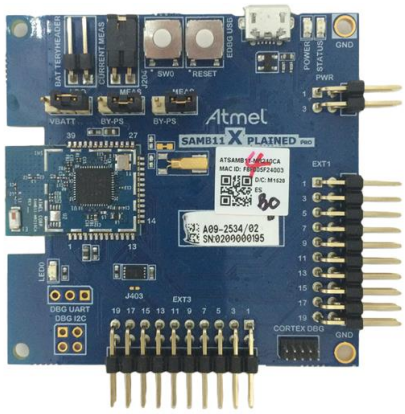
ATSAMB11 BluSDK SMART

Wireless Composer

USER GUIDE



Introduction

This document describes how to establish a setup to perform TX and RX tests by using the Direct Test mode between two Atmel® ATSAMB11 Modules. The BLE Performance Analyzer is a performance analysis tool that is part of the Wireless Composer tool in Atmel Studio. This tool will be used at both ends (one assuming the role of a transmitter and the other the role of a receiver) for execution of tests. The BLE Performance Analyzer communicates to ATSAMB11 by using DTM application running on the MCU.

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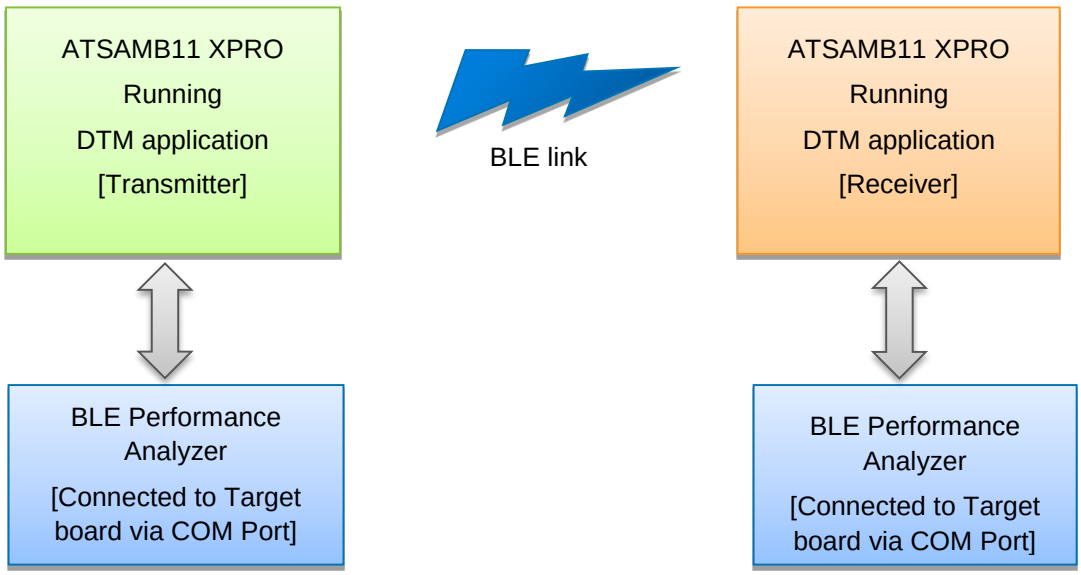
1 Supported Hardware Platforms and IDEs

Table 1-1. BLE Performance Analyzer - Supported Hardware and IDEs

Platform	MCU	Supported IDEs
SAM B11 (MCU)	ATSAMB11G18A	Atmel Studio v7.0 and Keil

2 Demo Setup

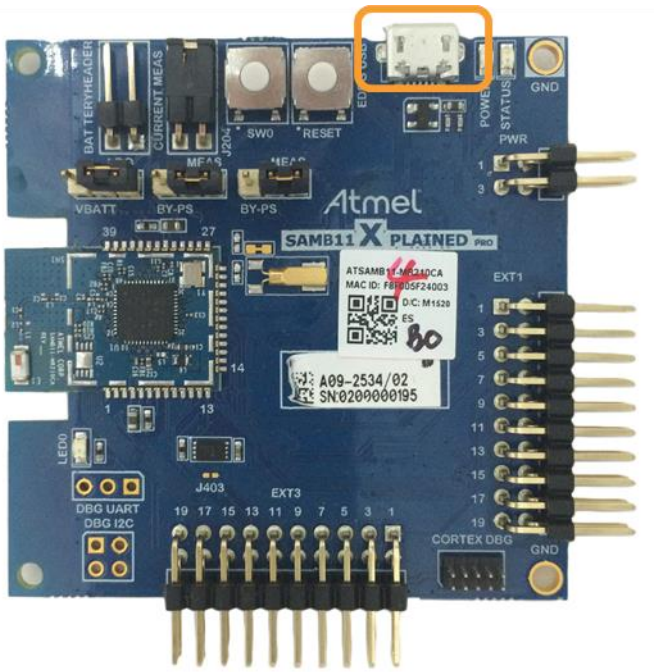
Figure 2-1. Demo Setup for BLE Performance Analyzer



3 Hardware Setup

Connect the ATSAMB11 board to the host PC using a Micro-USB cable.

Figure 3-1. EDBG USB Port



4 Software Setup

4.1 Installation Steps

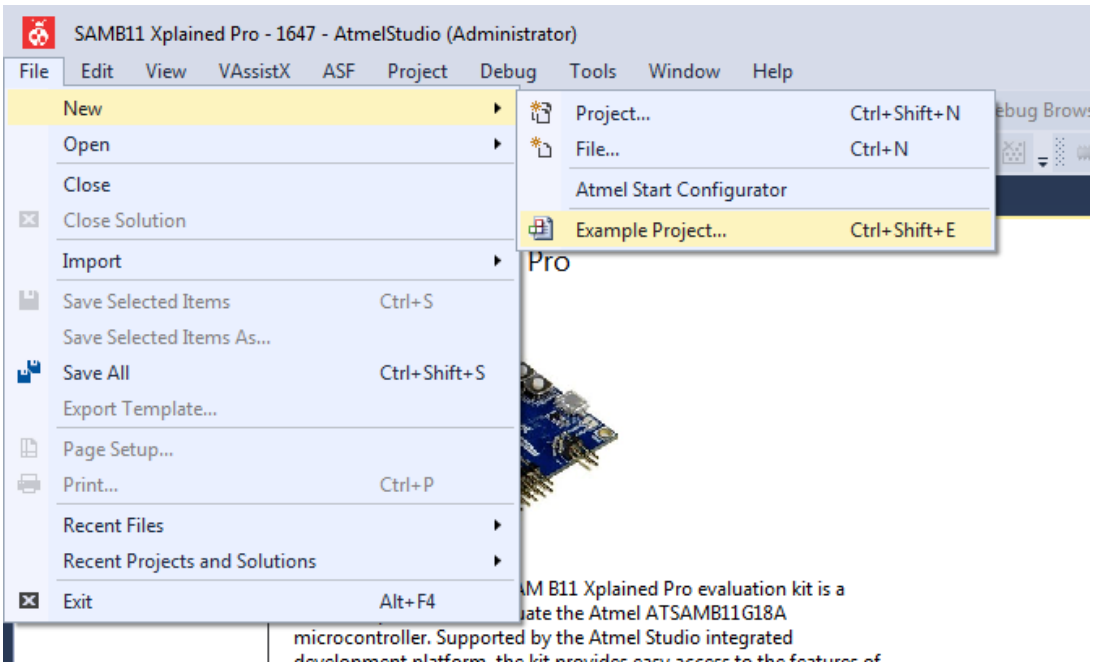
1. Install the latest Atmel Studio **[Atmel Studio 7.0 (build 629 or later) web installer (recommended)]**
   http://www.atmel.com/tools/ATMELSTUDIO.aspx.
2. Install the latest Atmel Software Framework.
3. Install the package Wireless Composer from Atmel Gallery. https://gallery.atmel.com/
   BLE Performance Analyzer is a part of the Wireless Composer tool

4.2 DTM Application for SAM B11

The following is the procedure to build the DTM application for SAM B11.

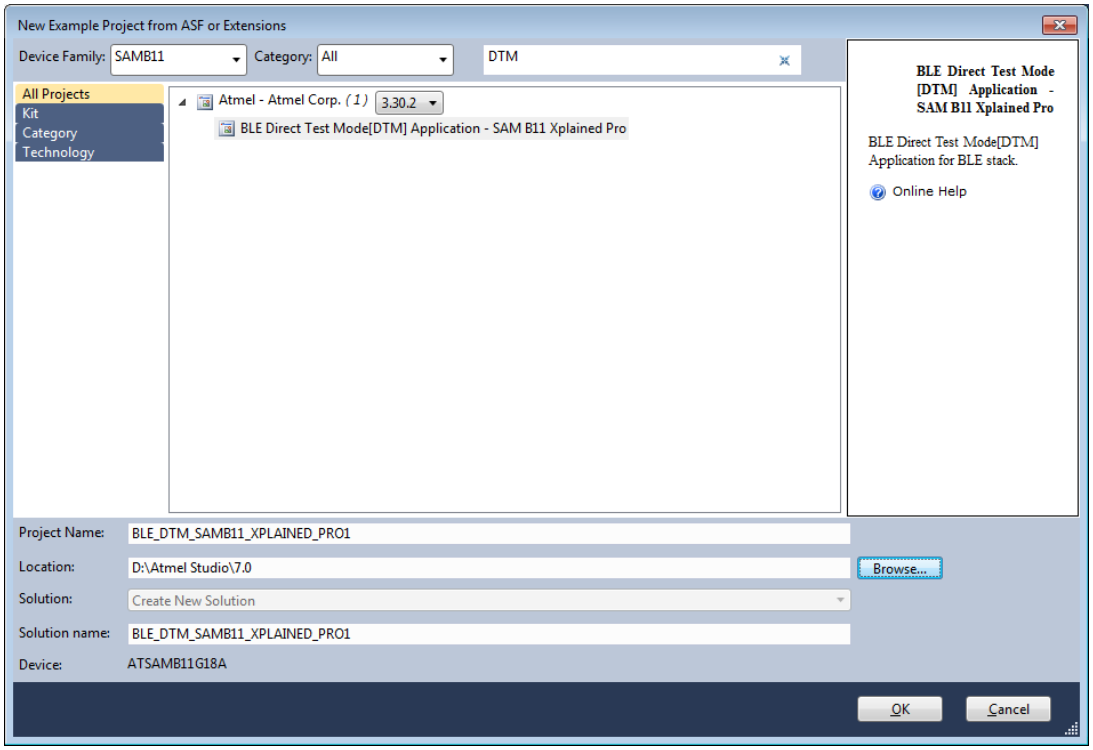
1. Select New Example Project.

Figure 4-1. Creating a New Project



2. Select “SAMB11” in device family, enter “DTM” in the search window and expand Atmel Corp. Projects. The location and the name of the project can be selected in the respective fields. Click **OK**.

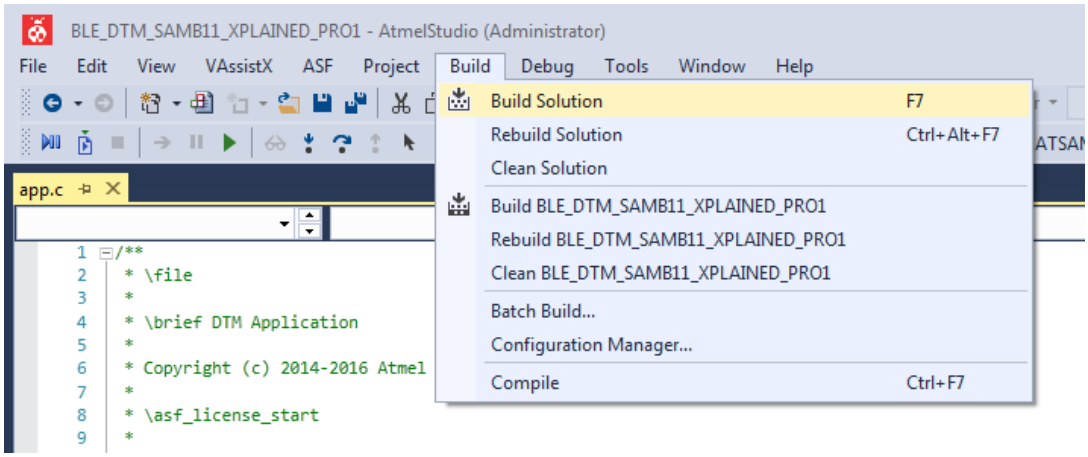
Figure 4-2. Searching for DTM Example Application



3. Accept the license agreement. The Atmel studio will generate the Direct Test Mode Example project for SAMB11.

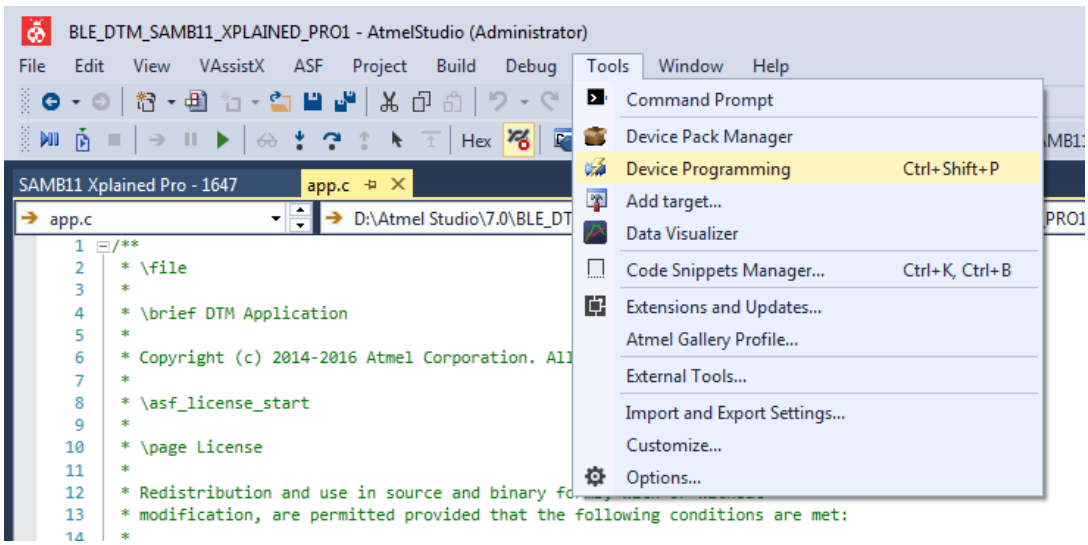
4. Build the solution.

Figure 4-3. Building the DTM Application



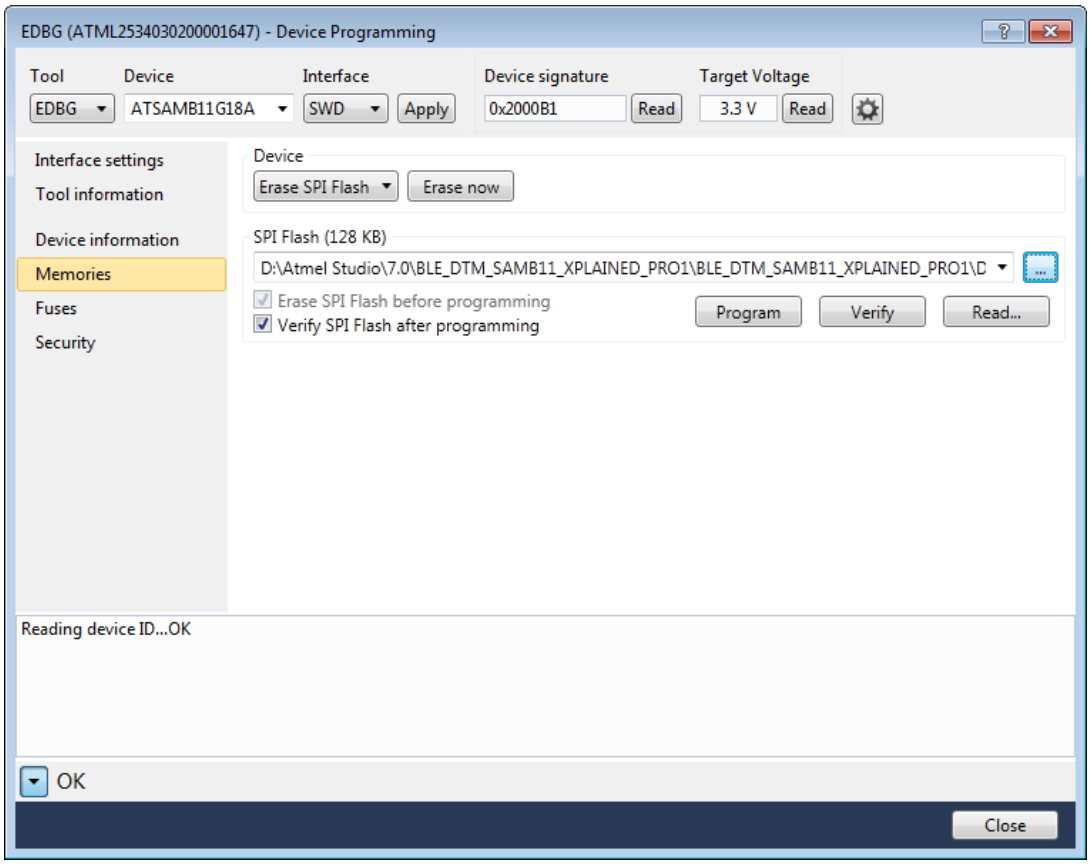
5. Download the application via the USB to the SAM B11 board using the Device Programming option available in Tools as mentioned below.

Figure 4-4. Select Device Programming



6. Inside Device Programming the user has to select the correct configuration for the device and finally program the device by using the program button.

Figure 4-5. Flash Programming

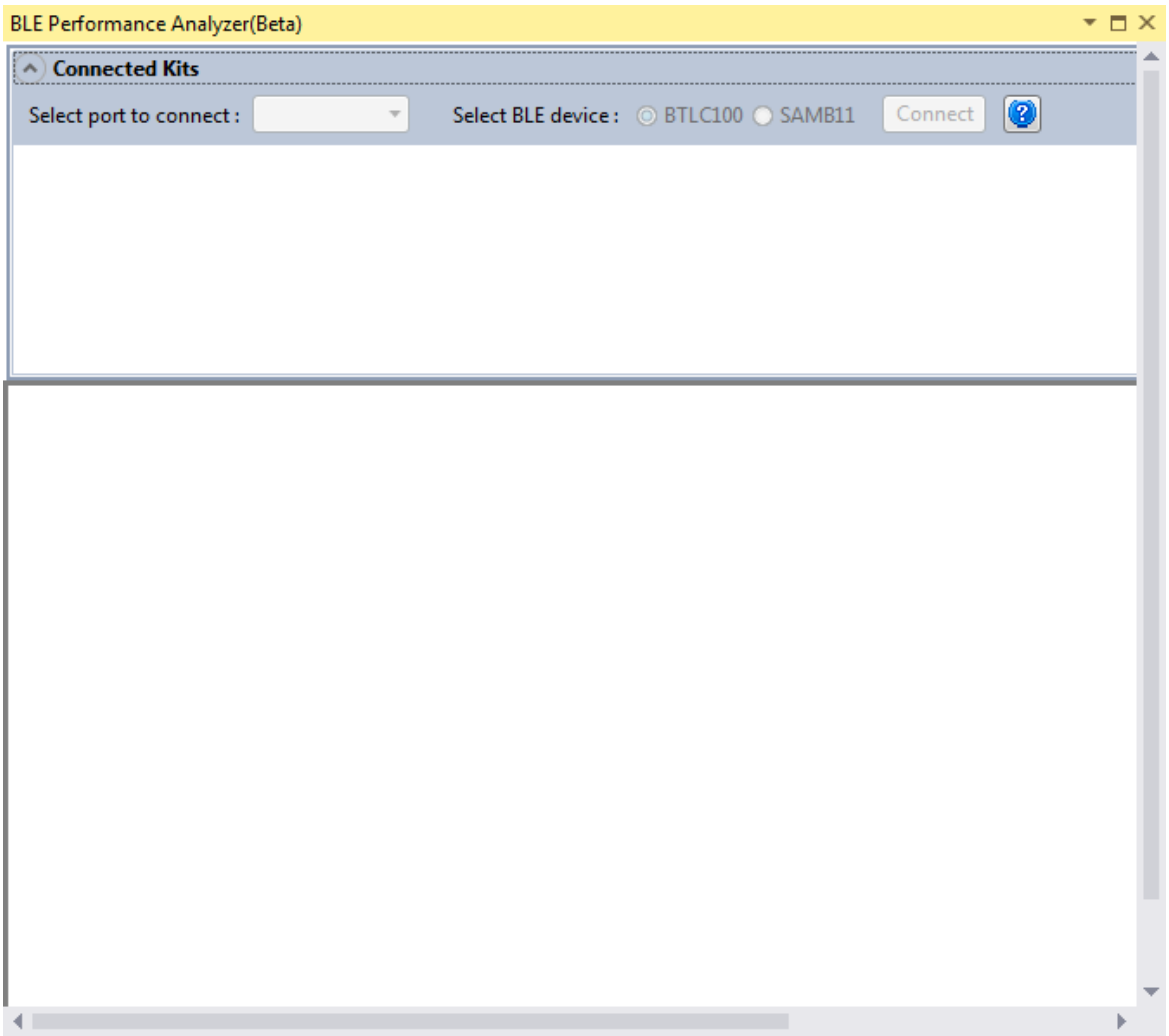


7. Once the application is flashed, the Direct Test Mode application is ready for use.

5 BLE Performance Analyzer

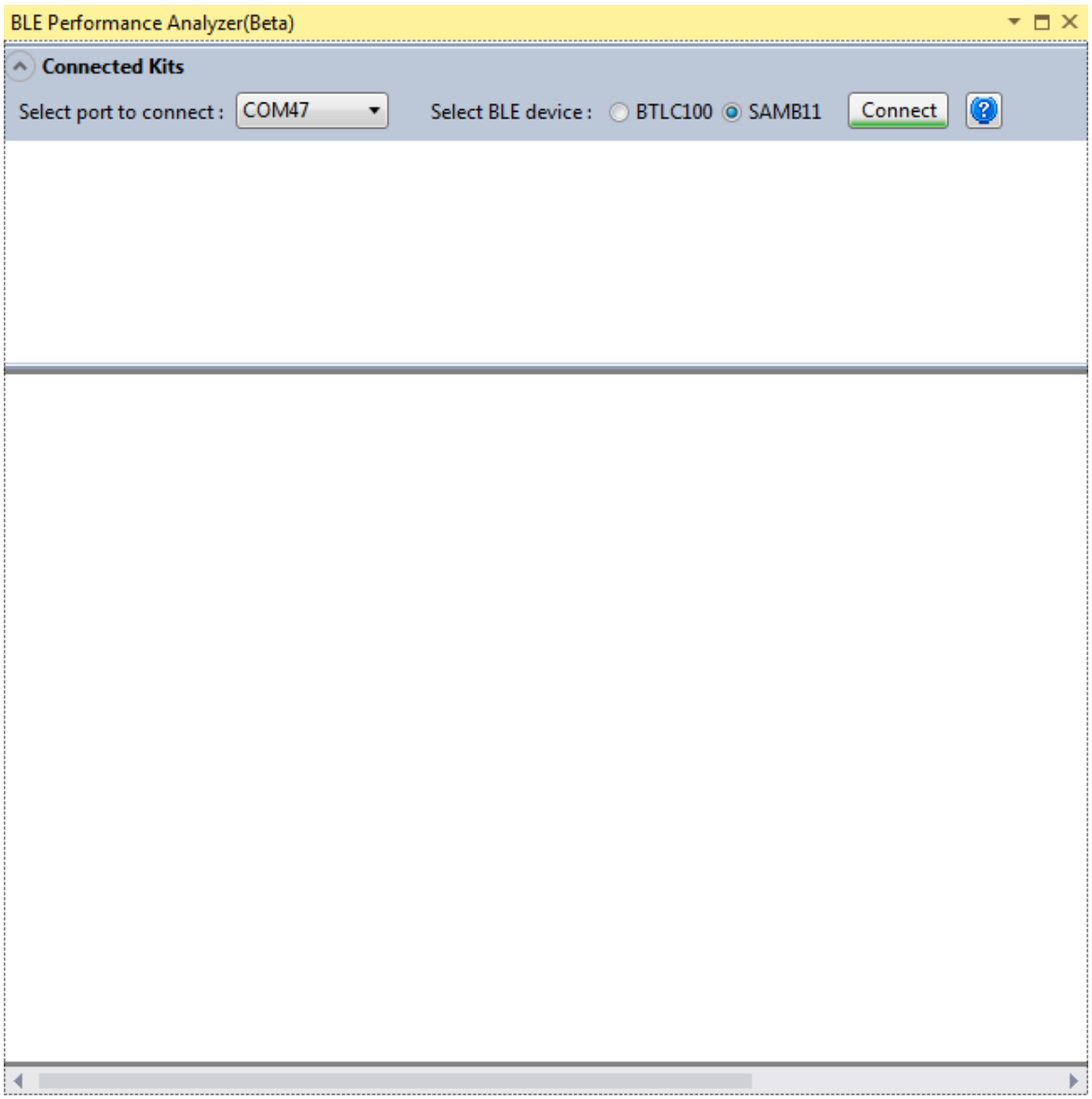
1. Start Atmel Studio.
2. Open the BLE Performance Analyzer tool using the menu command Tools → Bluetooth Low Energy Performance Analyzer. Figure 5-1 shows the Performance Analyzer application.

Figure 5-1. BLE Performance Analyzer



3. Select the COM port to which the HW platform is connected to. A Virtual COM port will be available to connect.

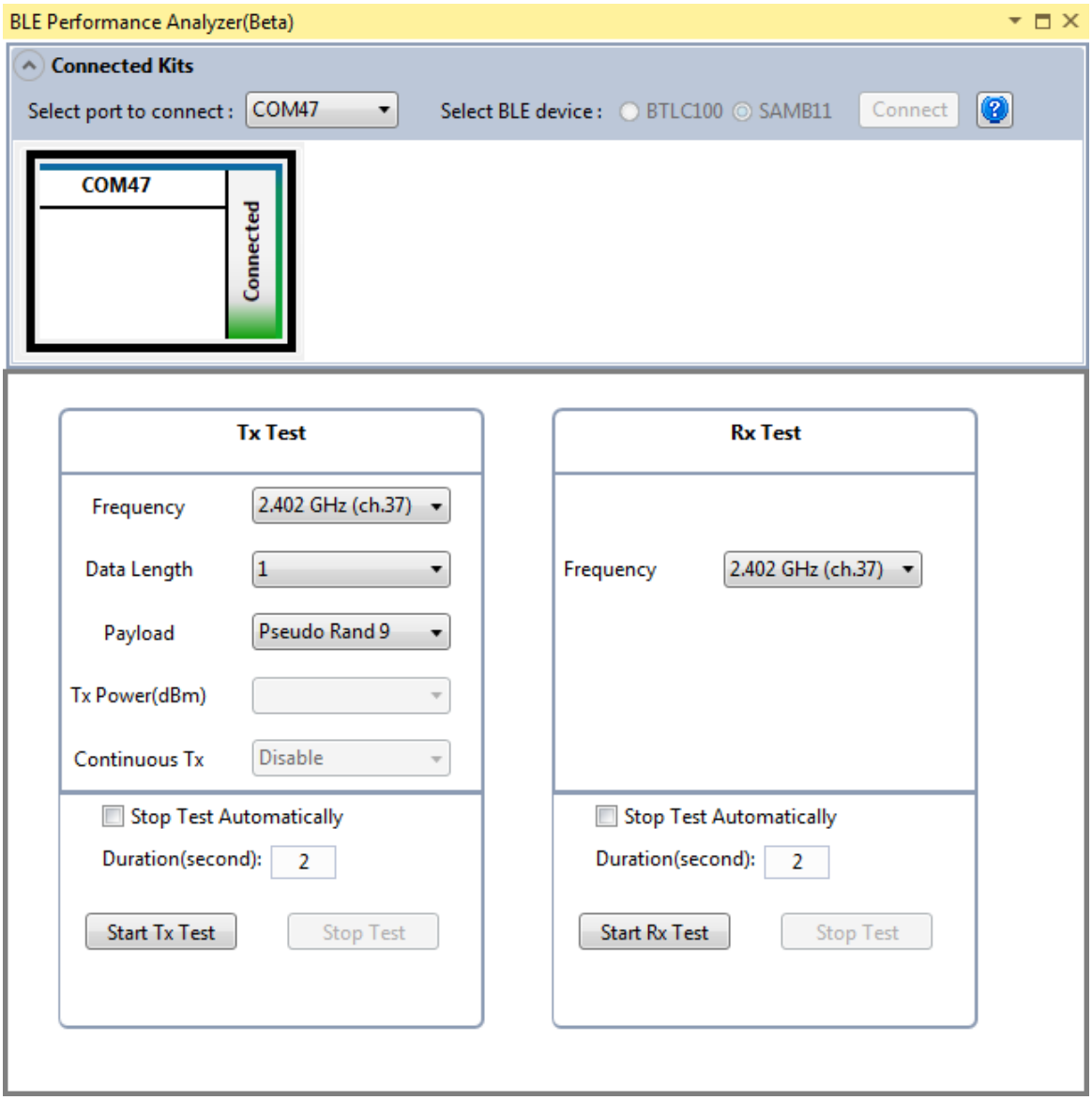
Figure 5-2. Select COM Port



4. After selecting the Virtual COM port, click the button Connect to establish communication between the BLE Performance Analyzer tool and the connected HW platform.

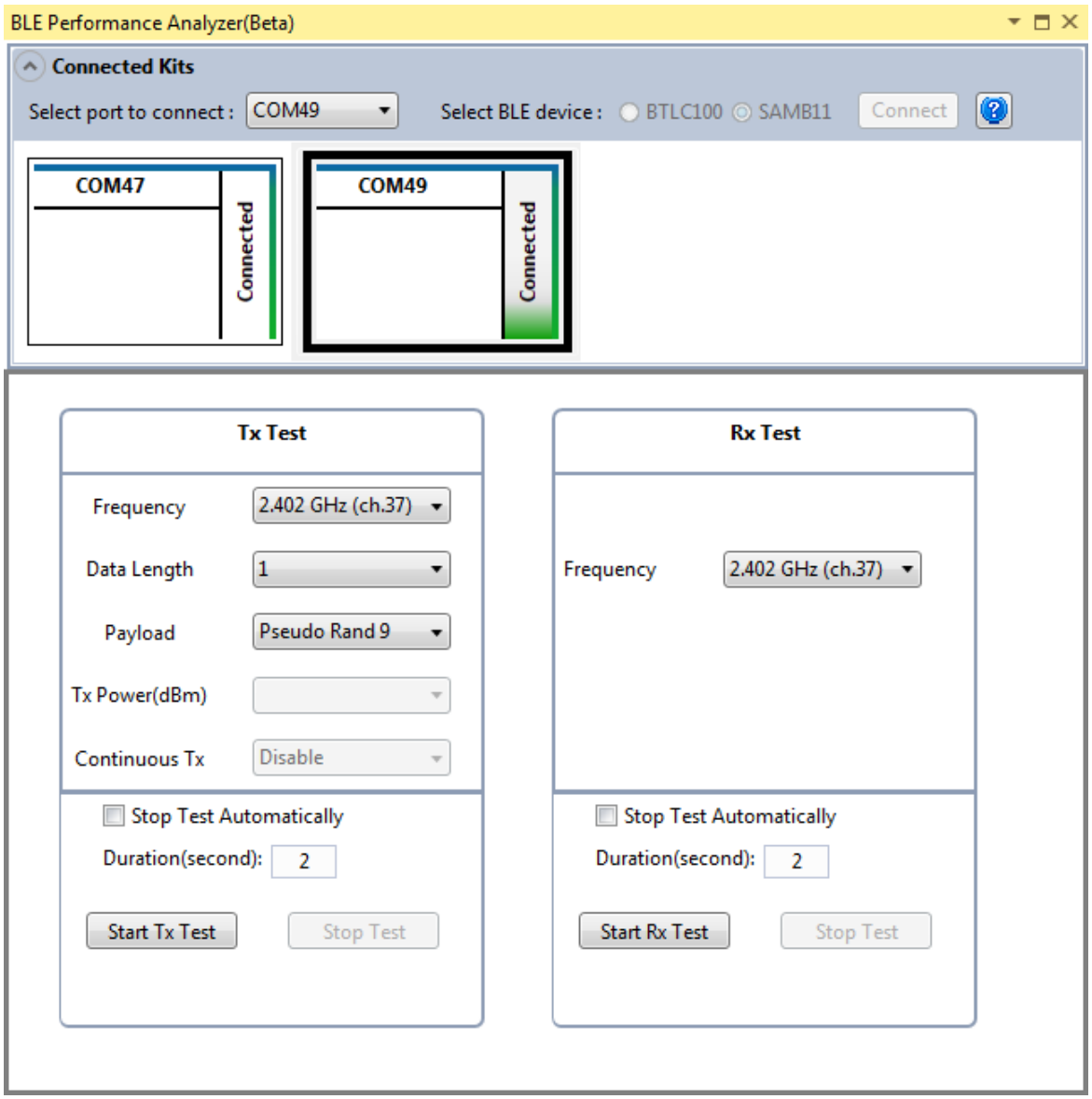
   Figure 5-3 shows the HW platform connected to the Performance Analyzer.

Figure 5-3. Single Kit Connected



5. Ensure that both the HW platforms (one for TX and one for RX) are connected to the Performance Analyzer as shown below.

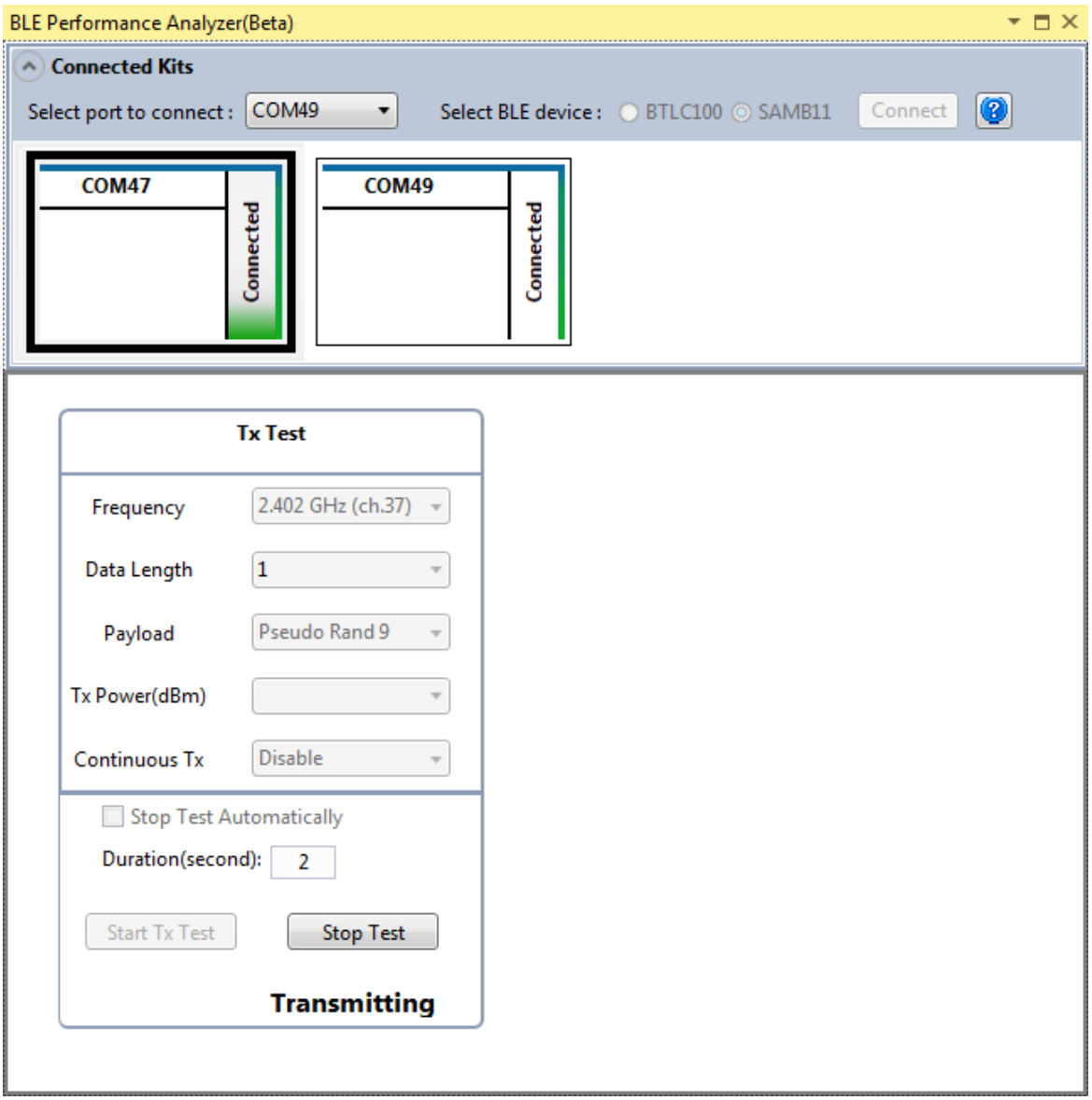
Figure 5-4. Two Kits Connected



6. Start the Direct Test mode, configure one board as TX and the other one as RX. Note that any side can be replaced by a standard compliant test equipment. Make sure to select the same RF Channel for both during the test and to start the RX test before the TX test in order not to miss any packets.

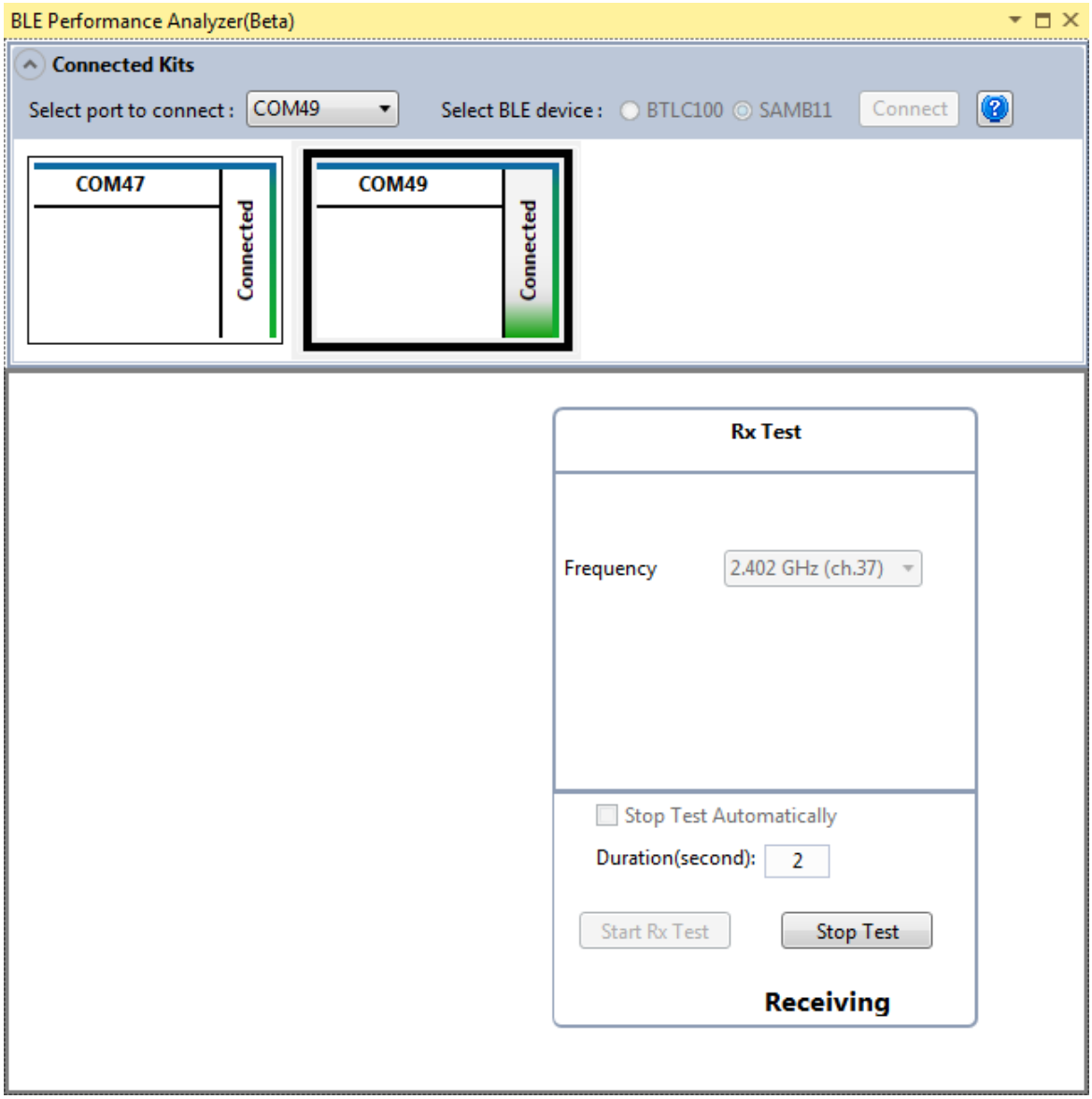
   The first kit is selected for executing the TX test. Select a kit and click the “Start Tx Test” button.

Figure 5-5. TX Test Running



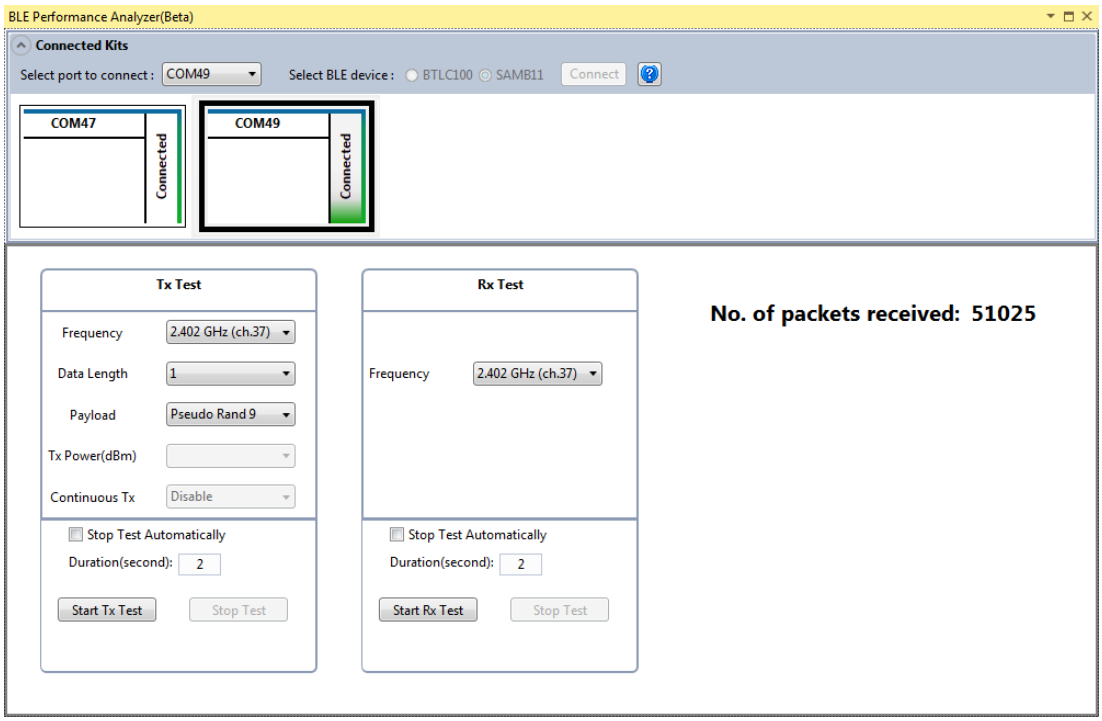
7. Select a kit for executing RX tests. Note that the second kit is selected for executing RX tests. Select a kit and click the “Start Rx Test” button to start the RX test.

Figure 5-6. RX Test Running



8. On the RX test pane, press the “Stop Test” button. The number of successful received packets is displayed after pressing the “Stop Test” button.

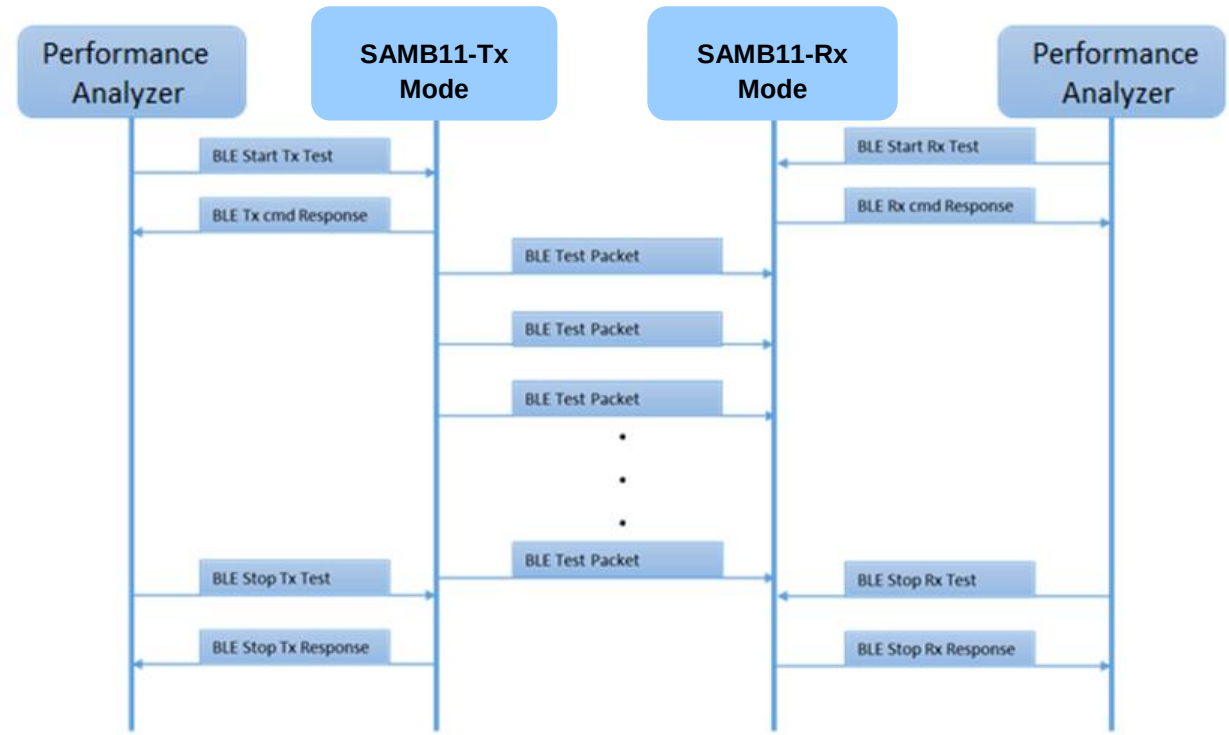
Figure 5-7. RX Side Test Result



6 DTM Test Sequence

The diagram in Figure 6-1 depicts the Direct Test mode between the two ATSAMB11 devices. The DTM commands are initiated from the BLE Performance Analyzer. To create the below test setup, open the BLE Performance Analyzer and connect to the devices using the COM Ports of each ATSAMB11 device.

Figure 6-1. DTM RX/TX Test Sequence



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8 Revision History

Doc Rev.	Date	Comments
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