Transmit test Application

User guide

Version 0.3

Oct 2016

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About this Document

This document describes the process of bringing up the RS9113 based module as a transmit test application which is used for FCC certification.

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Table of Contents

Table of Figures

Table of Tables

No table of figures entries found.

1 Introduction

This project is applicable to all the WiSeConnect variants like WiSeConnect Plus, WiSeMCU and WyzBee. The term WiSeConnect refers to its appropriate variant.

1.1 Application Overview

1.1.1 Overview

While measuring the performance of 802.11 Wireless devices, packet error test has become today's choice for FCC certification.

The Transmit test application demonstrates how WiSeConnect device starts transmit test in Burst mode which is used for FCC certification.

1.1.2 Sequence of Events

This Application explains user how to:

- Start transmission in Burst mode with different data rates, transmit power and lengths.

1.2 Application Setup

The WiSeConnect in its many variants supports SPI and UART interfaces. Depending on the interface used, the required set up is as below:

1.2.1 SPI based Setup Requirements

- Windows PC with CooCox IDE
- Spansion (MB9BF568NBGL) micro controller

> **Note**: If user does not have Spansion (MB9BF568NBGL) host platform, please go through the SPI-Porting guide **\sapis\docs\RS9113-WiSeConnect-SAPI-Porting-Guide-vx.x.pdf** for SAPIs porting to that particular platform.

- WiSeConnect device
- Spectrum Analyzer

1.2.2 UART/USB-CDC based Setup Requirements

- Windows PC with Dev-C++ IDE
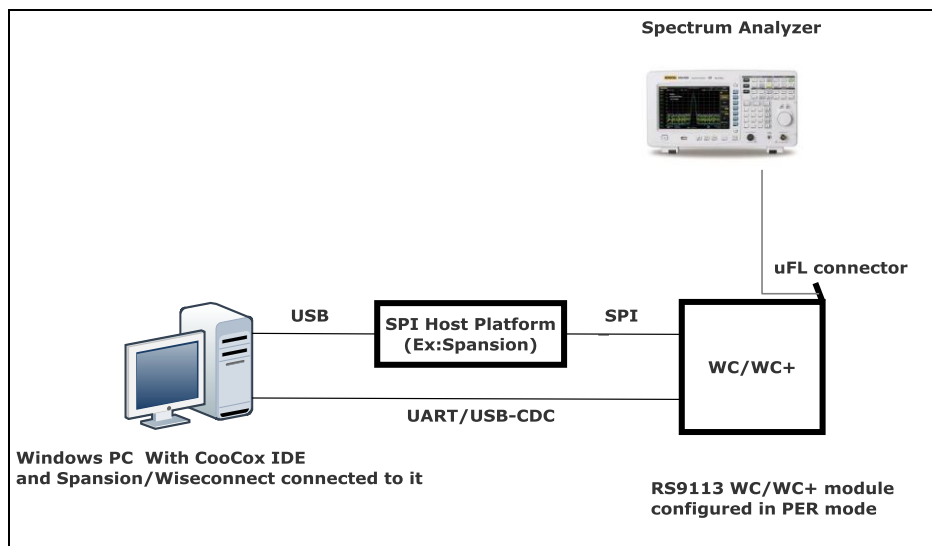- WiSeConnect device
- Spectrum Analyzer

Figure 1: Setup Diagram

2 Configuration and Execution of the Application

The example application is available in the Release at **{Release $}/host/sapis/examples.**

These examples will have to be initialized, configured and executed to test the application. The initialization varies based on the interface but configuration and execution are the common.

2.1 Initializing the Application

2.1.1 SPI Interface

If User using SPI interface, Please refer the document *sapis/platforms/spansion_MB9BF568NBGL/RS9113-WiSeConnect_SAPIS_Spansion_Project_User_guide.pdf* for opening the *trasmit_test* example in CooCox IDE.

2.1.2 UART/USB-CDC Interface

If User using UART interface, Please refer the document *sapis/platforms/ windows_uart/RS9113-WiSeConnect_SAPIS_Windows_Project_UserGuide.pdf* for opening the *trasmit_test* example in Dev-C++ IDE

2.2 Configuring the Application

1. Open *sapis/examples/ trasmit_test/rsi_ trasmit_test_app.c* file and update/modify following macros:

To set TX power in dbm. The valid values are from 2dbm to 18dbm for WiSeConnectTM module.

```
     #define RSI_TX_TEST_POWER      4
```

To set transmit data rate.

```
     #define RSI_TX_TEST_RATE     RSI_RATE_1
```

To configure length of the TX packet. Valid values are in the range of 24 to 1500 bytes in the burst mode and range of 24 to 260 bytes in the continuous mode.

```
        #define RSI_TX_TEST_LENGTH   30
```

To configure Burst mode or Continuous mode

```
      #define  RSI_TX_TEST_MODE   RSI_BURST_MODE
```

To configure the channel number in 2.4 GHz/5GHz.

```
       #define  RSI_TX_TEST_CHANNEL      1
```

To select internal antenna or UFL connector,

> 0 - to select internal antenna or RF_OUT2

> 1 - to select UFL connector or RF_OUT1

```
       #define  RSI_ANTENNA      1
```

To select antenna gain in db for 2.4GHz band. Valid values are from 0 to 10.

```
       #define   RSI_ANTENNA_GAIN_2G      0
```

To select antenna gain in db for 5GHz band. Valid values are from 0 to 10.

```
#define    RSI_ANTENNA_GAIN_5G      0
```

2. Open **sapis/include/rsi_wlan_config.h** file and update/modify following macros :

```
#define   CONCURRENT_MODE            RSI_DISABLE

#define   RSI_FEATURE_BIT_MAP        FEAT_SECURITY_OPEN

#define   RSI_TCP_IP_BYPASS          RSI_DISABLE

#define   RSI_TCP_IP_FEATURE_BIT_MAP TCP_IP_FEAT_DHCPV4_CLIENT

#define   RSI_CUSTOM_FEATURE_BIT_MAP  0

#define   RSI_BAND                   RSI_BAND_2P4GHZ
```

2.3   Executing the Application

1. **SPI Interface**

If User using SPI interface, Please refer the document **sapis/platforms/spansion_MB9BF568NBGL/RS9113-WiSeConnect_SAPIS_Spansion_Project_User_guide.pdf** for executing the **trasmit_test** example in CooCox IDE.

2. **UART/USB-CDC Interface**

If User using UART interface, Please refer the document **sapis/platforms/ windows_uart/RS9113-WiSeConnect_SAPIS_Windows_Project_UserGuide.pdf** for executing the **trasmit_test** example in Dev-C++ IDE

3. After the program gets executed, WiSeConnect Device will start the transmit test with the given configuration.

4. Analyzer can be used to monitor the device behavior with certificate constraints.

Please refer the given below image which shows when WiSeConnect device transmits packets in Burst mode with different Tx power and different transmission rates in channel 1 with length 30bytes.

```
RSI_TX_TEST_POWER       – 4dbm

RSI_TX_TEST_RATE        - 1Mbps

RSI_TX_TEST_LENGTH      - 30

RSI_TX_TEST_MODE        - BURST mode

RSI_TX_TEST_CHANNEL     - 1
```
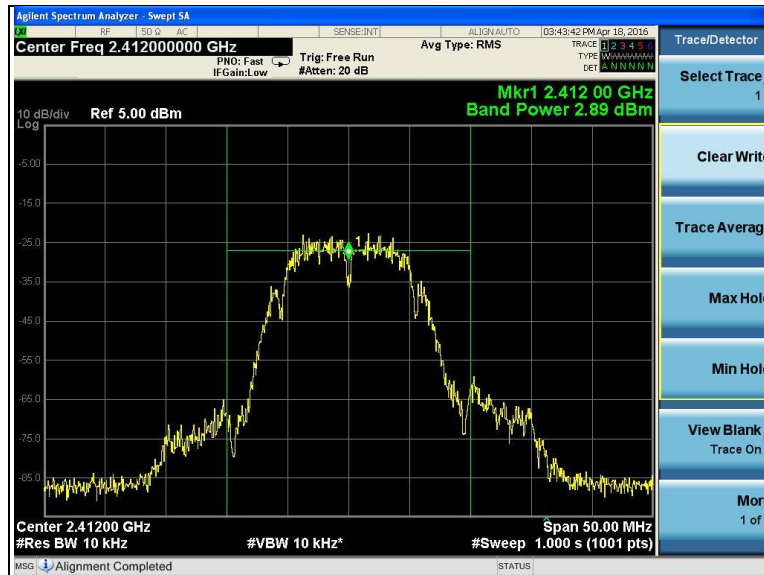
RSI_TX_TEST_POWER	– 12dbm
RSI_TX_TEST_RATE	- 6Mbps
RSI_TX_TEST_LENGTH	- 30
RSI_TX_TEST_MODE	- BURST mode
RSI_TX_TEST_CHANNEL	- 1