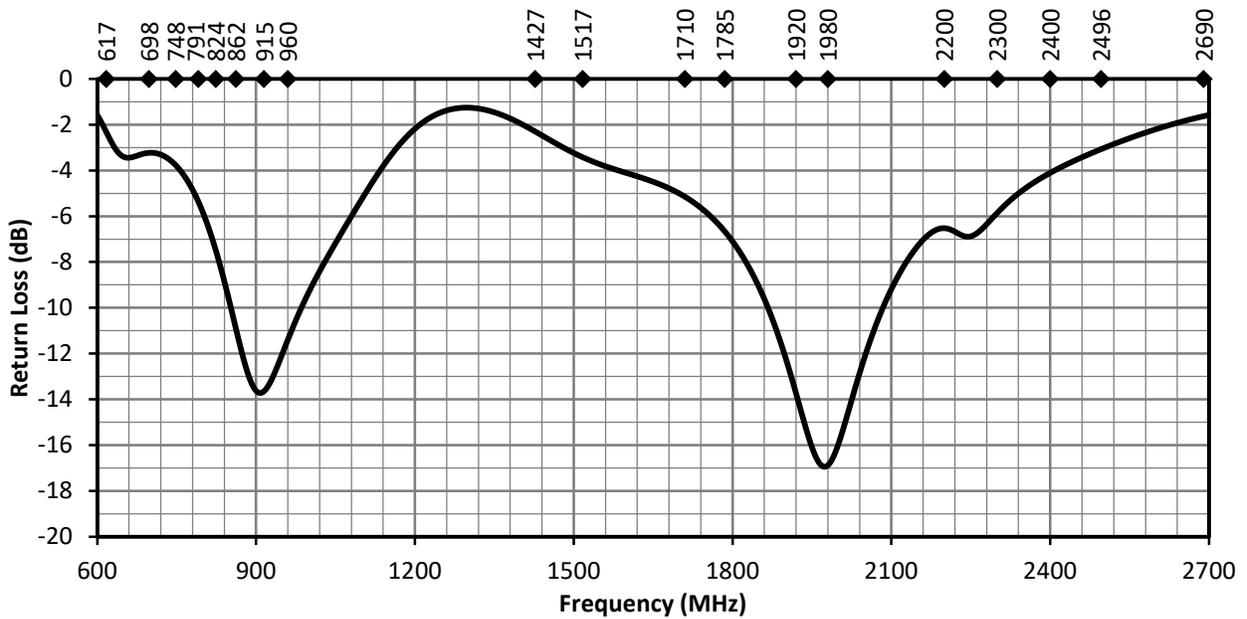


Figure 4. ANT-LTE-SP610 Simulated Return Loss

Peak Gain with Matching Components

Peak gain is shown in Figure 5 for the SP610 on the PCB ground plane and layout using the recommended matching components.

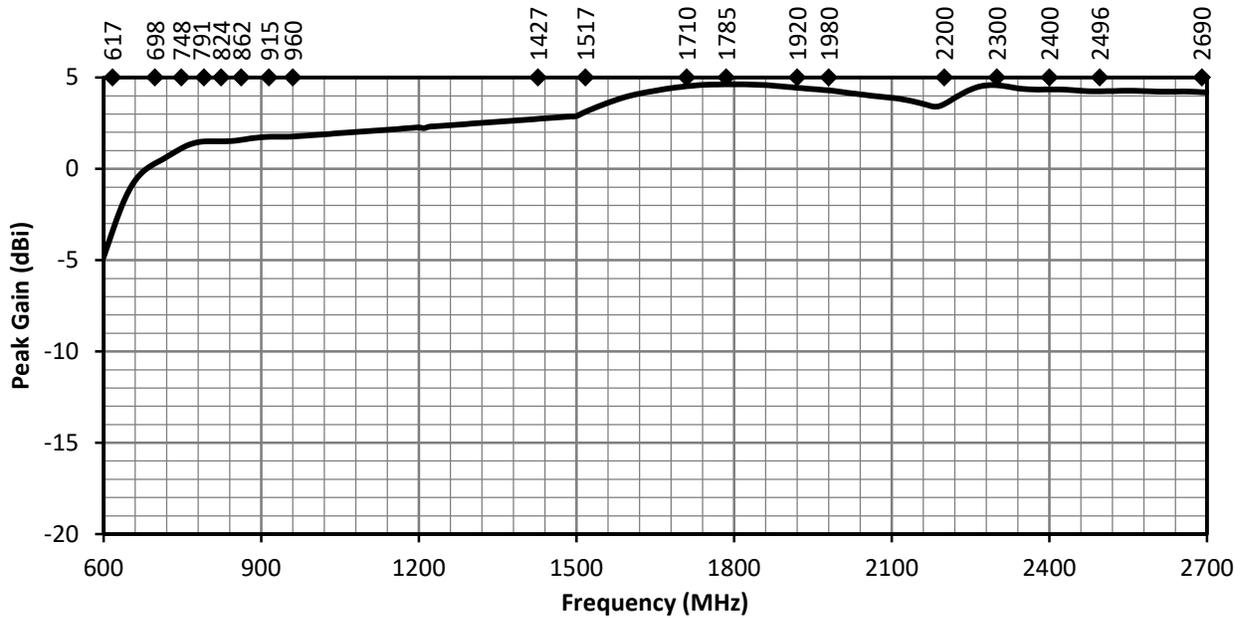


Figure 5. ANT-LTE-SP610 Simulated Antenna Peak Gain

Efficiency with Matching Components

Efficiency for the SP610 on the PCB ground plane and layout using the recommended matching components is shown in Figure 6.

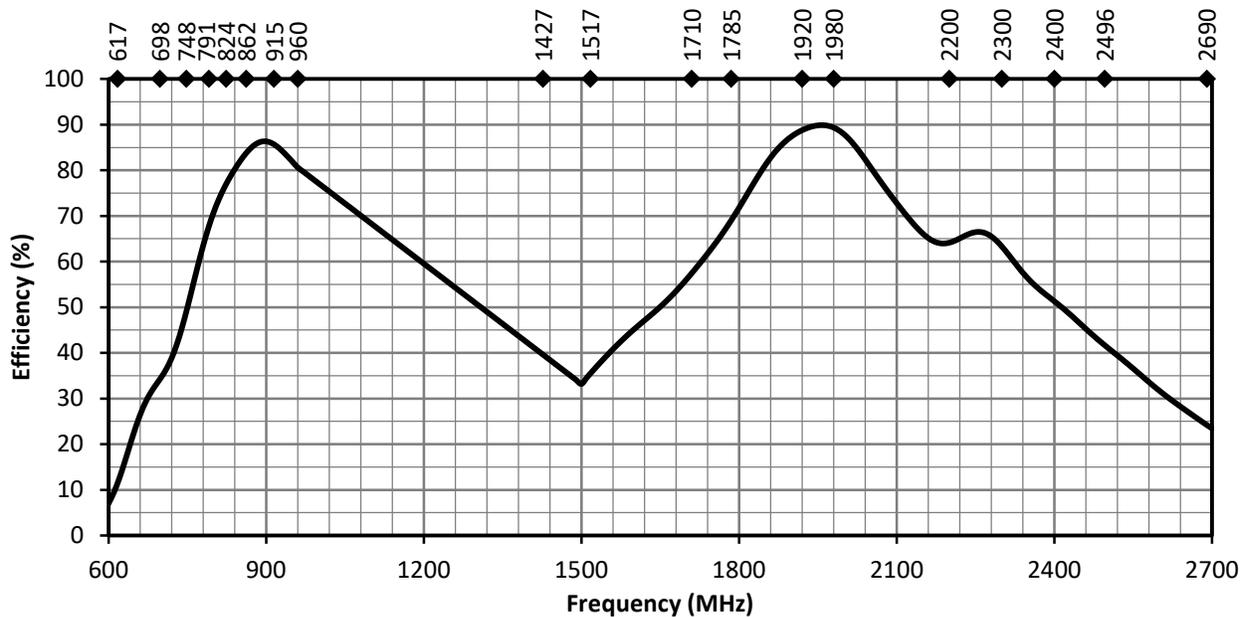


Figure 6. ANT-LTE-SP610 Simulated Antenna Efficiency

TE TECHNICAL SUPPORT CENTER

USA:	+1 (800) 522-6752
Canada:	+1 (905) 475-6222
Mexico:	+52 (0) 55-1106-0800
Latin/S. America:	+54 (0) 11-4733-2200
Germany:	+49 (0) 6251-133-1999
UK:	+44 (0) 800-267666
France:	+33 (0) 1-3420-8686
Netherlands:	+31 (0) 73-6246-999
China:	+86 (0) 400-820-6015

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