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APN Content Level	BASIC	INTERMEDIATE	✓	ADVANCED	Confidentiality	Public	✓	Private	
Hardware Compatibility	Product Line	AirPrime	Series	BC127					
Software Compatibility	ALL			Document Type	Application Note	Technical Note		✓	



1 Version

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2 Introduction

This document is provided to Sierra Wireless distributors and clients to aid more rapid development of embedded applications using the Sierra Wireless portfolio of cellular solutions. To request a new technical note, contact your regional Sierra Wireless Product Marketing Manager.

3 Technical Note Description

This document describes the steps needed to rework the AirPrime BC127 and set it up for conducted RF tests.

4 Preparing the AirPrime BC127 for Conducted RF Tests

To connect to the 50Ω trace on the AirPrime BC127, the antenna matching components on the module should be removed.



Figure 1. Remove both 0402 Components on the Module

Although the antenna itself can also be removed, it is not necessary to do so.

The following figures shows the matching antenna components, the location of local ground connections and the 50Ω pad on the module.

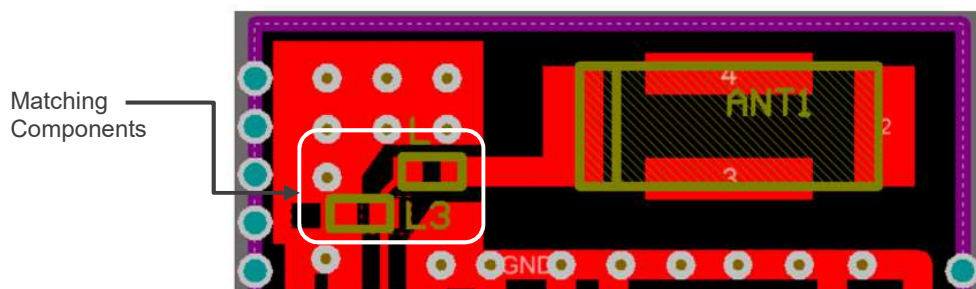


Figure 2. Matching Antenna Components

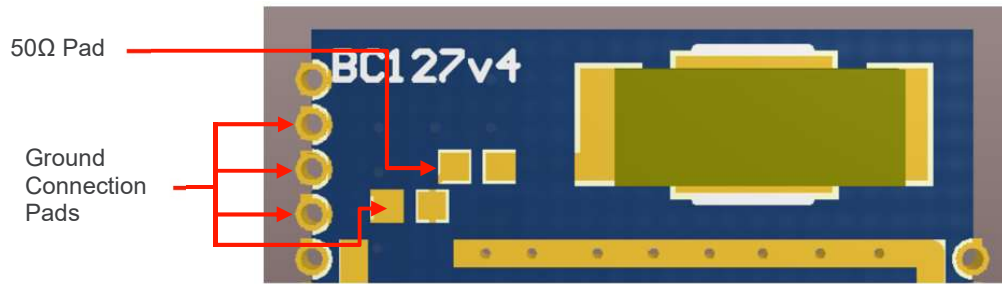


Figure 3. Local Ground Connections and 50Ω Pad

Once the matching components are removed, a semi-rigid 50Ω cable or a U.FL coaxial connector can be soldered to the RF trace to provide a 50Ω connection to the tester.

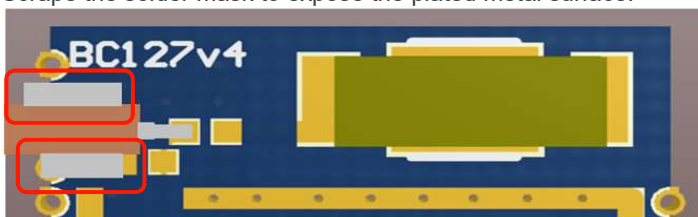
5 Connecting with a Semi-Rigid Cable

Connecting with a semi-rigid cable can either be done horizontally or vertically; a horizontal orientation is preferred as the semi-rigid sleeve can be soldered to the half via ground pins on the module.

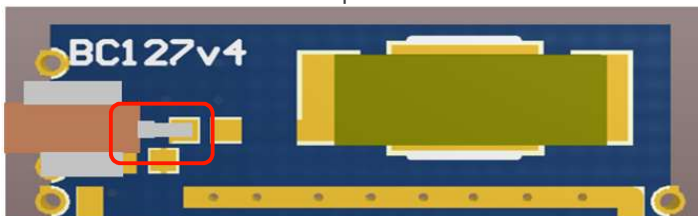
Ensure a good solder connection to the semi-rigid sleeve for both good RF connectivity and mechanical robustness.

5.1 Horizontal Connection

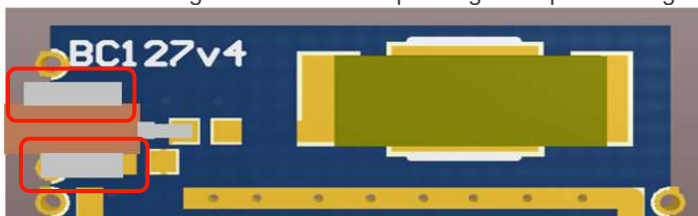
1. Scrape the solder mask to expose the plated metal surface.



2. Solder the center contact to the pad.

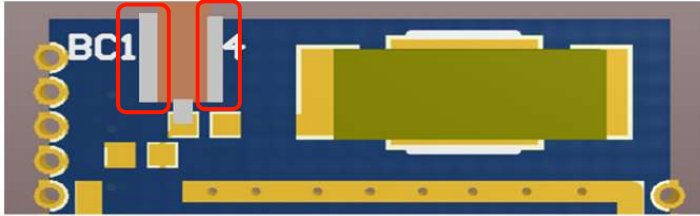


3. Solder the semi-rigid sleeve to the exposed ground plane and ground pin vias.

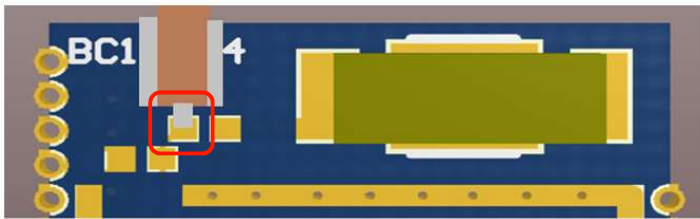


5.2 Vertical Connection

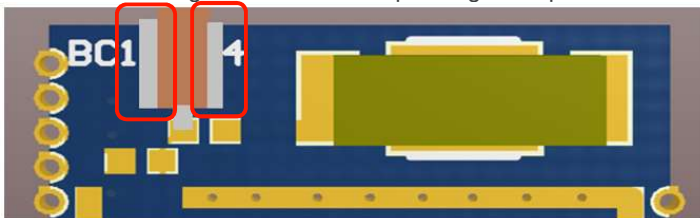
1. Scrape the solder mask to expose the plated metal surface.



2. Solder the center contact to the pad.



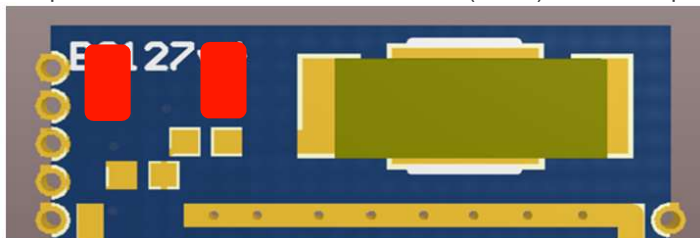
3. Solder the semi-rigid sleeve to the exposed ground plane.



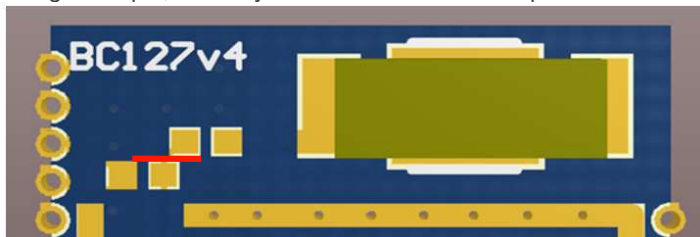
6 Connecting with a U.FL Connector

Follow these steps to connect the module to an RF tester using a U.FL connector.

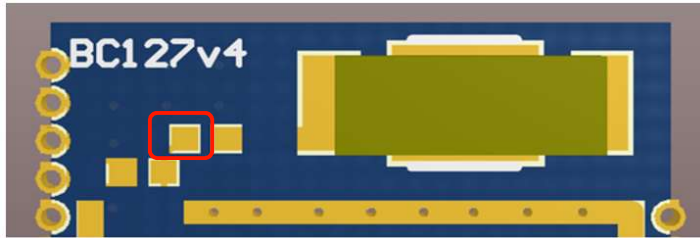
1. Scrape the solder mask in the areas shown (in red) below to expose the plated metal.



2. Using a scalpel, carefully cut the 50Ω trace at the point shown below.

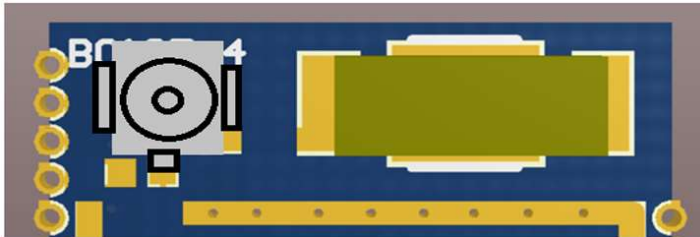


3. Peel off the SMT pad for L1.

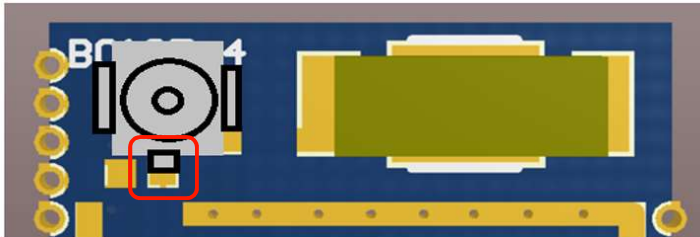


This leaves the L3 solder pad to attach the U.FL RF tab to.

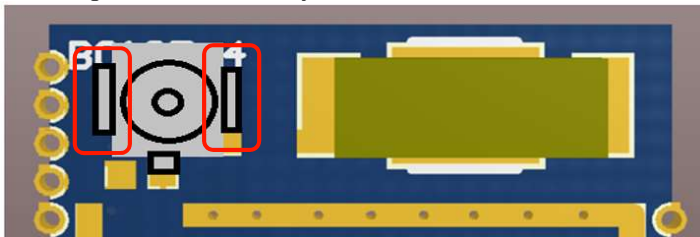
4. Place the U.FL coaxial connector.



5. Solder the center contact to the PCB pad.



6. Solder the ground contacts to the PCB. Ensure a good solder connection to the ground tabs on the U.FL connector for both good RF connectivity and mechanical robustness.



The following figure shows an AirPrime BC127 that has been fitted with a U.FL connector.

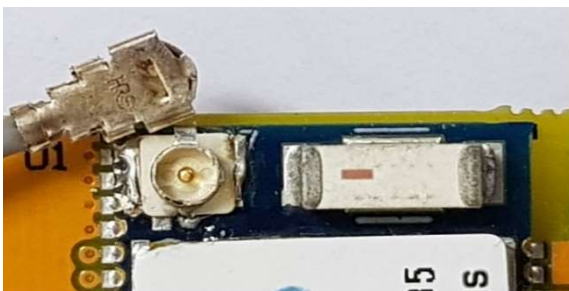


Figure 4. AirPrime BC127 Refitted with a U.FL Connector

7 Support

For direct clients: contact your Sierra Wireless FAE

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8 Document History

Level	Date	History
1.0	July 31, 2017	Creation

9 Legal Notice

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