HiChannel (for Hi3137 V100)

User Guide

Issue 00B01

Date 2014-03-31

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HiSilicon Technologies Co., Ltd.

Address: Huawei Industrial Base
Bantian, Longgang
Shenzhen 518129
People's Republic of China

Website: http://www.hisilicon.com

Email: support@hisilicon.com

About This Document

Purpose

This document describes how to use the HiChannel to debug the demodulation chip Hi3137 V100.

Related Version

The following table lists the product version related to this document.

Product Name	Version
Hi3137	V100

Intended Audience

This document is intended for:

- Technical support engineers
- Software development engineers
- Chip development engineers

Change History

Changes between document issues are cumulative. Therefore, the latest document issue contains all changes made in previous issues.

Issue 00B01 (2014-03-31)

This issue is the first draft release.

Contents

Figures

1 Overview

1.1 Introduction to the HiChannel

The HiChannel is common software on the PC for controlling the HiSilicon terminal channel products. It can be used to control various chips that contain channels and are developed after 2011, including the Hi3136, Hi3137, and Hi3712. Currently the HiChannel can connect to the target board over the Ethernet port or USB port.

1.2 Software Environment

The HiChannel can be used on the PC that runs Windows 2000, Windows XP, or Windows 7.

1.3 Hardware Environment

For the Ethernet connection, the PC, network cable, serial cable, and the board to be debugged are required.

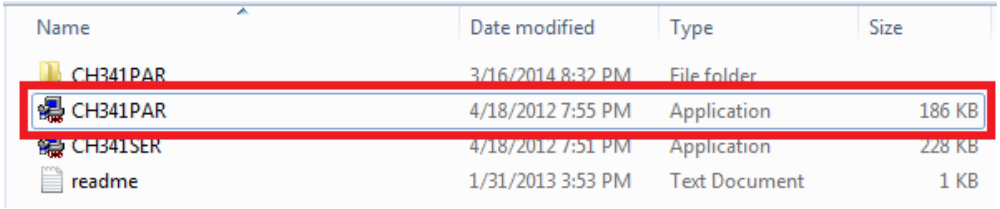
For the USB connection, the PC, USB-to-I^2C adapter CH341, and the board to be debugged are required.

2 Installing the Driver

The HiChannel enables direct access to the I^2C interface of the Hi3137 over the USB port of the PC by using the USB-to-I^2C adapter. The decoding chip, serial port, and Ethernet port are not required, which facilitates the debugging of the Hi3137. Before using the USB port, you need to install the corresponding driver on the PC. For example, to install the driver on a PC that runs Windows 7, perform the following steps:

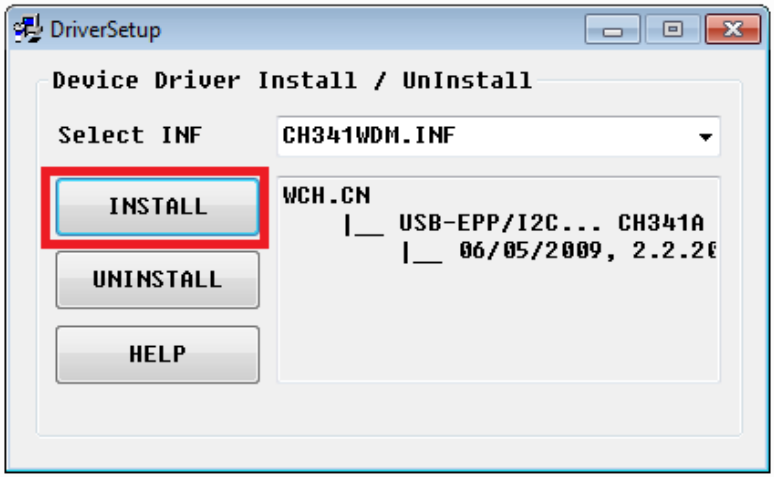
Step 1 Double-click **CH341PAR.EXE** in the toolkit, as shown in Figure 2-1.

Figure 2-1 Opening the driver file



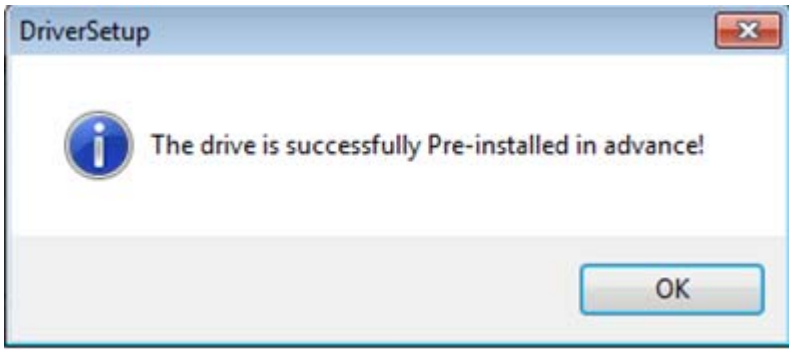
Step 2 Click **INSTALL**.

Figure 2-2 Installing the driver



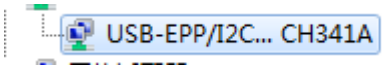
Step 3 Wait until the installation is complete. The information indicating that the driver is successfully installed is displayed, as shown in Figure 2-3.

Figure 2-3 Information indicating that the driver is successfully installed



Step 4 Connect the USB-to-I^{2}C adapter to the PC, and open **Device Manager** to check whether **USB-EPP/I2C...CH341** is displayed in the device list. If yes, the driver is successfully installed and can be used.

Figure 2-4 Checking the Device Manager

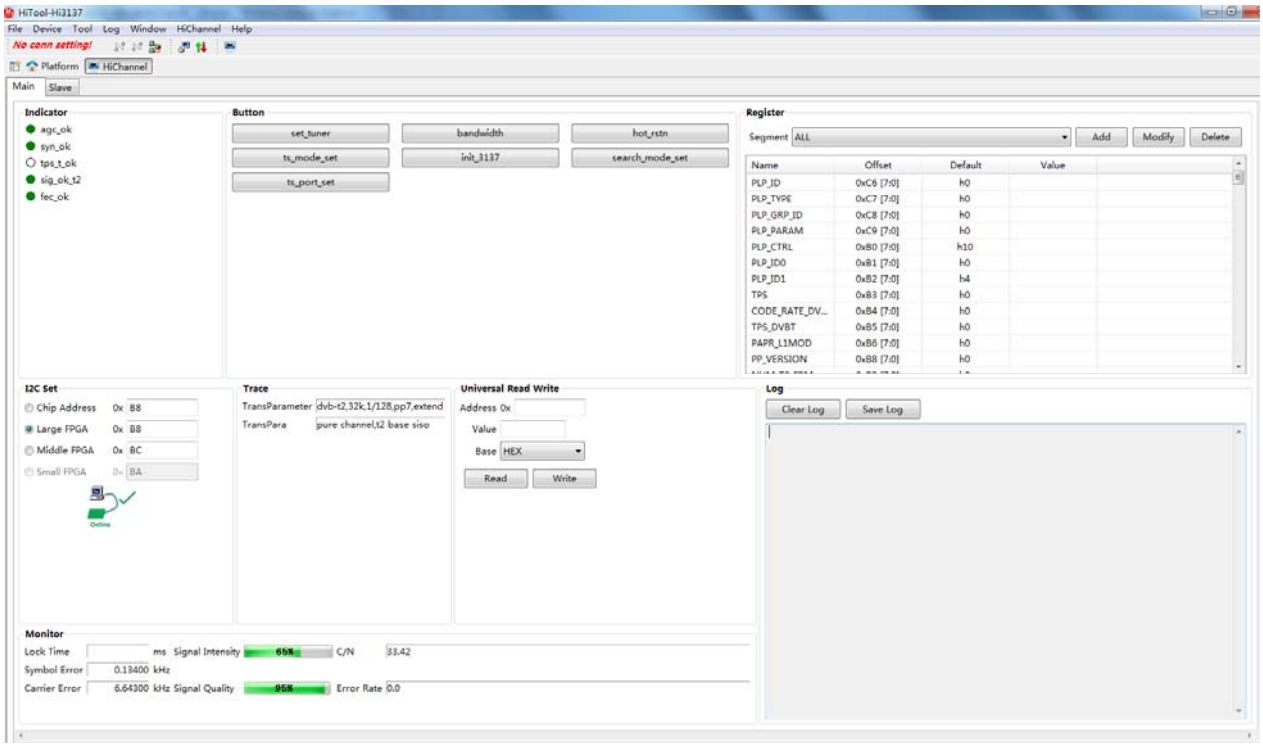


----End

3 Main GUI

Figure 3-1 shows the main GUI of the HiChannel.

Figure 3-1 Main GUI of the HiChannel



There are two tab pages: the **Main** tab page and the **Slave** tab page. The two pages are the same. You need to use only the **Main** tab page.

The tab pages consist of the following panes:

- Register

  This pane is used to add, modify, or delete register partitions and registers, generate register files, and monitor register values by using the buttons and shortcut menu.

- Button

Clicking a button in the **Button** pane triggers the execution of a C script function. Mapping between buttons and executed C script functions can be customized.

- Indicator

  Controlled by the timer, the HiChannel periodically calls the C script functions, obtains the returned values of the functions, and dynamically changes the color of the indicator according to the returned values.

- Trace

  Controlled by the timer, the HiChannel periodically calls the C script functions, obtains the returned values of the functions, and displays the values in the text box of the **Trace** pane.

- Monitor

  This pane contains the following parameters:

  - C/N
  - Error Rate
  - Signal Intensity
  - Signal Quality
  - Lock Time
  - Symbol Error
  - Carrier Error

- Universal Read Write

  This pane is used to read/write values from/to registers at specific addresses.

- I2C Set

  This pane is used to set addresses for registers and display the I^2C bus status.

- Log

  This pane displays operation-related information and stores logs.

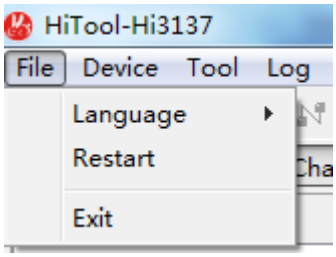
4 Menus and Toolbar

4.1 Menu Items

4.1.1 File

The **File** menu is used to switch the language version and restart or exit the software.

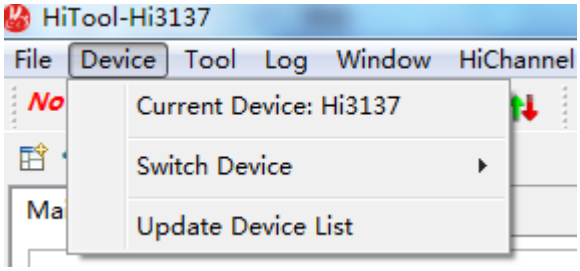
Figure 4-1 File menu



4.1.2 Device

The **Device** menu is used to switch the chip and update the chip list.

Figure 4-2 Device menu



4.1.3 Tool

The **Tool** menu is used to manage tools. Choose **Tool** > **Tool Manager**. Then the **Tool manager** UI shown in Figure 4-4 is displayed. Choose **HiChannel**. You can then enable, disable, uninstall, upgrade, or degrade the HiChannel, manage configuration parameters, view plug-ins, or register the software.

Figure 4-3 Tool menu

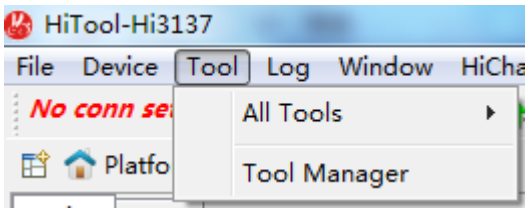
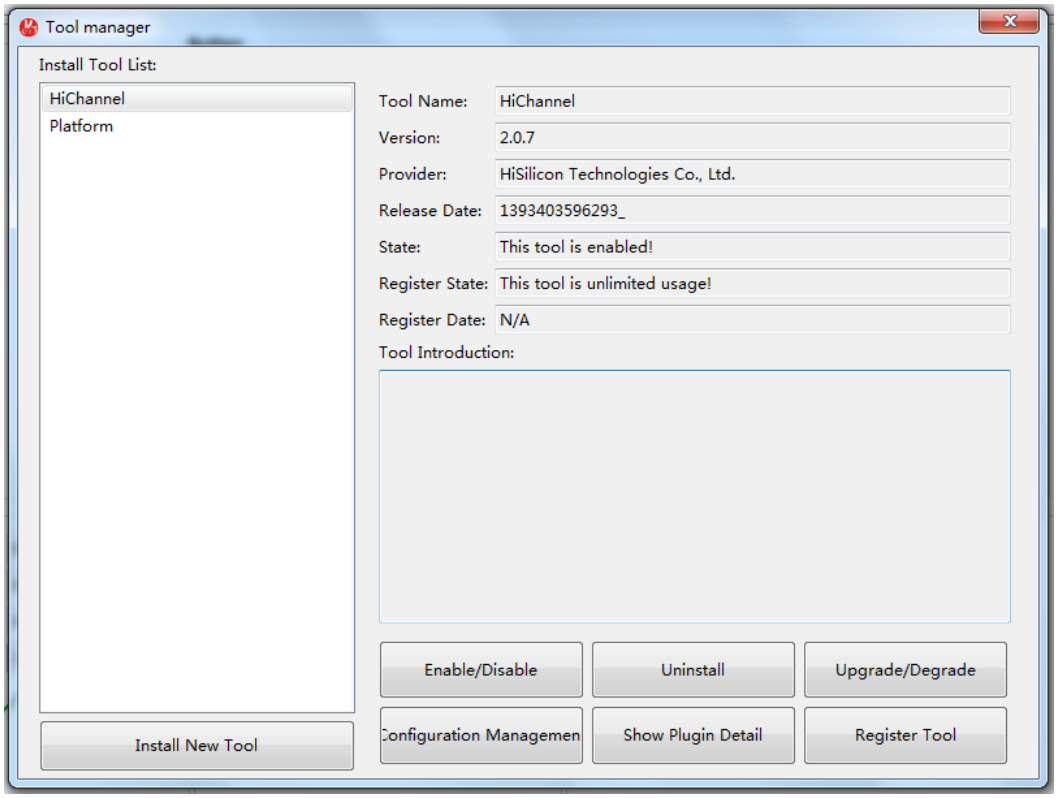


Figure 4-4 Tool manager



4.1.4 Log

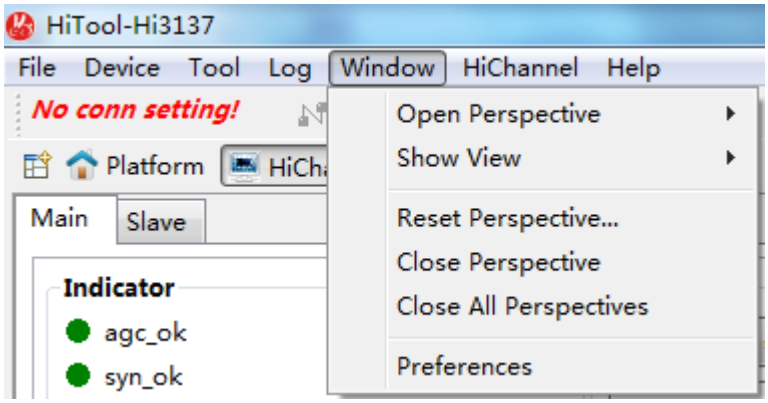
The **Log** menu is used to display and store logs.

Figure 4-5 Log menu

4.1.5 Window

The **Window** menu is used to implement switchover between views.

Figure 4-6 Window menu



4.1.6 HiChannel

The **HiChannel** menu is frequently used, which contains the **Advance** and **Setting** sub menus.

The **Advance** sub menu is used to monitor the error rate and C/N in real time, and display the constellation view, spectrum, and time domain data. See Figure 4-7.

Figure 4-7 Advance sub menu

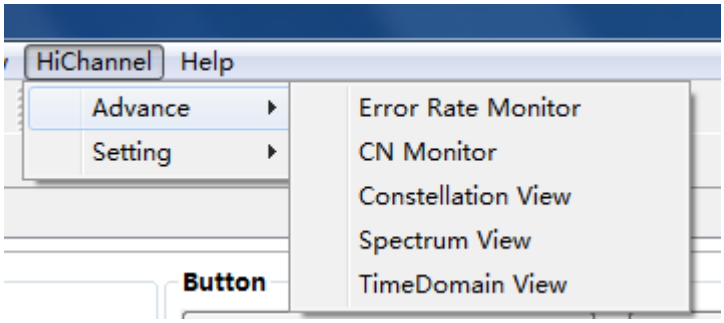
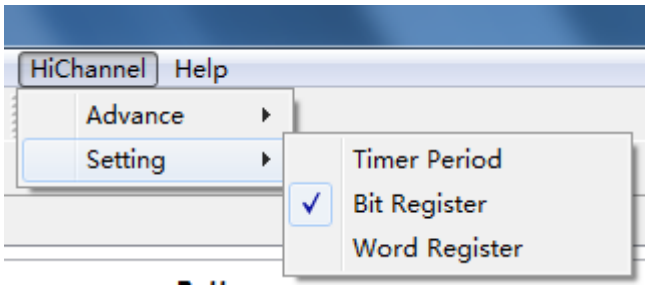


Figure 4-8 shows the **Setting** sub menu.

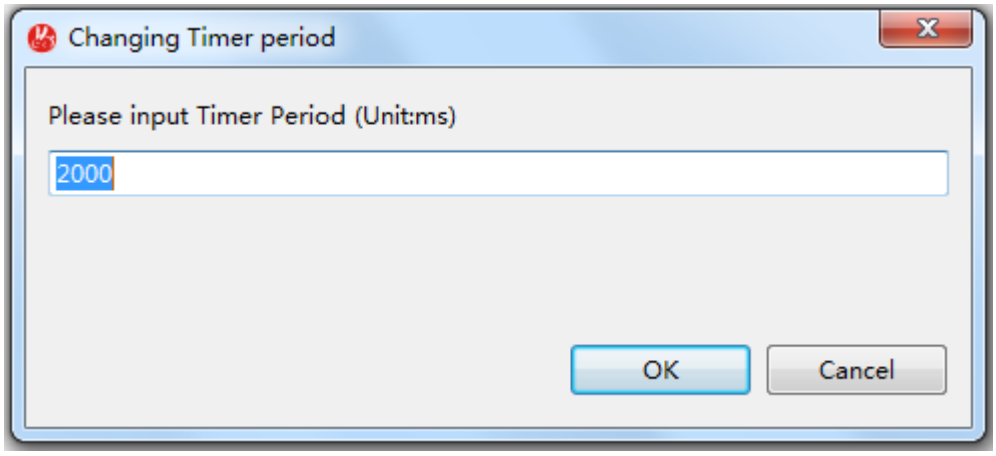
Figure 4-8 Setting sub menu



- Timer Period

  Time Period is used to set the automatic refresh cycle for the indicator, trace display, and common monitoring. The unit is ms, and the default value is 2000. See Figure 4-9.

Figure 4-9 Changing Timer Period



- Bit Register

  Registers in the register information area are named, displayed, and operated by several bits in a byte (or word). When **Bit Register** is selected, √ is displayed close to **Bit Register**. You can select only one of **Bit Register** and **Word Register**.

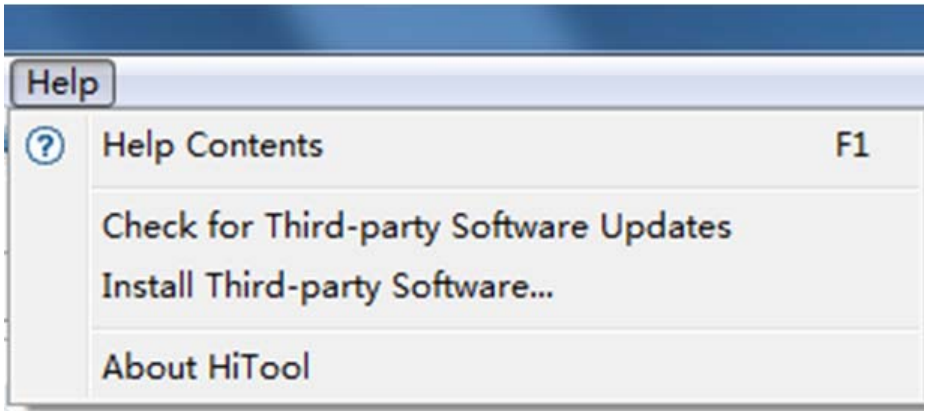
- Word Register

  Registers in the register information area are named, displayed, and operated by word (or byte if the register bit width is 8 bits). When **Word Register** is selected, √ is displayed close to **Word Register**. You can select only one of **Bit Register** and **Word Register**. This option applies to the register list file generated for the driver.

4.1.7 Help

The **Help** menu provides descriptions of various functions. You can view the help information whenever you have doubts.

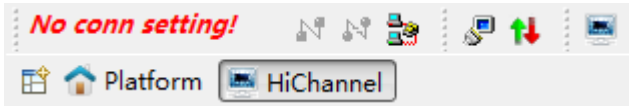
Figure 4-10 Help menu



4.2 Toolbar

Figure 4-11 shows the HiChannel toolbar. The toolbar allows you to set the connection parameters, serial port, TFTP, and the connection mode.

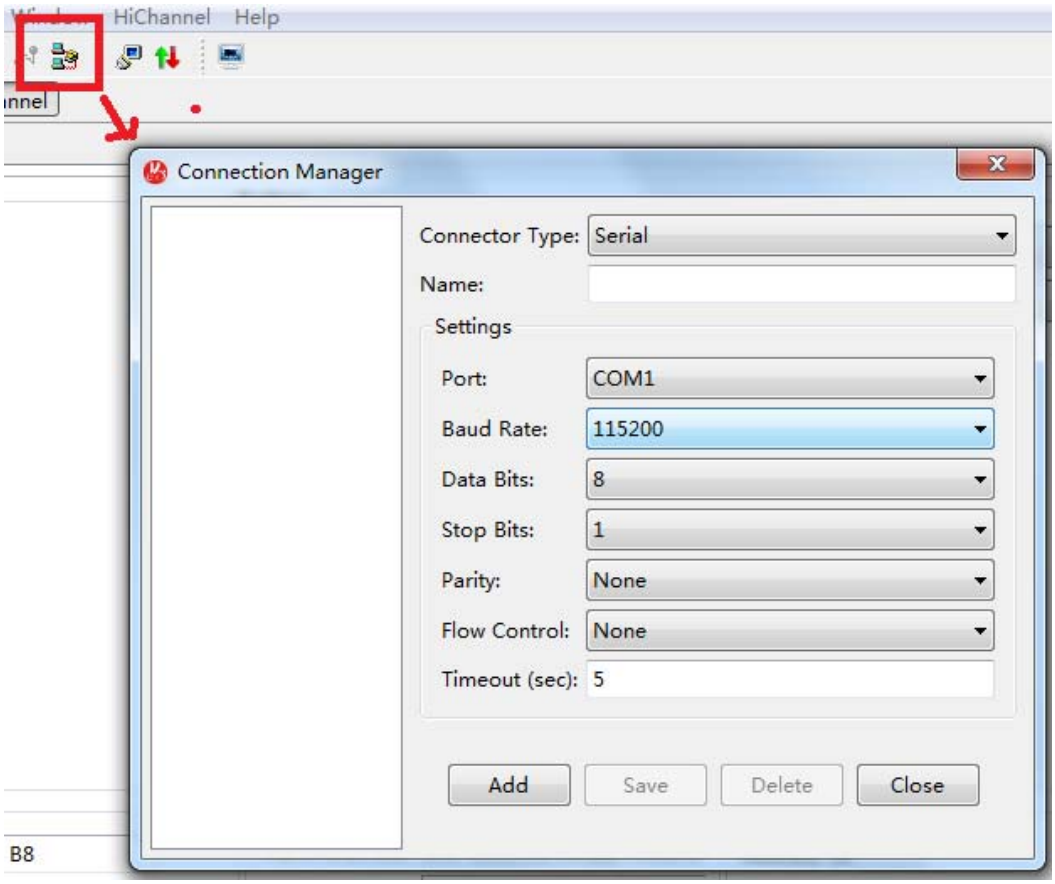
Figure 4-11 Toolbar



4.2.2 Connection Manager

Clicking the icon in the red rectangle shown in Figure 4-12 displays the **Connection Manage**r dialog box, which allows you to set basic port parameters such as the port ID and baud rate.

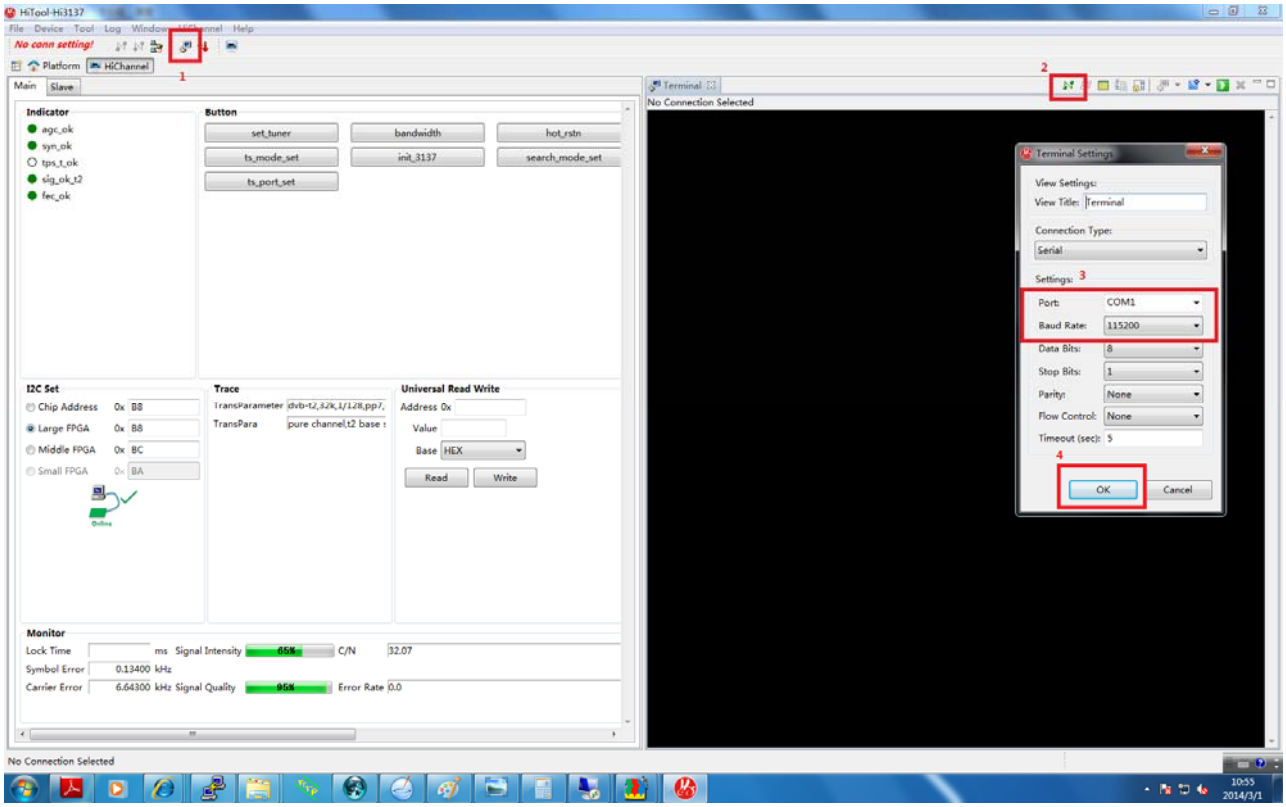
Figure 4-12 Connection Manager



4.2.3 Serial Port

Clicking the icon in red rectangle 1 shown in Figure 4-13 displays the **Terminal** pane. Then click the icon in red rectangle 2. The **Terminal Settings** dialog box is displayed, in which you can set the serial port ID and baud rate. Click **OK** after the configuration.

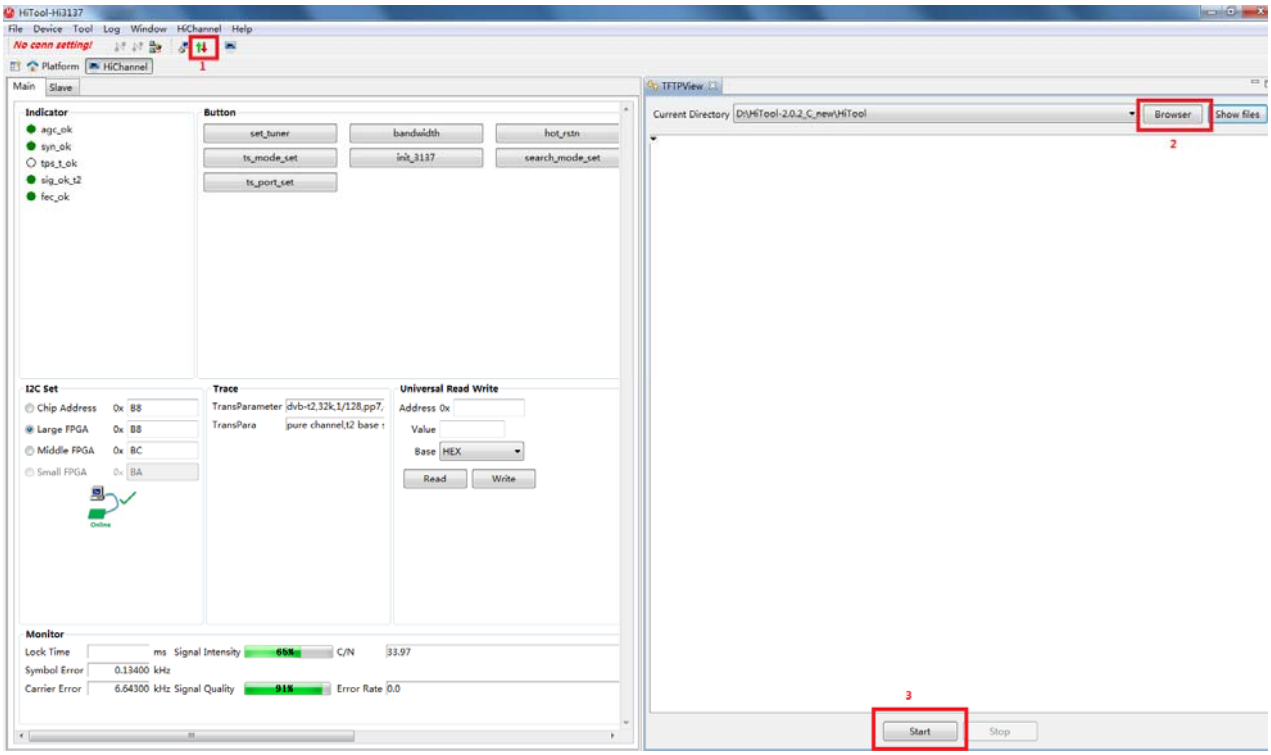
Figure 4-13 Serial port settings



4.2.4 TFTP

Clicking the icon in red rectangle 1 shown in Figure 4-14 displays the **TFTPView** pane for debugging.

Figure 4-14 TFTP service



4.2.5 Connection Mode

Clicking the icon in the red rectangle shown in Figure 4-15 displays the **Connection Manager** dialog box. You can select **DUT Network** or **USB Device** according to the connection mode.

Figure 4-15 Connection Manager

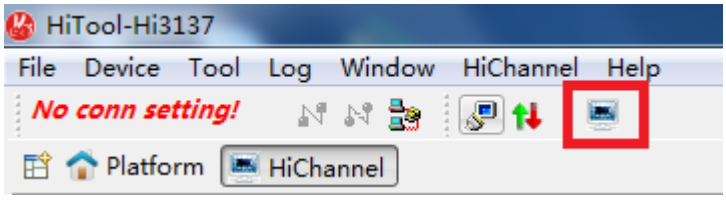


Figure 4-16 Network connection

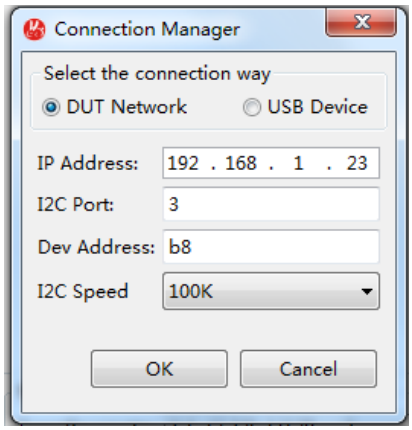
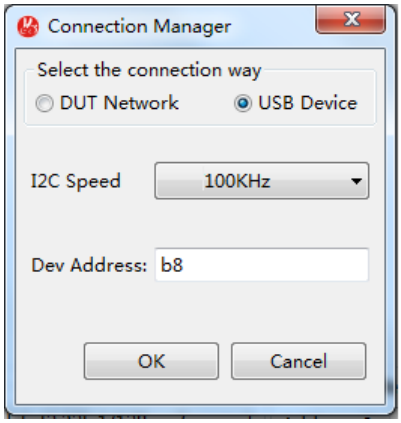


Figure 4-17 USB connection

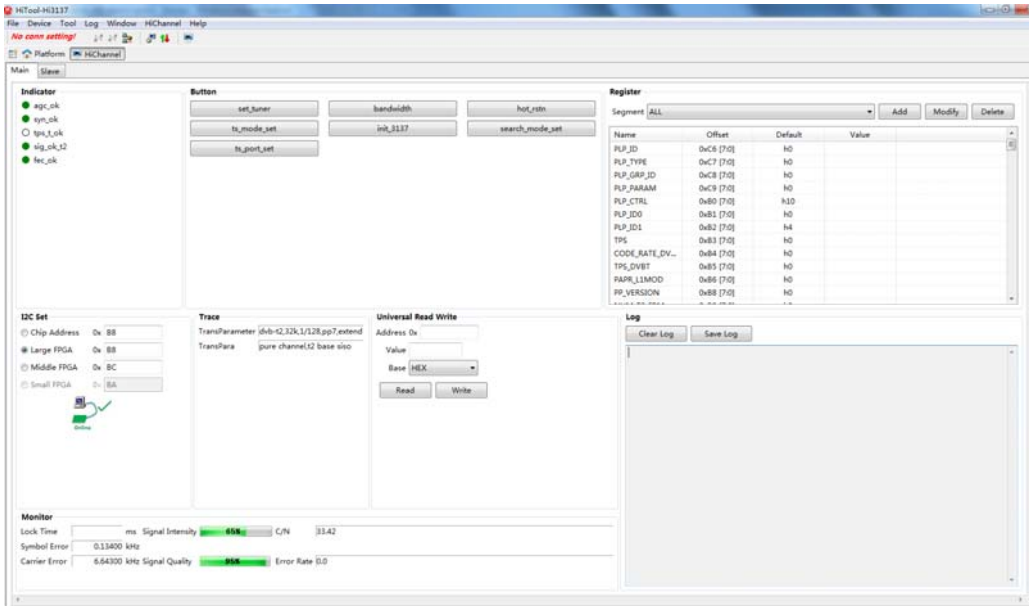


- **IP Address**: IP address for the target board
- **I2C Port**: ID of the I^2C channel that connects the channel chip to the Hi3137. The channel ID is determined by the hardware solution. Confirm it with the hardware engineer of the solution.
- **Dev Address**: I^2C address for the Hi3137
- **I2C Speed**: I^2C rate

5 Major Operations

The **Main** tab page is the main operation area of the HiChannel. It consists of eight panes: **Indicator**, **Button**, **Register**, **I2C Set**, **Trace**, **Universal Read Write**, **Log**, and **Monitor**. See Figure 5-1.

Figure 5-1 Main tab page



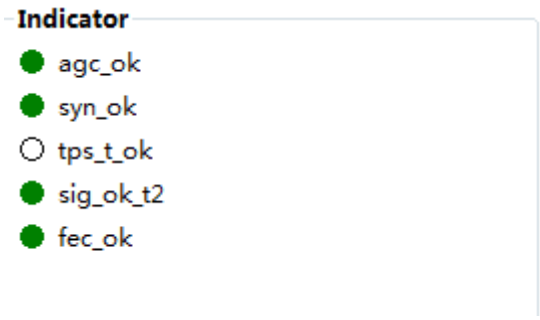
5.1 Indicator

As shown in Figure 5-2, the **Indicator** pane provides the following real-time monitoring information for facilitating observation of the chip working status:

- **agc_ok**: The AGC is locked.
- **syn_ok**: Synchronization of the carrier, timer, and symbols of the Hi3137 is complete.
- **tps_t_ok**: Extraction of signaling parameters in the DVB-T mode is complete. It is invalid in DVB-T2 mode.

- **sig_ok_t2**: Extraction of signaling parameters in DVB-T2 mode is complete.
- **fec_ok**: Error correction decoding succeeds.

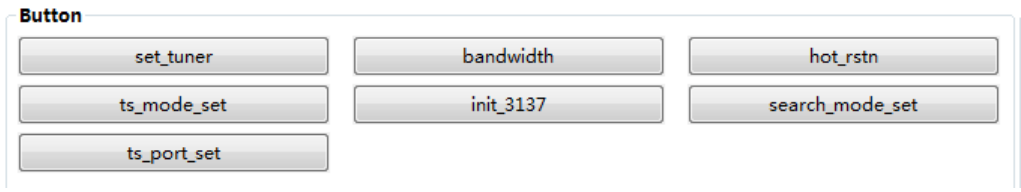
Figure 5-2 Indicator pane



5.2 Button

As shown in Figure 5-3, the HiChannel provides multiple buttons in the **Button** pane to implement specific functions. These buttons are bound to specific C scripts, which are triggered by clicking the buttons.

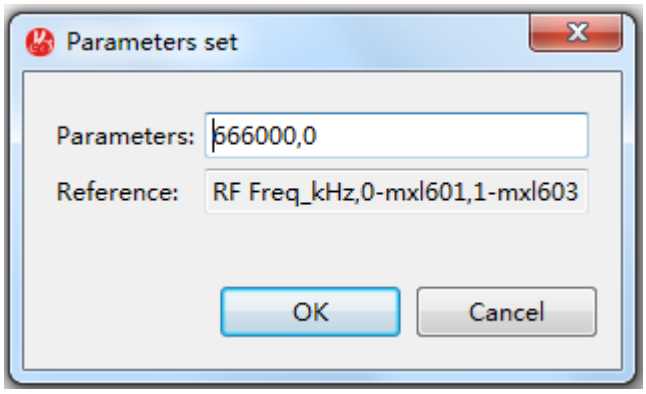
Figure 5-3 Button pane



- set_tuner

  Sets the tuner frequency. Enter the frequency (in kHz) to be locked and the model of the tuner chip (**0** indicates the MxL601, and **1** indicates the MxL603) in the displayed dialog box, and click **OK**. Then you can lock the frequency of the tuner.

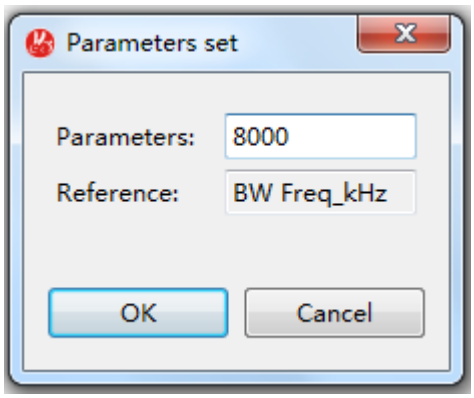
Figure 5-4 set_tuner parameters



- bandwidth

  Sets the Hi3137 bandwidth when locking the frequency. The default value is 8000 and the unit is kHz. In DVB-T mode, the Hi3137 supports four bandwidth modes: 5M, 6M, 7M, and 8M. In DVB-T2 mode, the Hi3137 supports five bandwidth modes: 5M, 6M, 7M, 8M, and 1.7M.

Figure 5-5 Setting the bandwidth



- hot_rst

  Performs hot reset on the Hi3137. Clicking this button performs hot reset on the Hi3137 directly without setting any parameters.

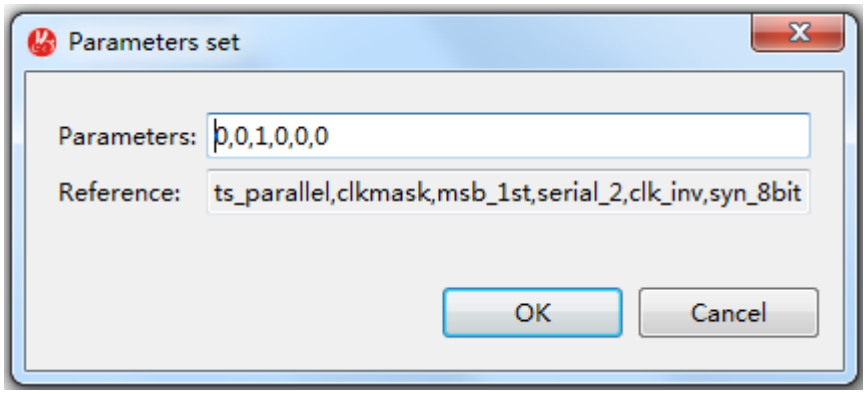
- ts_mode_set

  Sets the TS output parameters. The frequently used parameters are described as follows:

  - **ts_parallel**: Specifies the serial or parallel mode for TS outputs. **0** indicates the serial mode, and **1** indicates the parallel mode. The default value is **1**.
  - **clkmask**: Specifies whether to mask the TS clock. **1** indicates that the TS output clock is masked when the TS data is invalid, and **0** indicates that the TS clock is not masked all the time. The default value is **0**.
  - **msb_1st**: Specifies the priority for TS serial outputs. **1** indicates that the most significant bit (MSB) takes priority, and **0** indicates that the lease significant bit (LSB) takes priority. The default value is **1**.

- **serial_2**: Specifies the TS serial output mode. **1** indicates 2-bit serial output, and **0** indicates 1-bit serial output. It is valid only when **ts_parallel** is **0**. The default value is **0**.
- **clk_inv**: Configures the TS clock edge. **1** indicates that the falling edge of the TS clock is between data, and **0** indicates that the rising edge of the TS clock is between data. The default value is **0**.
- **sync_8bit**: Specifies the width of TS sync header in the serial mode. **1** indicates 8 bits, and **0** indicates 1 bit in 1-bit serial mode or 2 bits in the 2-bit serial mode. The default value is **0**.

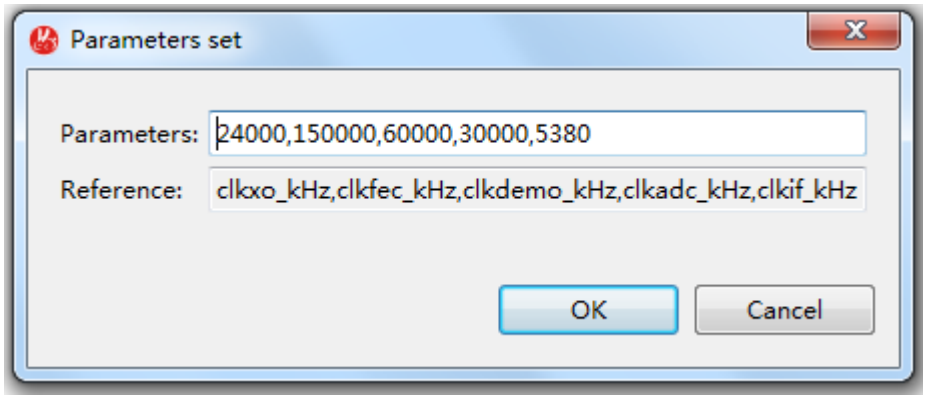
Figure 5-6 Setting the TS output mode



- init_3137

  Initializes the Hi3137. The parameters are as follows:
  - **clkxo_kHz**: frequency of the Hi3137 external input clock, in kHz
  - **clkfec_kHz**: frequency of the Hi3137 internal decoding clock, in kHz
  - **clkdemo_kHz**: frequency of the Hi3137 internal demodulation clock, in kHz
  - **clkadc_kHz**: frequency of the Hi3137 internal AD sampling clock, in kHz
  - **clkif_kHz**: frequency of the Hi3137 input intermediate frequency (IF), in kHz

Figure 5-7 Initializing the Hi3137

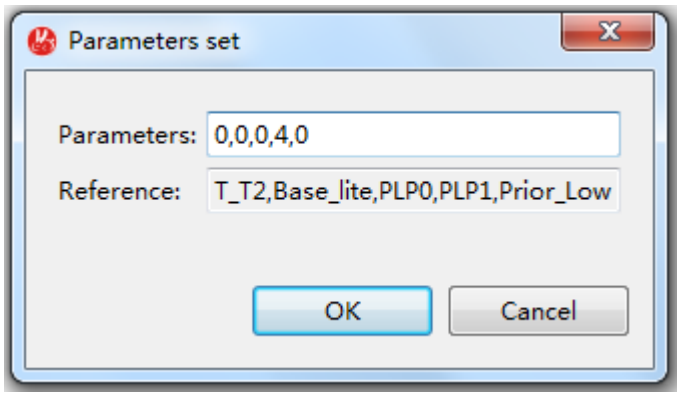


- search_mode_set

Sets the Hi3137 search mode. The parameters are as follows:

- **T_T2**: Specifies whether the Hi3137 searches for DVB-T or DVB-T2 signals. **0** indicates that the Hi3137 searches for only DVB-T2 signals, **1** indicates that the Hi3137 searches for only DVB-T signals, and **2** indicates that the Hi3137 searches for both DVB-T and DVB-T2 signals. The default value is **2**.
- **Base_lite**: Specifies the base or lite mode to be searched for. **0** indicates that only the base mode is searched for, **1** indicates that only the lite mode is searched for, and **2** indicates that both the base and lite modes are searched for. The default value is **0**.
- **PLP0**: Specifies the ID of the data physical layer pipe (PLP) in DVB-T2 mode. The default value is **0** for the single PLP or the data PLP ID of the program to be played for multi-PLP.
- **PLP1**: Specifies the ID of the common PLP in DVB-T2 mode. The default value is **0** for the single PLP. For multi-PLP, if the common PLP exists, the value is the actual common PLP ID; if the common PLP does not exist, the value must be the same as the data PLP ID.
- **Prior_low**: Specifies the stream output in DVB-T layered mode. **0** indicates that streams with a high priority are output, and **1** indicates that streams with a low priority are output. The value is **0** for the non-layered mode.

Figure 5-8 Setting the Hi3137 search mode



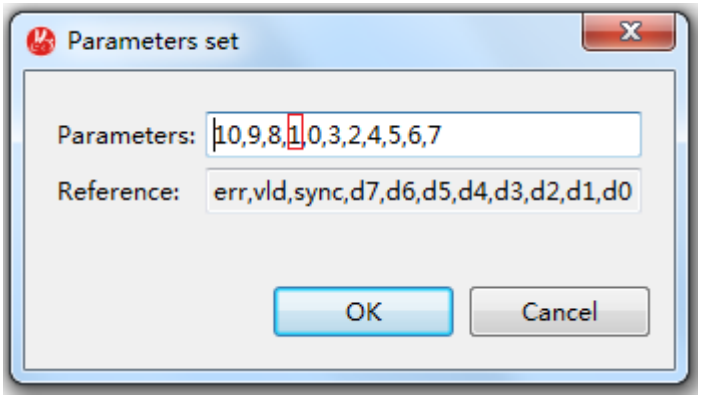
- ts_port_set

  Sets the TS pin output sequence. The parameters are as follows:

  - **Parameters**: This group of parameters defines the actual TS functions of the Hi3137. The IDs 0 to 7 correspond to the ts_data0 to ts_data7 data signals. The ID 8 corresponds to the sync signal, 9 corresponds to the data validity signal, and 10 corresponds to the TS error signal.
  - **Reference**: This group of parameters defines the TS output pins of the Hi3137. Any internal TS signal (except TS_CLK) can be bound to any TS output pin.

    For example, to output the TS LSB ts_data0 from the TS_DATA7 pin (d7) of the Hi3137, set **1** in **Parameters** to **0** in **Reference**. See Figure 5-9.

Figure 5-9 Setting the TS pin output sequence



5.3 I2C Set

The **I2C Set** pane is used to set the I^2C address for the chip or field-programmable gate array (FPGA) and display the I^2C connection status in real time. When the I^2C is connected properly, the green **Online** is displayed; when the I^2C is not connected, the red **Offline** is displayed.

Figure 5-10 I^2C connection success

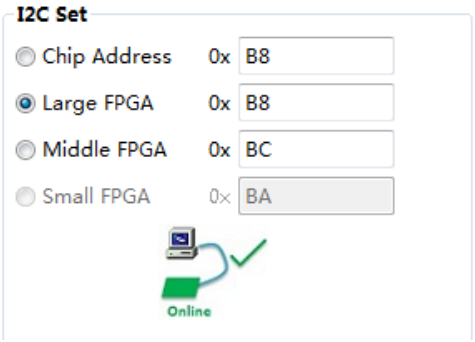
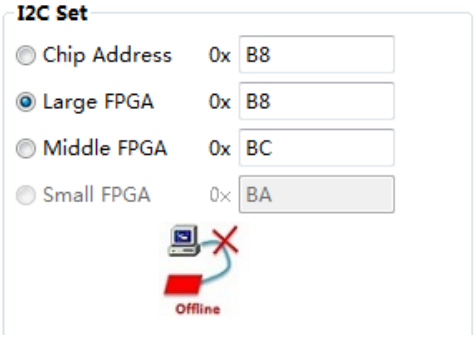


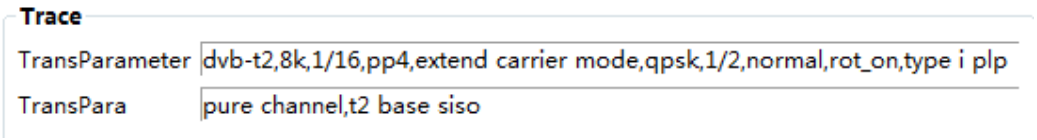
Figure 5-11 I2C connection failure



5.4 Trace

The **Trace** pane displays basic signal information, including the DVB-T/T2 mode, fast Fourier transform (FFT) parameters, guard interval, pilot pattern, carrier mode (extended or not), constellation, internal code rate, forward error correction (FEC) frame length, constellation rotation mode, PLP type parameters, channel type (mixed or non-mixed), DVB-T2 base/lite mode, and single-input single-output (SISO) or multiple-input single-output (MISO) mode.

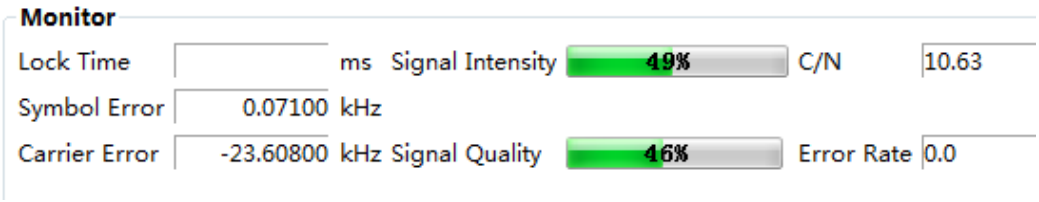
Figure 5-12 Basic signal information in the Trace pane



5.5 Monitor

The **Monitor** pane provides monitoring information of signals. See Figure 5-13.

Figure 5-13 Monitor



- **Symbol Error**: error between the symbol rate of the current signal and the input standard symbol rate (in kHz). A positive value indicates that the current symbol rate is greater.
- **Carrier Error**: error between the carrier center frequency of the current signal and the standard carrier center frequency (in kHz). A positive value indicates that the current carrier frequency is higher.
- **Signal Intensity**: signal strength
- **Signal Quality**: signal quality
- **C/N**: carrier-to-noise ratio, in dB
- Error Rate: bit error rate after low-density parity-check (LDPC) decoding and before Bose-Chaudhuri-Hocquenghem (BCH) decoding

5.6 Universal Read Write

The **Universal Read Write** pane allows you to read/write the Hi3137 registers in binary, decimal, or hexadecimal mode. See Figure 5-14.

Figure 5-14 Universal Read Write

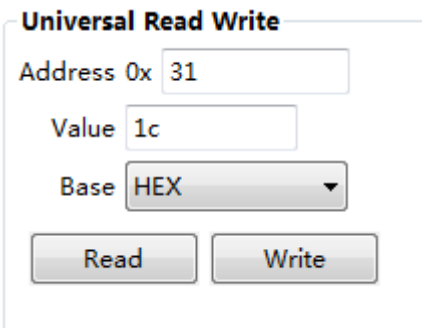
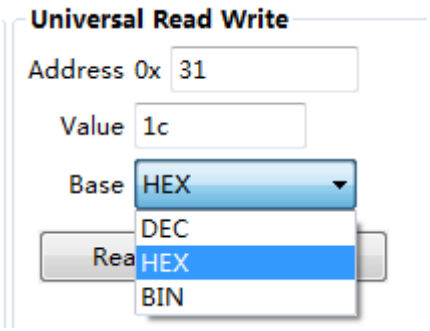


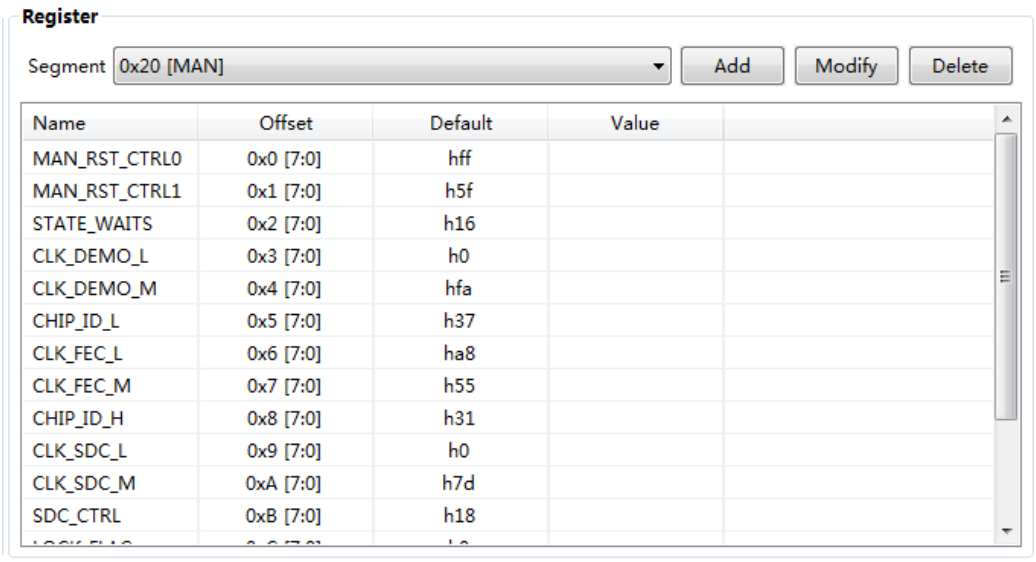
Figure 5-15 Setting the data type



5.7 Register

The **Register** pane provides information about frequently used registers of the Hi3137 by segment to facilitate register read and write operations. You can read or write to a single or multiple registers at a time. See Figure 5-16.

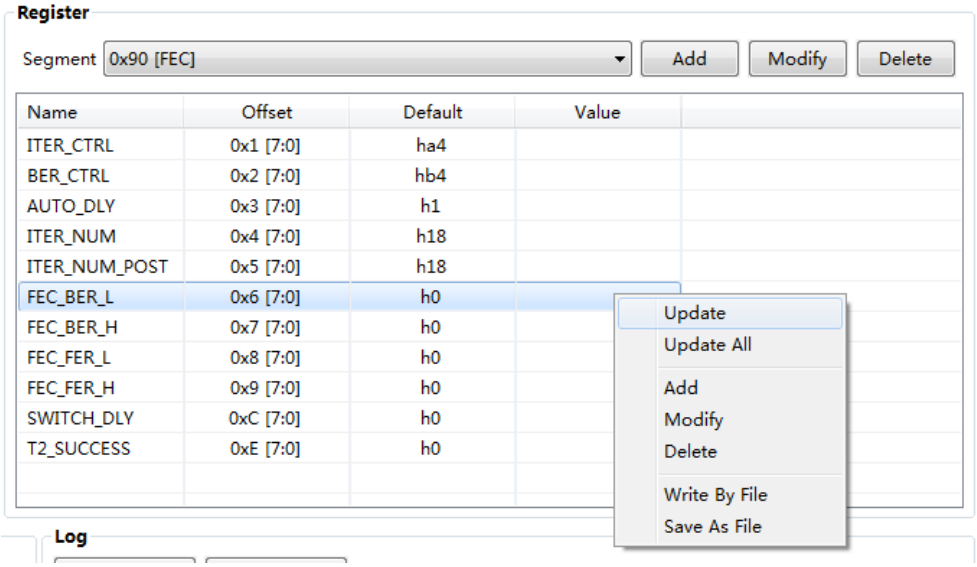
Figure 5-16 Register



- TPS1: PLP parameter register group
- TPS0: DVB-T/T2 signaling parameter register group
- OUT: phase locked loop (PLL) parameter register group
- FEC: error correction decoding control and status register group
- TDP1: ADC clock control register group
- CEQ1: timing loop and multipath distribution register group
- CEQ0: carrier loop and TS configuration register group
- SYN: synchronization control and status register group
- TPD0: automatic gain control (AGC) and IF control register group
- AGC: AGC control and status register group
- MAN: status control register group
- IP1: IO and PLL1 control register group
- IP0: analog-to-digital converter (ADC) and PLL0 control register group
- ALL: all register groups

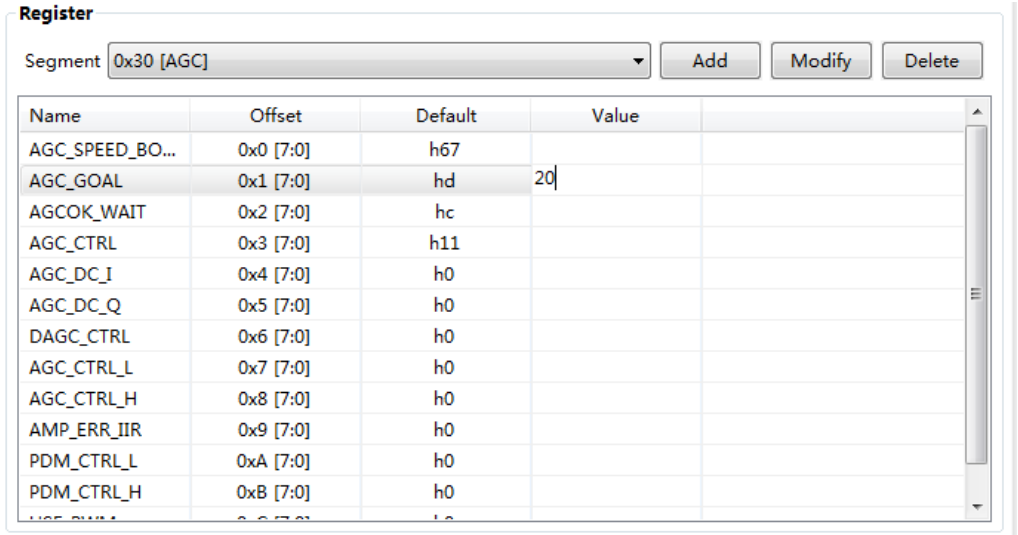
As shown in Figure 5-17, you can right-click a register row and choose **Update** from the shortcut menu to read the register, or choose **Update ALL** to read all registers in the current group.

Figure 5-17 Reading registers



As shown in Figure 5-18, you can enter a value in the **Value** column of a register and press **Enter** to write the value to the register.

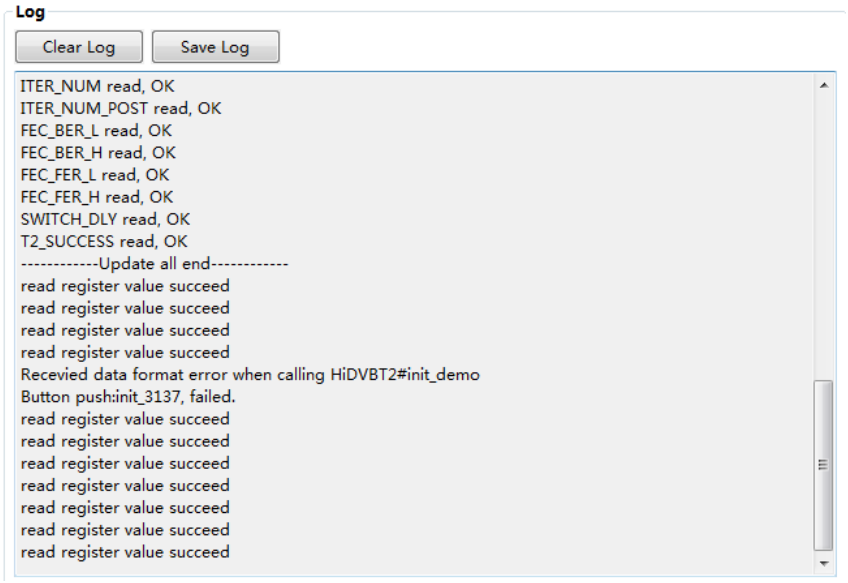
Figure 5-18 Writing to registers



5.8 Log

The results of each operation are displayed in the **Log** pane. You can check whether the operation is successful according to the log information. You can also clear or save logs.

Figure 5-19 Log



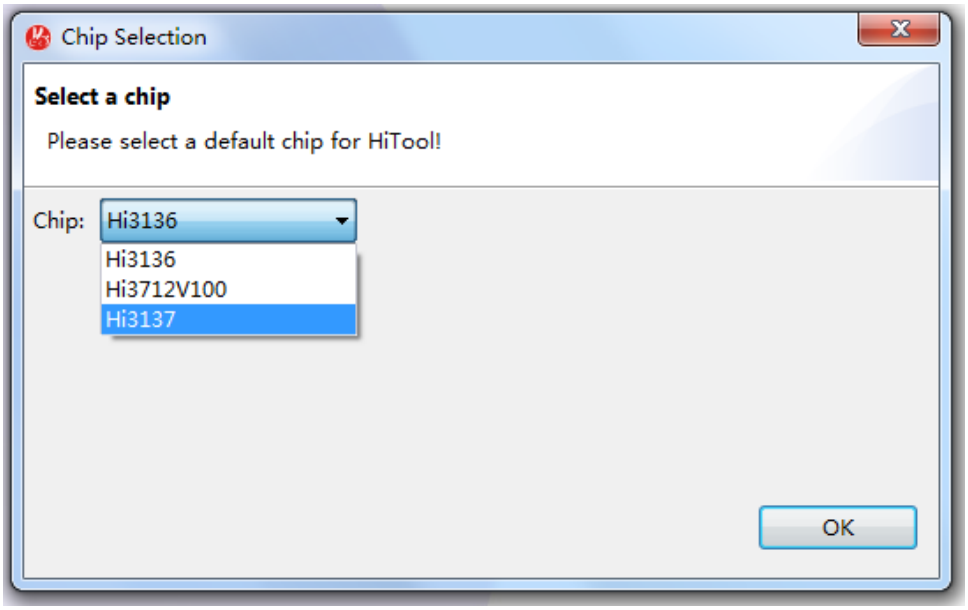
6 Application Instance

6.1 USB Connection Mode

This section takes the Hi3137 DMO1D VER.A board as an example to illustrate how to connect to the board in USB mode by using the HiChannel. The Hi3137 I^2C address is 0xB8. The Tuner is MxL601, the model is 0, and the address is 0xC0. The test signals are DVB-T2 base signals, the PLP mode is SinglePLP, the bandwidth is 8 MHz, and the input frequency is 666 MHz.

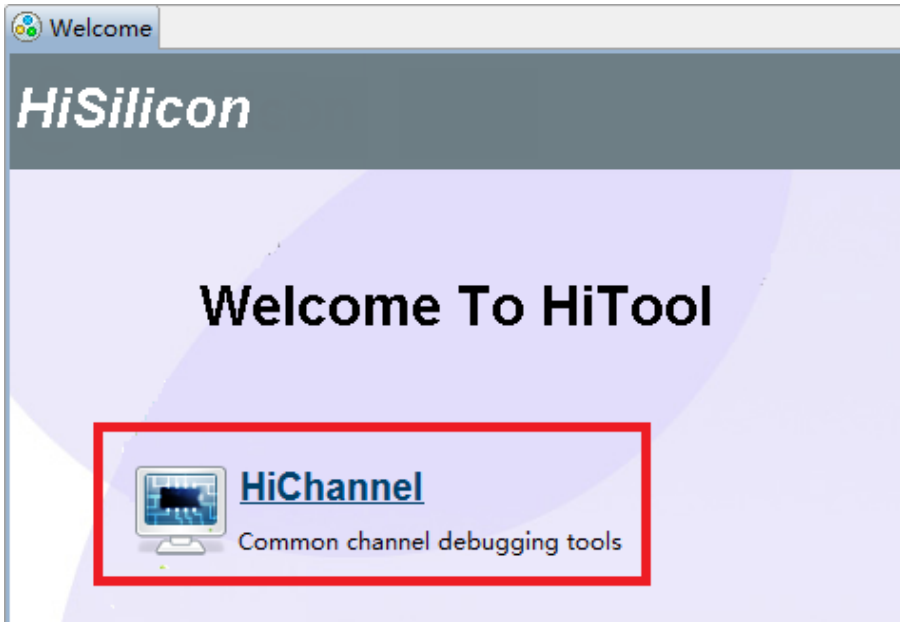
Step 1 Start the HiTool, and select the Hi3137, as shown in Figure 6-1.

Figure 6-1 Selecting the chip



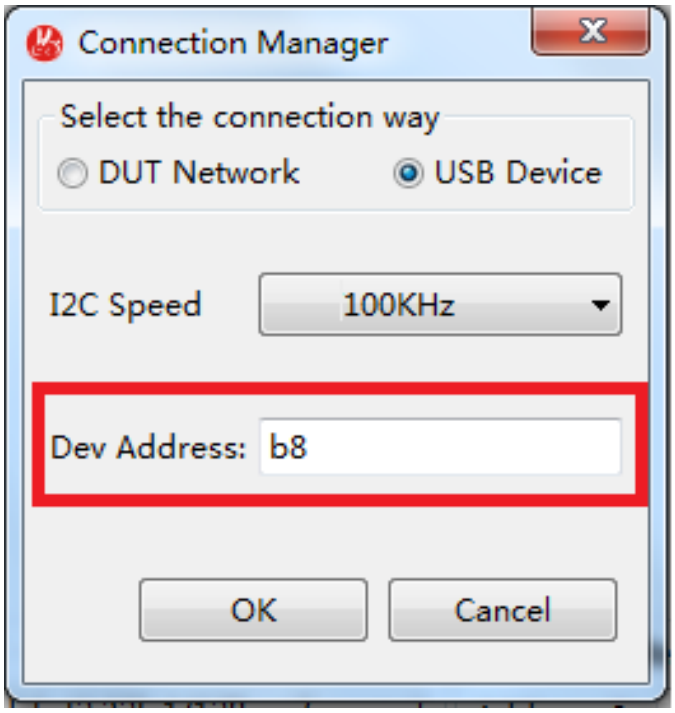
Step 2 Click HiChannel, as shown in Figure 6-2.

Figure 6-2 Clicking HiChannel



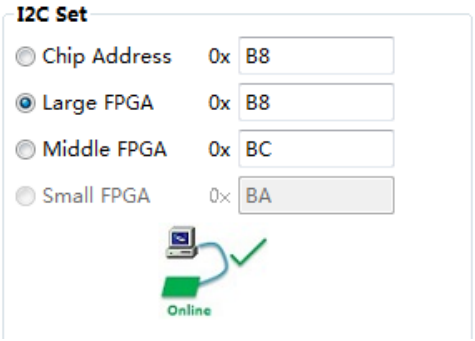
Step 3 Click  on the toolbar. Select **USB Device** in the displayed dialog box, and set **Dev Address** to **b8**, as shown in Figure 6-3.

Figure 6-3 Setting the I^2C address



After the connection is successfully set up, the I^{2}C indicator in the **I2C Set** pane changes from **Online** in green to **Offline** in red, as shown in Figure 6-4.

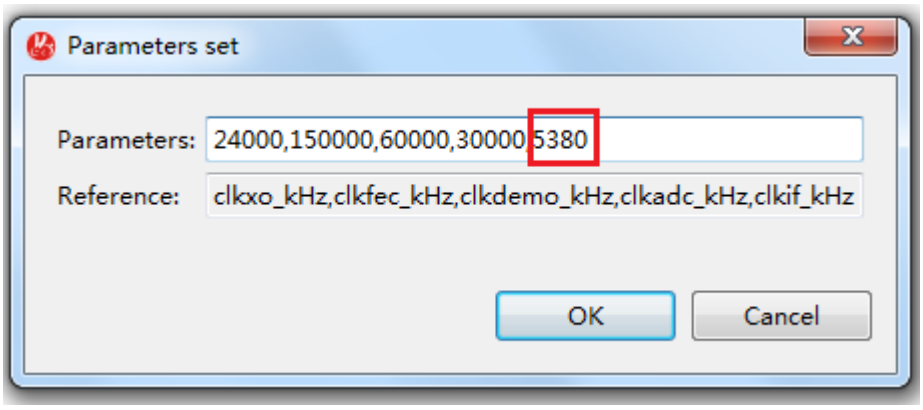
Figure 6-4 I^{2}C connection success



----End

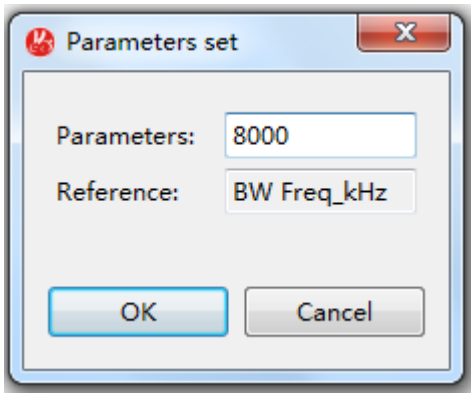
- Initialize the Hi3137 by clicking **init_3137** in the **Button** pane. Set **clkxo** (Hi3137 external input clock frequency) to **24 MHz** and **clkif_kHz** (IF frequency output by the tuner) to **5.38 MHz**, and retain the default values of **clkfec_kHz**, **clkdemo_kHz**, and **clkadc_kHz**.

Figure 6-5 Initializing the chip



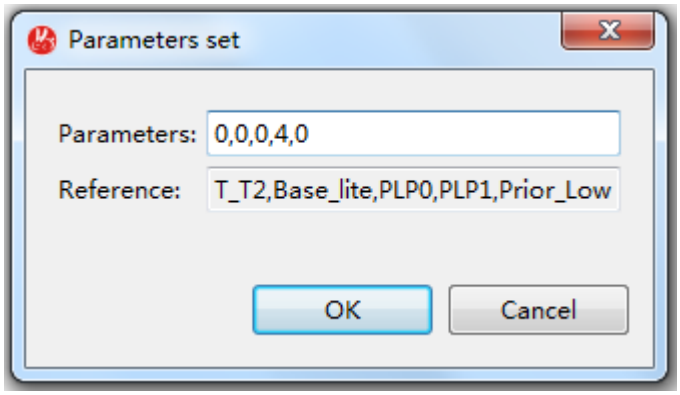
- Set the frequency lock bandwidth of the Hi3137 to **8000**.

Figure 6-6 Setting the bandwidth



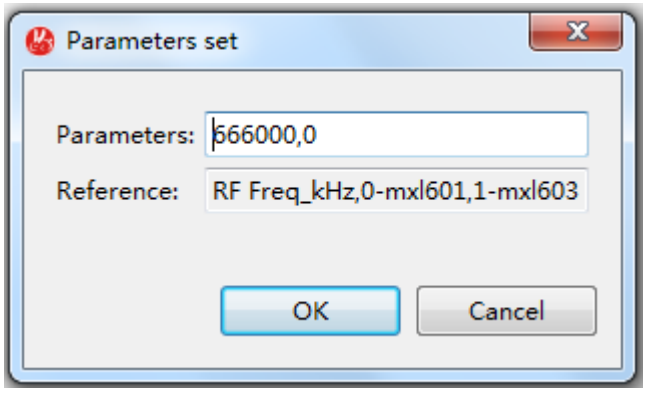
- Click **search_mode_set** to set the Hi3137 search mode. The current signals are DVB-T2, base, SinglePLP signals. Therefore set **T_T2** and **Base_lite** to **0**, and retain default values of other parameters.

Figure 6-7 Setting the search mode



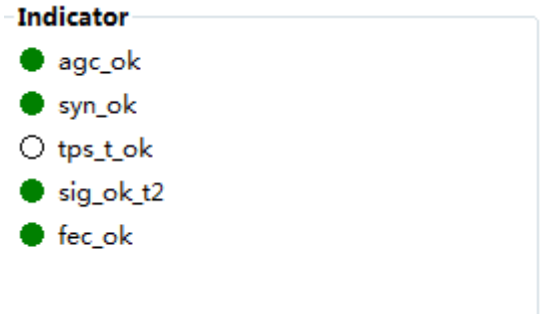
- Click **set_tuner** in the **Button** pane, and set the input signal frequency to **666 MHz** and tuner model to **0**.

Figure 6-8 Locking the frequency



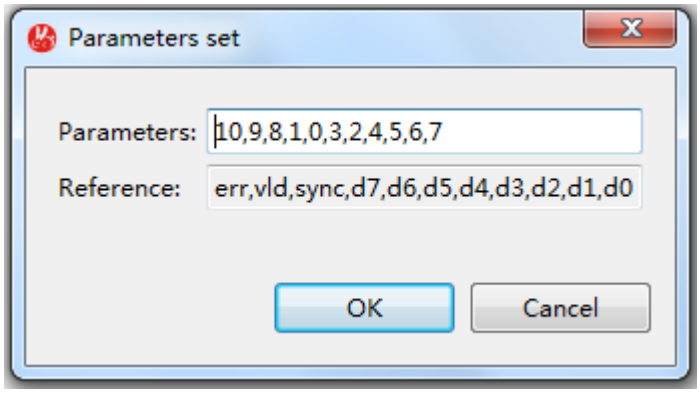
- View the indicator status in the **Indicator** pane to check whether the frequency is successfully locked. As shown in Figure 6-9, the **fec_ok** indicator is on, indicating that the frequency is successfully locked.

Figure 6-9 Checking the frequency lock status



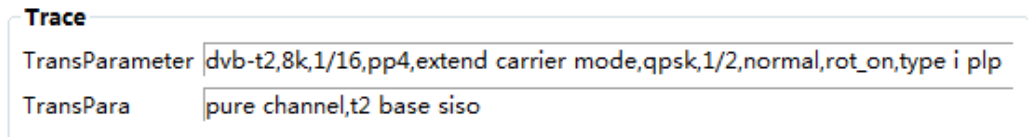
- After the frequency is successfully locked, click **ts_port_set** to set the TS pin output sequence so that TSs are output properly.

Figure 6-10 Setting the TS pin output sequence



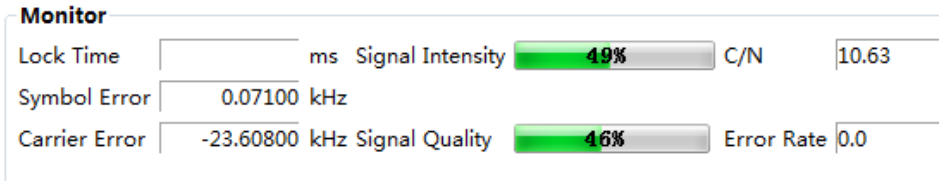
- After the frequency is locked successfully, you can view the current signal parameters in the **Trace** pane. As shown in Figure 6-11, the current signals are DVB-T2 signals, the FFT size is 8K, the guard interval is 1/16, the pilot pattern is PP4, the spectrum extension and constellation is QPSK, the internal code rate is 1/2, the FEC frame length is 64800, the constellation rotation and PLP type is I, the channel is a non-mixed channel, the mode is DVB-T2 base mode, and the transmission mode is SISO.

Figure 6-11 Viewing basic signal information



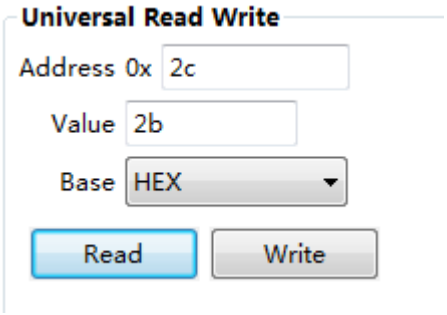
- After the frequency is locked successfully, you can view the real-time signal status information in the **Monitor** pane. As shown in Figure 6-12, the symbol rate error is 0.071 kHz, the carrier frequency error is –23.6 kHz, the signal strength is 49%, the C/N is 10.63, the BER is 0, and the signal quality is 46%.

Figure 6-12 Viewing signal status information



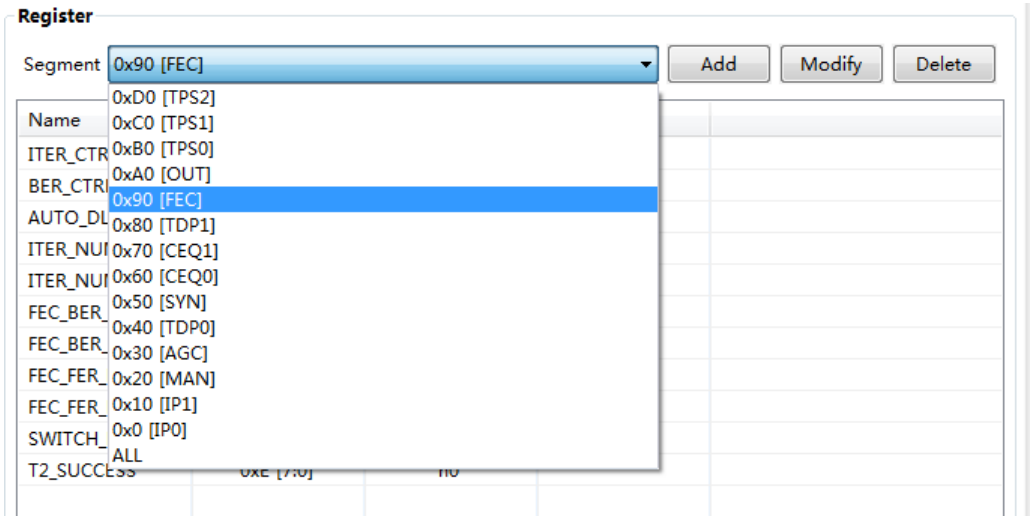
- After the frequency is locked successfully, you can read and write to registers in the **Universal Read Write** pane to debug the Hi3137. For example, you can read the register at the address 0x2c to check the chip lock status. As shown in Figure 6-13, the current 0x2c register is 0x2b (0x37 in DVB-T mode), indicating that the signal is locked successfully.

Figure 6-13 Reading/Writing to registers



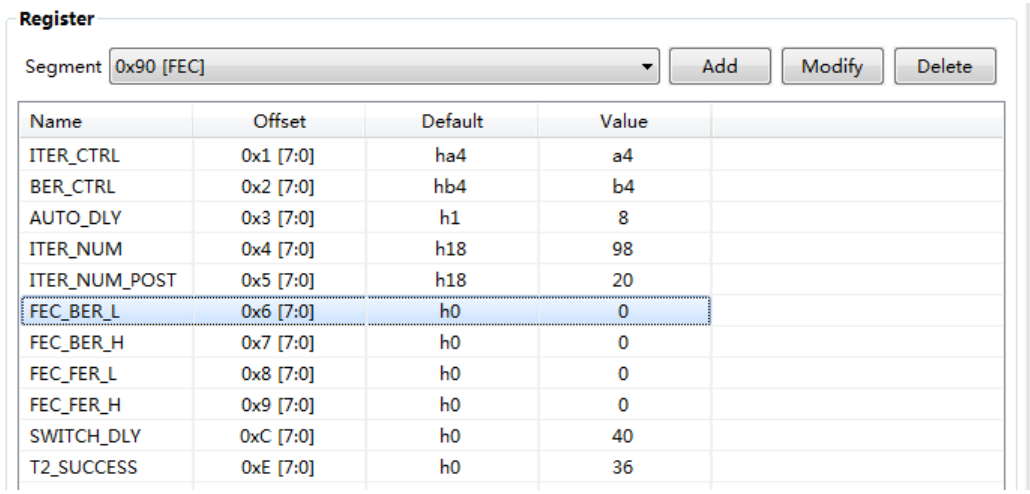
- After the frequency is locked successfully, you can debug the chip by reading/writing to registers by segment. For example, you can view the registers FEC_BER_L and FEC_BER_H in the FEC register group to monitor BER, as shown in Figure 6-14.

Figure 6-14 Selecting the FEC register group



Then you can choose **Update ALL** from the shortcut menu to update all registers in this group. The current FEC_BER_L and FEC_BER_H are 0, indicating that there is no bit error. You can also double-click the register to update it.

Figure 6-15 Updating the register group



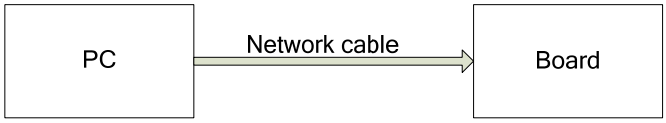
6.2 Network Connection Mode

This section takes the Hi3716C DMO VER.C+Hi3137 DMO1D VER.A as an example to illustrate how to connect to the board in network mode by using the HiChannel. The channel chip is the Hi3716C. The demodulation chip is the Hi3137, its I^2C channel ID is 3, and the I^2C address is 0xb8. The test signals are DVB-T2 base signals, the PLP mode is SinglePLP, the bandwidth is 8 MHz, and the input frequency is 666 MHz

6.2.1 Connection Mode 1

The PC connects to the board directly.

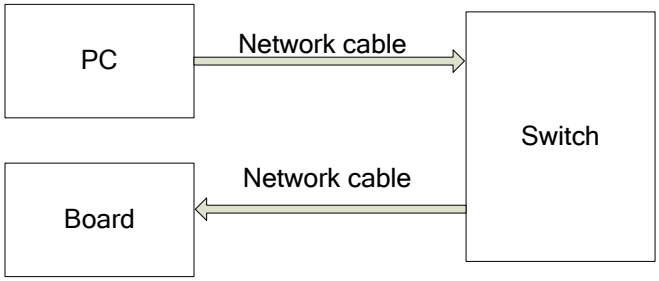
Figure 6-16 Direct connection between the PC and the board



6.2.2 Connection Mode 2

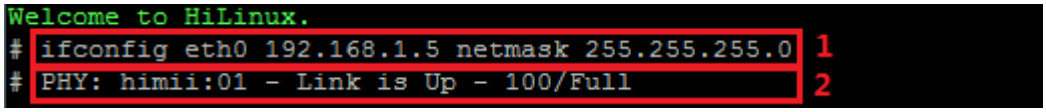
The PC and the board both connect to a switch.

Figure 6-17 Connection between the PC and the board by using a switch



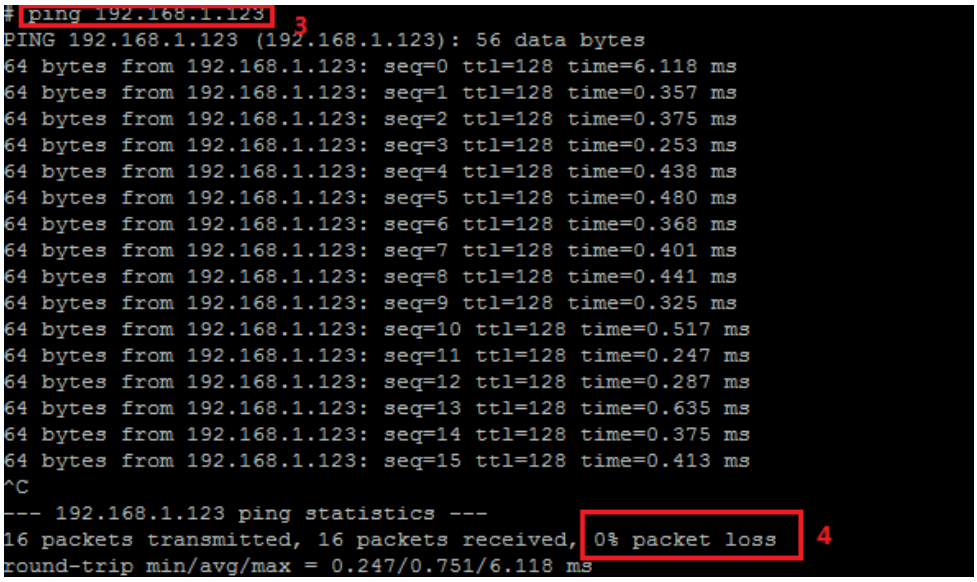
- Power on the board after the serial port and network port are connected. Set the board IP address by running **ifconfig eth0 192.168.1.5 netmask 255.255.255.0**. **192.168.1.5** is the IP address of the board to be debugged. If the board is connected to the PC or switch properly, **PHY: himii:01 - Link is Up- 100/Full** is displayed. If the information is not displayed after a long time, physical connection between the board and the PC or switch is abnormal. In this case, you need to check the network cable and the PC or switch to locate the fault.

Figure 6-18 Setting the board IP address



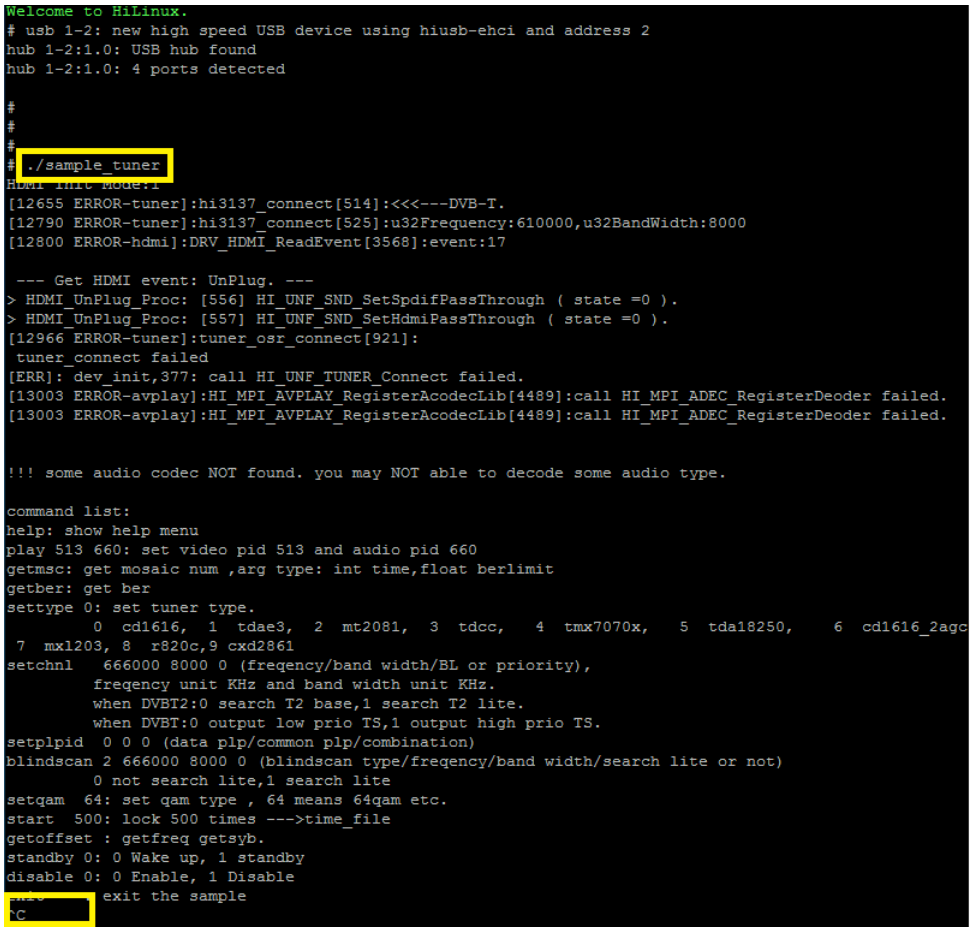
- Run **ping 192.168.1.123** to check whether the board and the PC are connected properly. **192.168.1.123** is the IP address of the PC. If the information indicating that data is returned from the PC is displayed, and the packet loss rate is 0, the board and the PC are connected properly, as shown in Figure 6-19.

Figure 6-19 Checking whether the network connection is normal



- If the Hi3137 reset function is controlled by the channel chip I/O pin, and the I/O pin output is at low level after power-on, you need to run **sample_tuner** in the root directory to initialize the I/O pin so that it does not always output at a low level. If you do not perform initialization, the Hi3137 is always in the reset state and cannot connect to the HiChannel. After running the sample, press **Ctrl+C** to exit.

Figure 6-20 Running sample_tuner

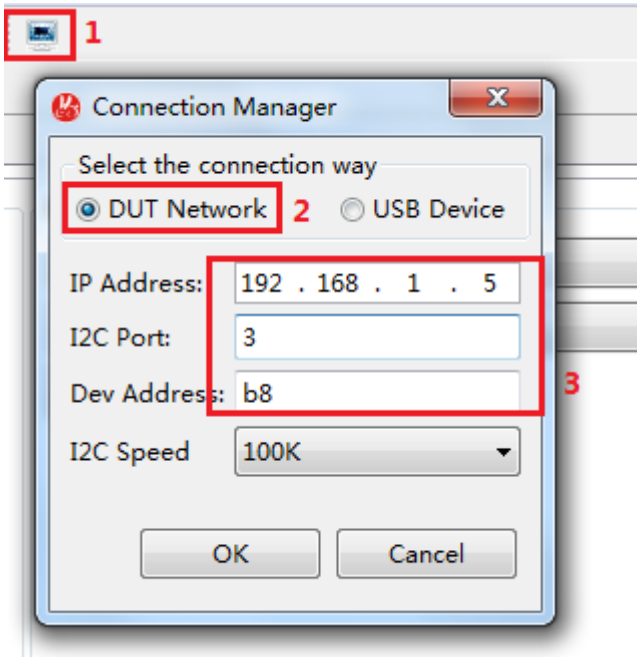


- Run **cd bin** to go to the **bin** folder in the root directory, and run the **ls** command to check whether the **soc_server** file (key file for connecting the board to the HiChannel) exists. If the file does not exist in the **bin** folder, you need to recompile the SDK to add this file. If the file exists, the HiChannel tool can be used to set up the connection. (When compiling the SDK, you need to enable the compilation of **soc_server**. For details, see 7 "Compilation of soc_server".)

Figure 6-21 Checking whether soc_server exists

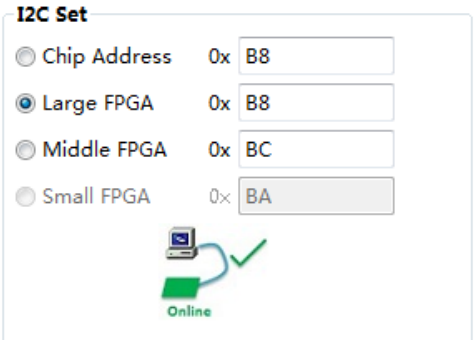
- Start the HiChannel, and click  . Select **DUT Network**, set **IP Address** to the configured board IP address (**192.168.1.5**), set **I2C port** to the I2C channel ID used by the Hi3137 (to **3**), and set **Dev Address** to the Hi3137 address (to **b8**). See Figure 6-22.

Figure 6-22 Setting connection parameters



- After the connection is successfully set up, the I^2C indicator in the **I2C Set** pane changes from **Online** in green to **Offline** in red, as shown in Figure 6-23.

Figure 6-23 I²C connection success



- The follow-up procedure after the I²C is connected successfully is the same as that for the USB connection mode. For details, see section 6.1 "USB Connection Mode."

7 Compilation of soc_server

soc_server enables the HiChannel to connect to the board to be tested in network mode. You need to enable the compilation of **soc_server** during compilation.

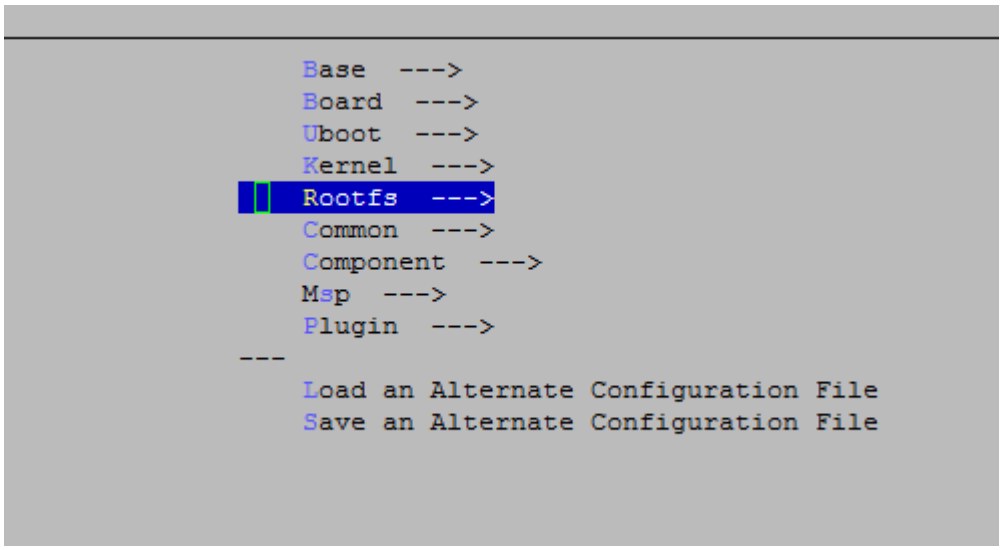
Run **make menuconfig** in the project directory, as shown in Figure 7-1.

Figure 7-1 make menuconfig

```
O:~/x6_new/Code> make menuconfig
```

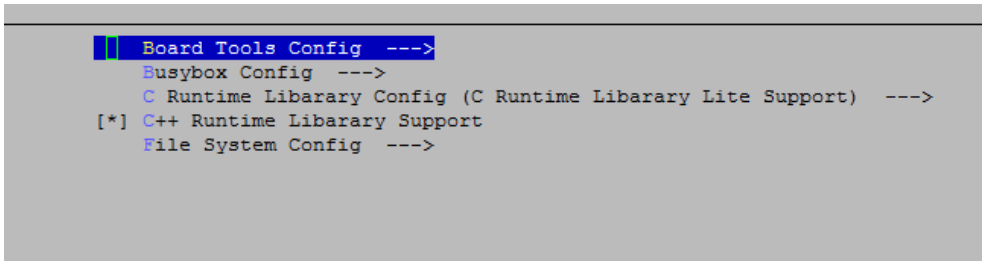
Select **Rootfs** in the SDK compilation configuration window and press **Enter**.

Figure 7-2 SDK compilation configuration window



Select **Board Tools Config** and press **Enter**.

Figure 7-3 Rootfs configuration window



Select **SOC Server Tool Support**, and press **y** to compile the **soc_server** file in the SDK. After downloading the generated **rootfs** image to the board, you can find the **soc_server** file in the **/bin** directory.

Figure 7-4 Board Tools Config

8 FAQs

8.1 What Do I Do If "Failed to open usb device" Is Displayed When the Board Is Connected in USB Mode?

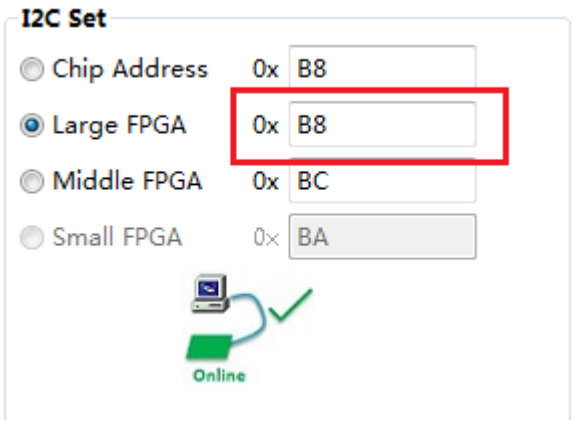
Do as follows:

- Check whether the USB driver has been successfully installed.
- If the USB driver is successfully installed but the connection also fails, close the HiChannel, disconnect the USB connector from the PC, restart the HiChannel, connect the USB connector to the PC, and set up the connection again.

8.2 What Do I Do If the HiChannel Is Successfully Connected to the Board But All Operations Are Invalid?

Set the selected component I^2C address in the **I2C Set** pane to the address of the Hi3137.

Figure 8-1 Viewing the I^2C address



8.3 What Do I Do If the HiChannel Is Connected to the Board Properly But the Frequency Fails to Be Locked?

The frequency fails to be locked due to various reasons. You can locate the fault as follows:

- Check whether signals from the channel chip are output properly (verify the signal output by using other solutions).
- Check whether the Hi3137 is initialized before the frequency lock operation. Click the **init_3137** button again and set the initialization parameters based on the current hardware and signal parameters. Pay attention to parameters such as the crystal clock and tuner output IF.
- Check whether the signal mode is consistent with the configured search mode (including the DVB-T/T2 mode and base/lite mode).
- Check whether the signal frequency is set correctly. Click the **set_tuner** button to lock the frequency again based on the signal frequency.

8.4 What Do I Do If the Frequency Is Successfully Locked But No Image Is Output?

Check whether the TS output pin sequence of the Hi3137 is the same as that of the channel chip. If not, set the sequence correctly by clicking the **ts_port_set** button.