User Guide V1.2

BK4811B Demo Board

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Getting Started

Personal Computer Requirement

Hardware Description

BK4811B Demo Board

Board Set for Development

Test Setup

Software Description

User Interface

User Interface in TX mode
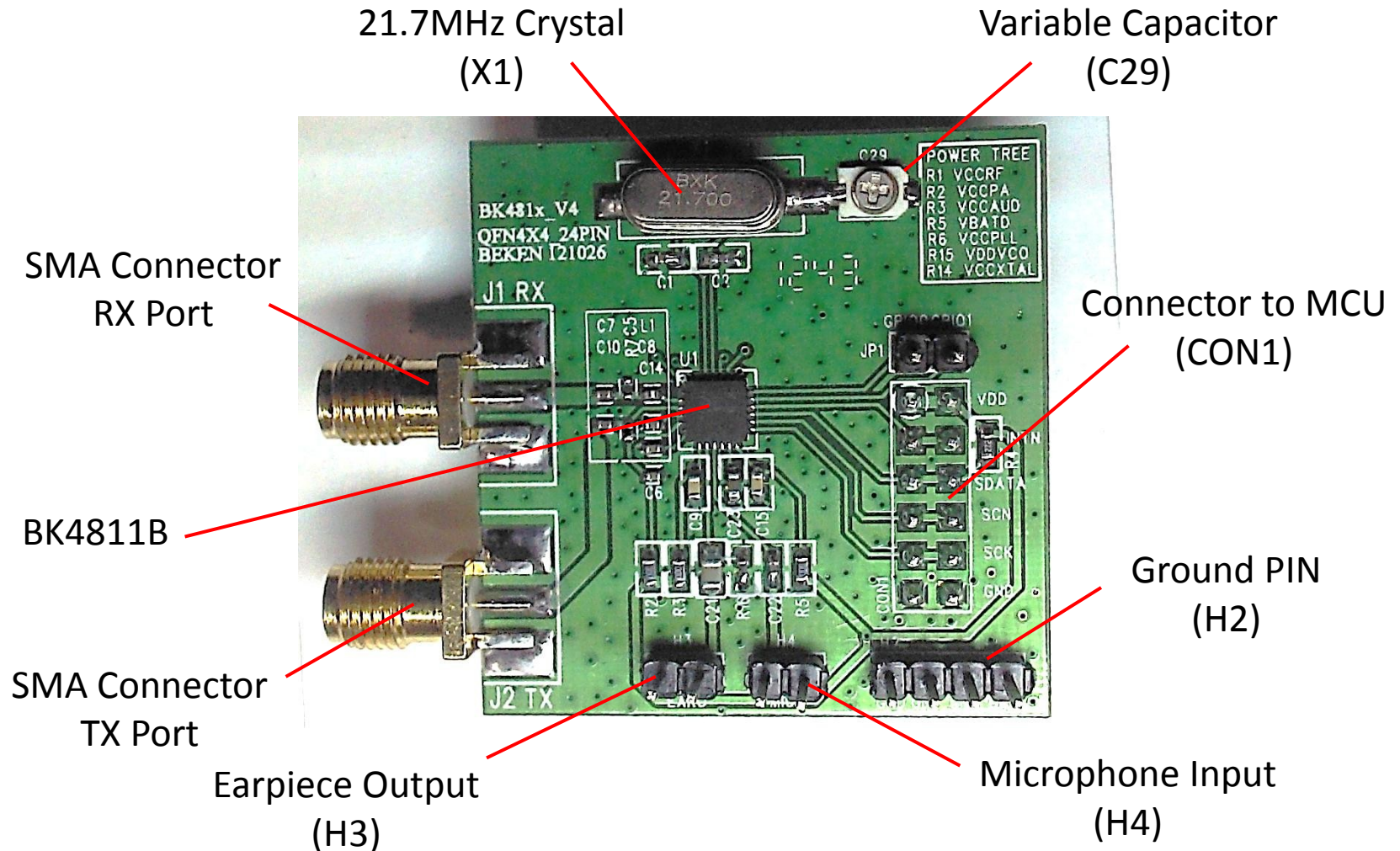
User Interface in RX mode

Link Test

FSK PER Test

Register Operation

Personal Computer Requirements

Computer	IBM PC AT or compatible
Processor	Pentium 500 or better
Operating Systems	Windows XP, Windows 7
System Memory Required	>128MB
Hard Disk Space Required	>100MB
Video Standard	SVGA (1024 x 768 min.)
Mouse	Microsoft Compatible

Hardware Description

21.7MHz Crystal (X1)

Variable Capacitor (C29)

SMA Connector RX Port

Connector to MCU (CON1)

BK4811B

Ground PIN (H2)

SMA Connector TX Port

Earpiece Output (H3)

Microphone Input (H4)

BK4811B Demo Board

Hardware Description

The BK4811B is a walkie-talkie transceiver, and must work together with a MCU. The BK4811B demo board should be mounted onto a MCU board through connector(CON1).

The MCU has a built-in regulator to convert the 5V USB voltage to 3.3V voltage as the power supply of BK4811B demo board. Therefore, additional power supply is not necessary.

USB Connector

BK4811B Demo Board   MCU Board   8051 MCU

Board Set for Development
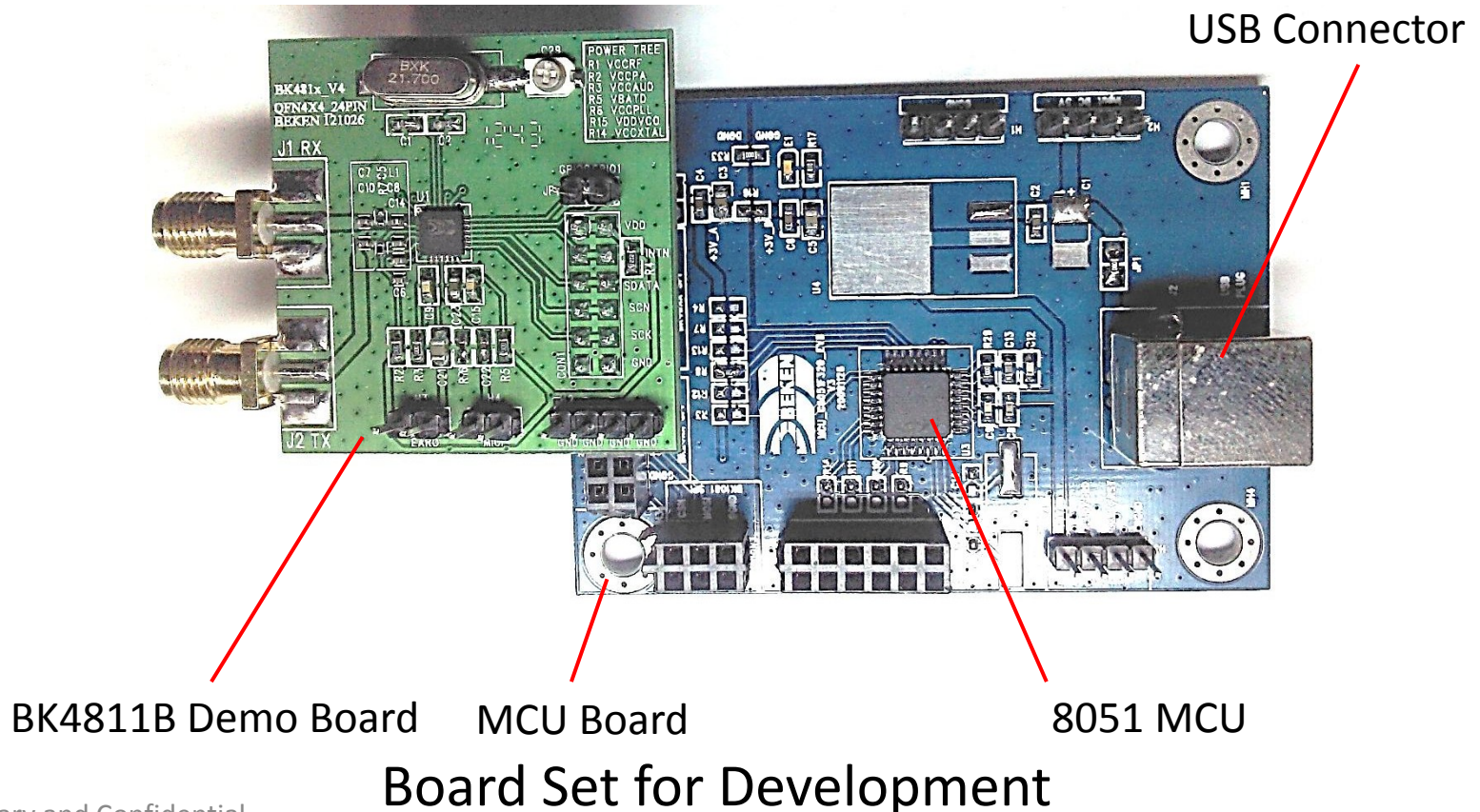
Test Setup

Method 1:

DUT test. Can be used to quantify the performance of BK4811B using instrument, such as Agilent 8920B.
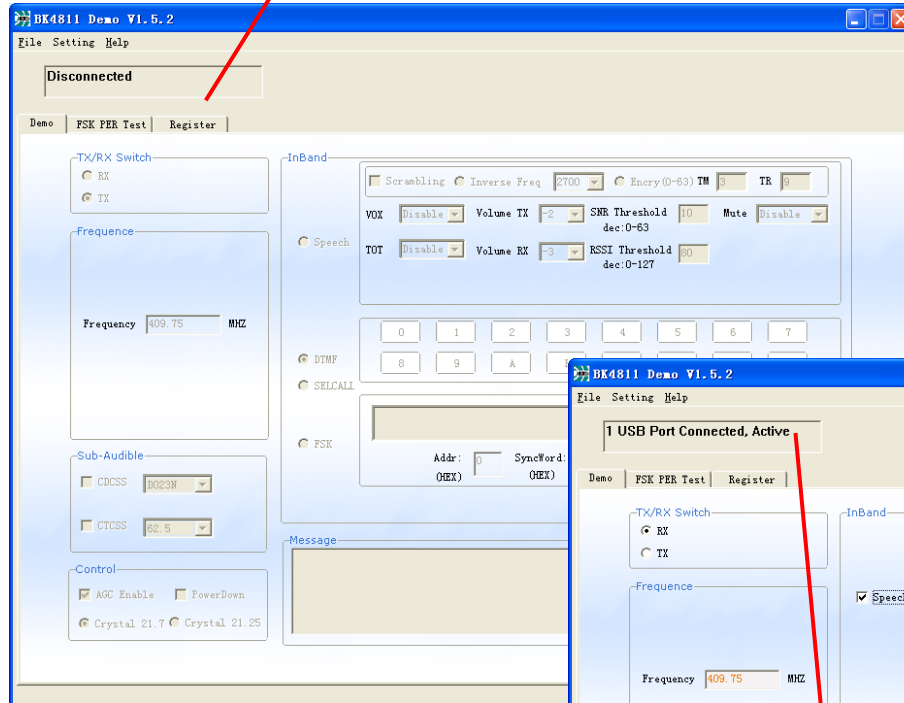
Agilent 8920B RF Communication Test Set

RF Cable

USB Cable
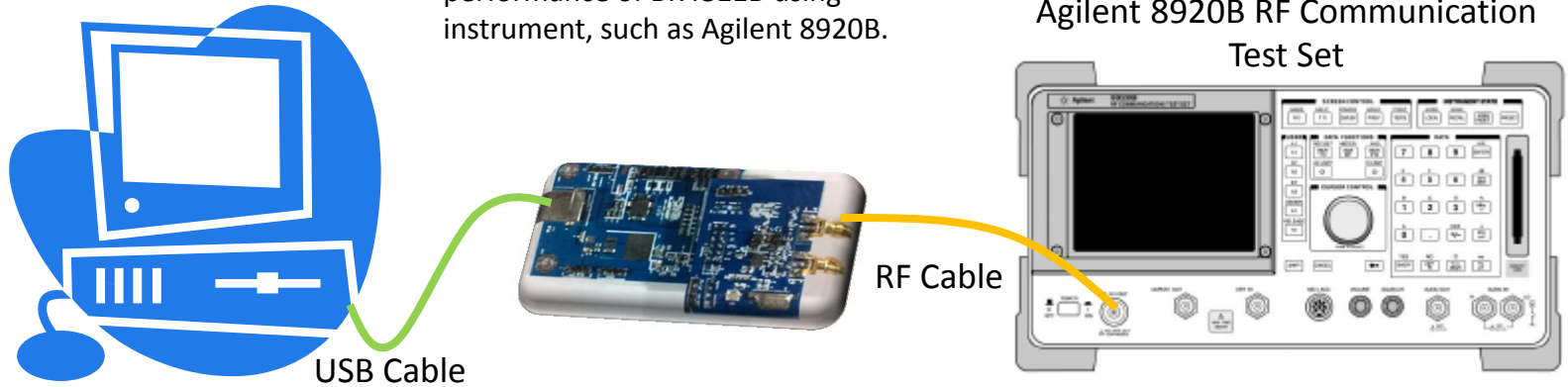
Method 2:

Link test. You should open 2 software window. One control demo board in TX mode, another control demo board in RX mode.

TX

USB Cable 2

USB Cable 1

RX
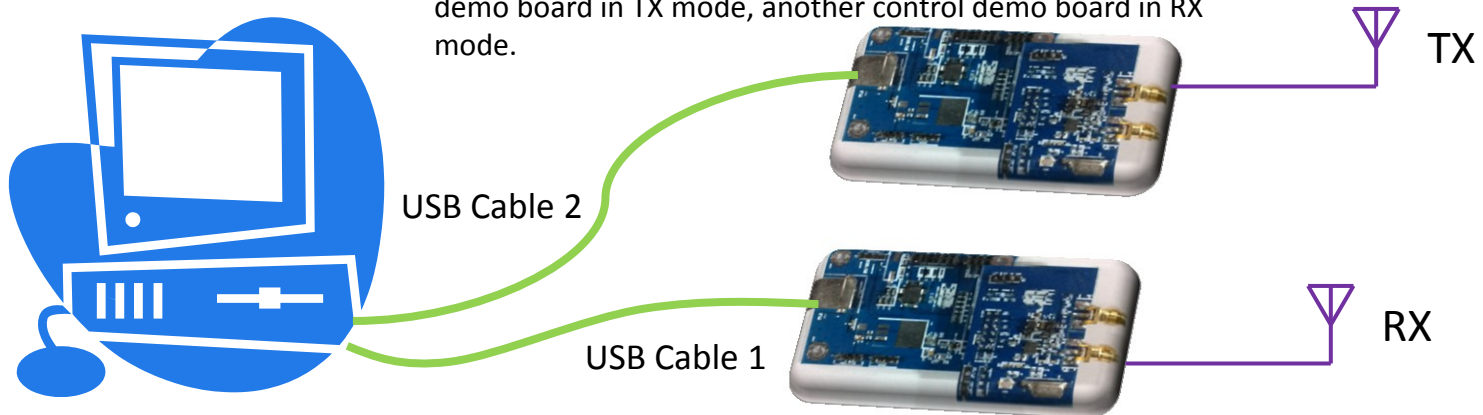
Software Description
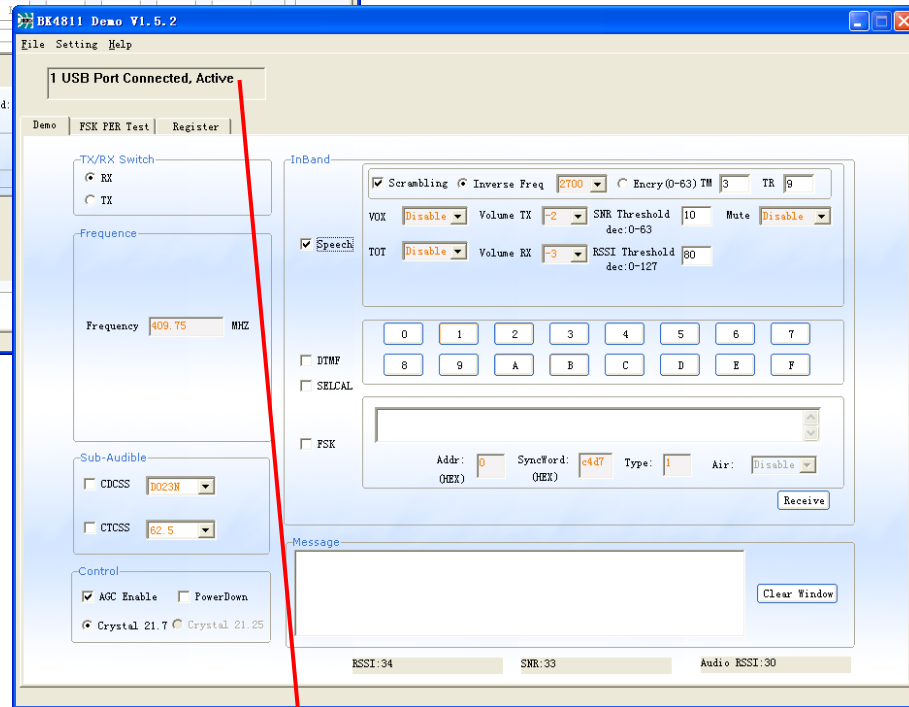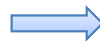
Status indicator: Disconnected

User Interface

Initial user interface of test software before connecting board set to computer. All buttons and select boxes are in gray, and can't be operated.
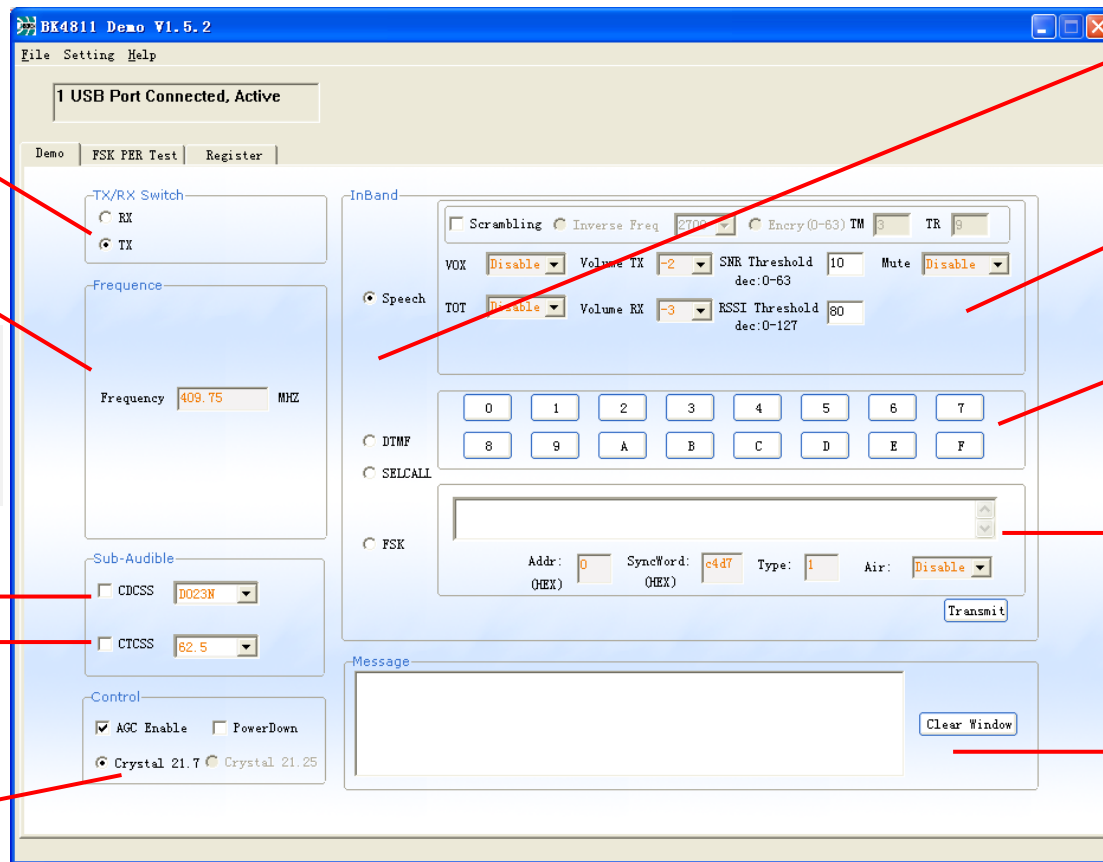
User interface activated after connecting board set to computer. All buttons and select boxes are lighted, and can be operated.

Status indicator: 1 USB port Connected. Active

Software Description

Signal type selection

Audio, DTMF, SELCALL & FSK

TX/RX mode selection

Set parameters in audio mode

Set Operating Frequency

Click "Enter" on key board after inputting the value. Otherwise, the frequency change doesn't take effect.

Send single symbol

Apply to DTMF, SELCALL and FSK

Send single symbol or symbol string

Apply to DTMF, SELCALL and FSK

Set CDCSS word

Set CTCSS frequency

Please ignore these operations in this software version.
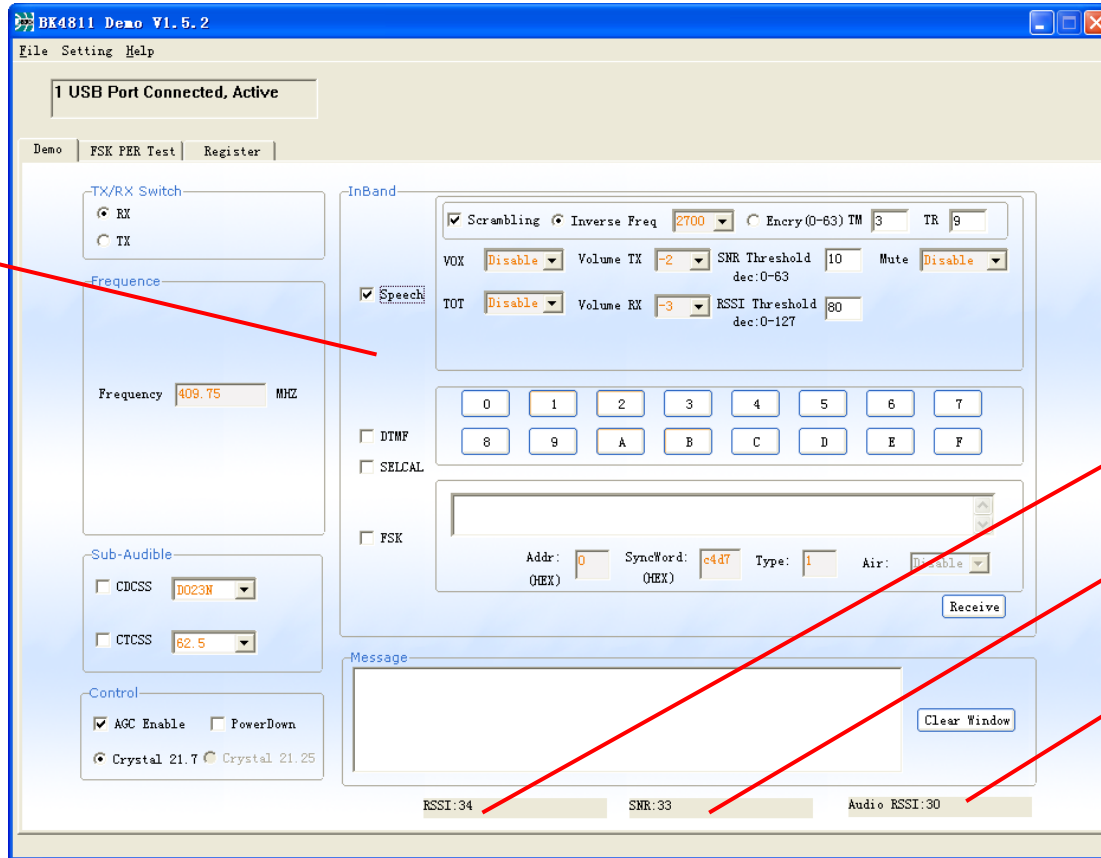
Message area

User Interface in TX mode

Software Description

The user interface in RX mode is almost the same with that in TX Mode except two areas given below.

Signal selection

The single select box in TX mode changes to multi-select box in RX mode. By selecting partially or all boxes, The RX audio part can automatically identify the received signal type.

IF Received Signal Strength Indicator

IF Signal to Noise Ratio Indicator

Audio Signal Strength Indicator
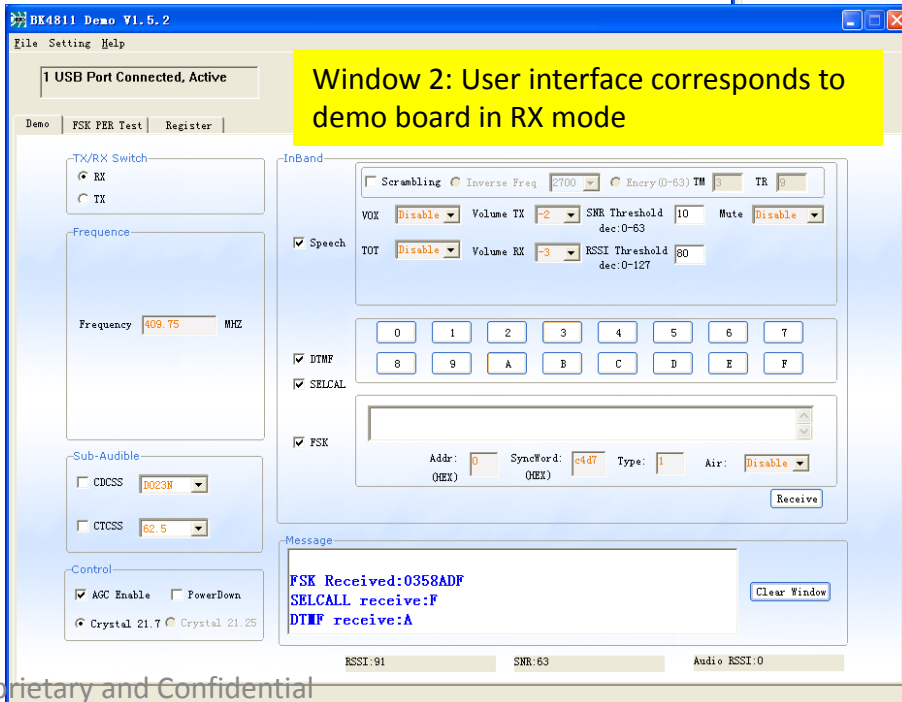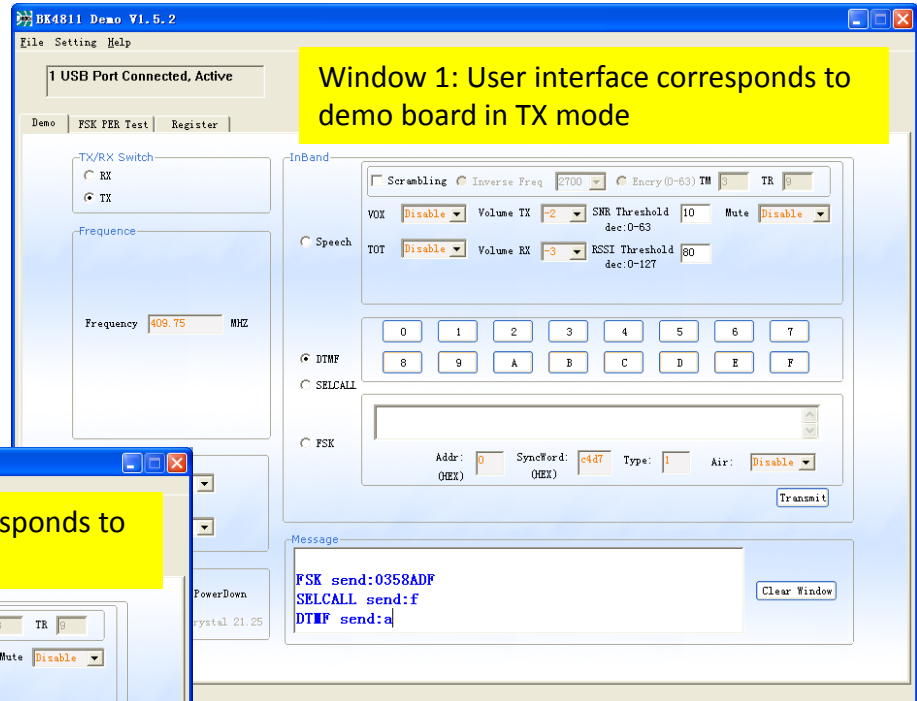
User Interface in RX mode

Software Description

Link Test

Transmit audio, DTMF, SELCALL and FSK signal using the setup method 2 described in page 6.

Test Procedure:
1. Choose RX mode in window 2.
2. The default frequency is 409.75MHz. You can set to other frequency, then click "Enter" on key board.
3. Select "Speech", "DTMF", "SELCALL" and "FSK".
4. Turn to window 1. Choose TX mode.

Window 1: User interface corresponds to demo board in TX mode

Window 2: User interface corresponds to demo board in RX mode

5. Set the frequency equals to that in RX mode, then click "Enter" on key board.
6. Select "FSK". Input a string in blank area, such as "0358ADF", then click "Transmit" button. You can find that the same string is displayed in the message area of window 2.
7. Select "SELCALL" in window 1. Click a symbol button, such as "F". Then you can find symbol "F" displayed in the message area of window 2.
8. Select "DTMF" in window 1. Click a symbol button, such as "A". Then you can find symbol "A" displayed in the message area of window 2.
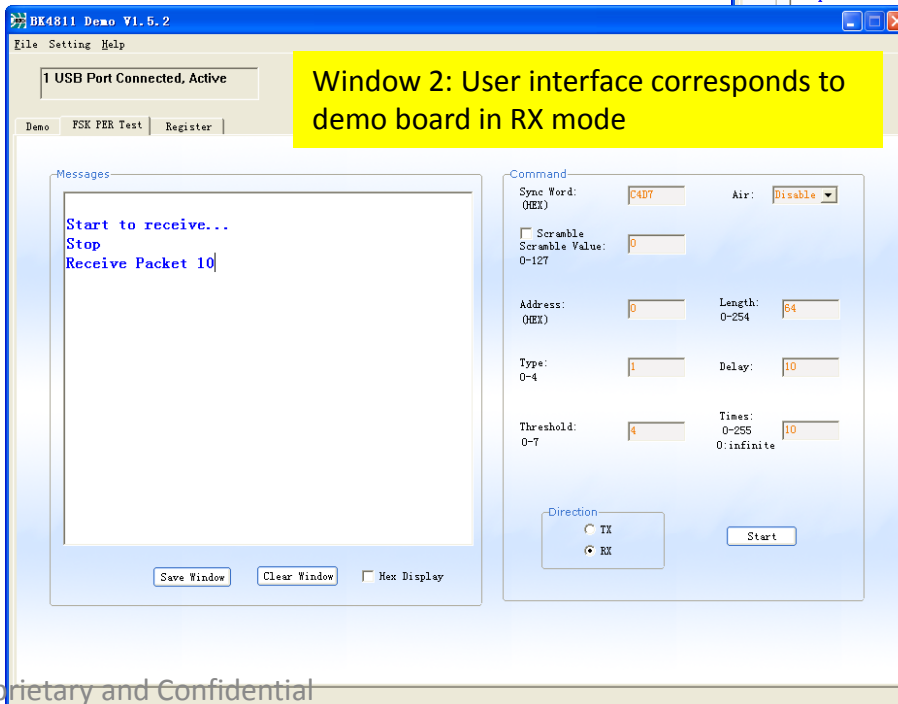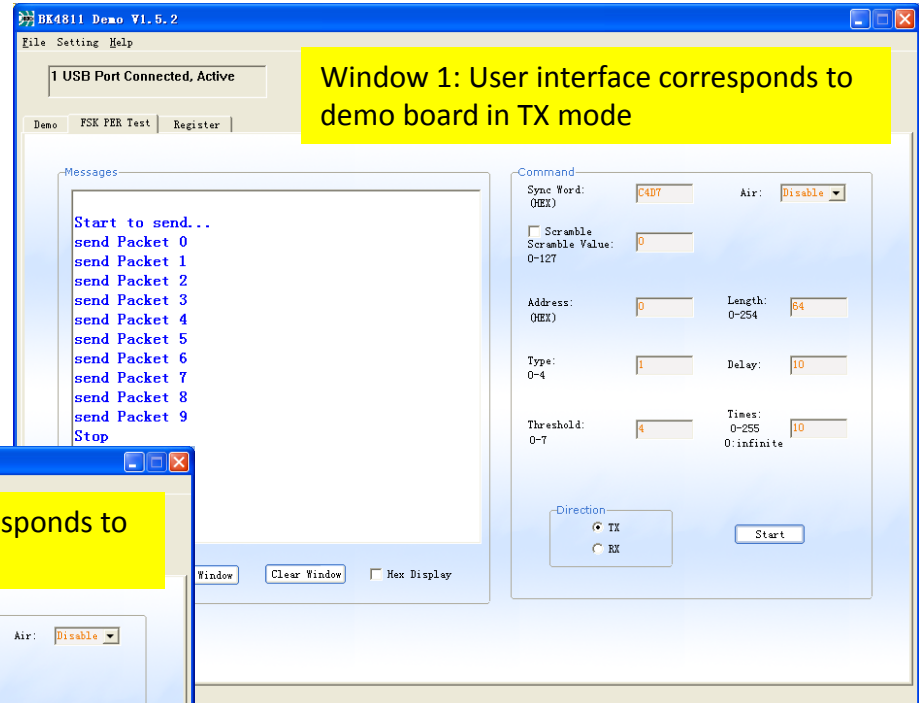
Software Description

FSK PER Test

PER: Package Error Rate
Using the setup method 2 described in Page 6.

Operating Instructions
1. Definitions of Sync Word, Scramble, Address and Length can be found in the datasheet of BK4811B (Page 12).
2. Air Enable: FSK packet transmit directly through FM modulation
3. Air Disable: FSK packet transmit through MSK modulated subcarrier
4. TX/RX: Demo board operating mode selection.

Window 1: User interface corresponds to demo board in TX mode

Window 2: User interface corresponds to demo board in RX mode

Test Procedure:
1. Choose RX mode in window 2. Then click "Start". The demo board in RX mode is ready to receive packets.
2. Turn to window 1. Choose TX mode. Then click "Start". The demo board in TX mode will send 10 packets.
3. Click "Stop" in window 1.
4. Turn to window 2. Click "Stop". Then the number of packets received will be shown in message area.

Software Description

Register List

Register Details

Register Operation

LoadConfig

The test software will automatically load "config_4811.ini" in the same folder at initial start. You can choose other config file by click this button.

Load Value

Load register values saved previously (TXT format).

Save Value

Save register value in TXT format.

Read Reg

Read the updated register value. Only the selected register value will be refreshed.

Read All

All register values will be refreshed.

Write Reg

Write the input value into the selected register.

Flush All

Write input values to all registers. For example, you can click "Load value" first to load a saved value, then click "Flush All".