

**USB
Smart Card Reader
ST7SCR Evaluation
Board**

USER GUIDE

May 2002

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ST7SCR

**SMART CARD READER
EVALUATION BOARD**

INTRODUCTION

The objective of this evaluation board is to provide the user with a reference design using the USB Smart Card Reader peripheral. This board is based on a ST7SCR MCU from STMicroelectronics that features an embedded USB full speed interface and a dedicated ISO 7816 UART interface.

The core of this evaluation board is the USB CCID (Chip Card Interface Device) compliant ST7 firmware that allows the peripheral to be recognized as a CCID class device by the host computer.

The USB CCID compliant firmware has to be updated to be used with synchronous Smart Cards.

The evaluation board includes ICC (Integrated Circuit Card) reading capabilities, a programmed ST7FSCR part with a beta version of the firmware (including the firmware source files), the ST host computer drivers and this user guide. The latest release of the ST7SCR firmware, the “Developing a USB Smart Card Reader with ST7SCR” application note AN1527 and development tools (C compiler, debugger and programming board) can be obtained by contacting your ST sales office.

1 GETTING STARTED

1.1 SYSTEM REQUIREMENTS

- In order to run the USB Smart Card Reader evaluation board, the host computer must first run an OS supporting the USB, which excludes Windows 95 and Windows NT. This OS can be Windows 98, Windows 98 SE, Windows Millennium, Windows 2000 or Windows XP.

1.2 HARDWARE INSTALLATION

Before connecting the device, select either self-powered or bus-powered power supply using the corresponding jumper (W5): If you select self-powered device, provide a 5-volt supply on the J6 connector.

1.3 SOFTWARE INSTALLATION

Before using the USB Smart Card Reader evaluation board, execute the setup.exe program and follow the wizard on screen instructions to install the STCCID driver.

To complete the installation, plug the board on the USB bus. It will be detected and the PC will finish the setup.

For this evaluation board, the used Vendor ID and Product ID are 0x0483 and 0x2105 respectively.

2 RUNNING THE SMART CARD READER EVALUATION BOARD

2.1 INTRODUCTION

Once the driver is installed on the host computer, the applet software can be used to communicate with the board.

To do this, execute the STCCIDTester.exe file from the start button in the Windows task bar (programs menu).

This applet uses the CCID specification to communicate with the USB device and to access the card.

2.2 HARDWARE FEATURES

The evaluation board is designed to be a bus-powered USB device although you can select the self-powered hardware option.

4 LEDs and 4 buttons are selectable by jumpers.

All the I/Os are available on connectors for adding extensions like keyboards.

An HE10 connector is also available for reprogramming the firmware in the Flash memory of the ST7FSCR. To use this feature, an EPB (programming tool) is needed.

2.3 SOFTWARE OVERVIEW

The STCCIDTester PC applet is designed to conform to the USB CCID specification with the following conditions:

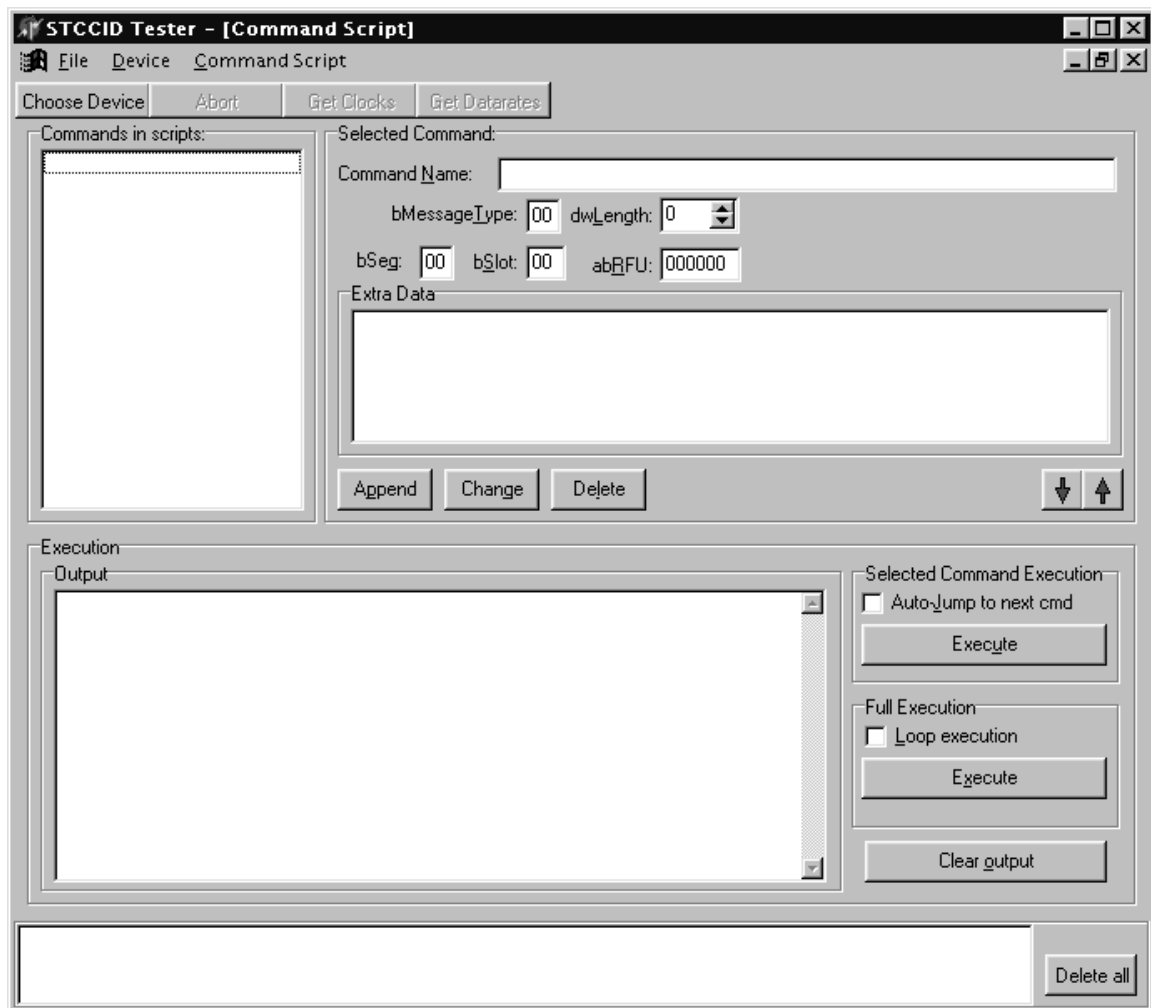
- One slot is supported
- The applet can send one CCID command at a time

3 SOFTWARE DESCRIPTION

3.1 INITIALIZATION

When the STCCIDTester starts, select “File” menu, item “Command Script”.

The following window appears :



There are 2 parts :

- The Command script window
- The Status scroll box

3.2 DEVICE SELECTION

The next step is to select the device to use.

The evaluation board must be plugged to the host computer.

Then, click the “Choose device” button, the following dialog box appears :



Click the radio button if you want to automaticcally select the first plugged device.

When you click “Choose”, the applet program selects the evaluation board and begins the communication process as described in the CCID specification.

It refreshes the Status scroll box and you can enter commands using the command editor.

3.3 STATUS SCROLL BOX

This displays the reader status. For example:

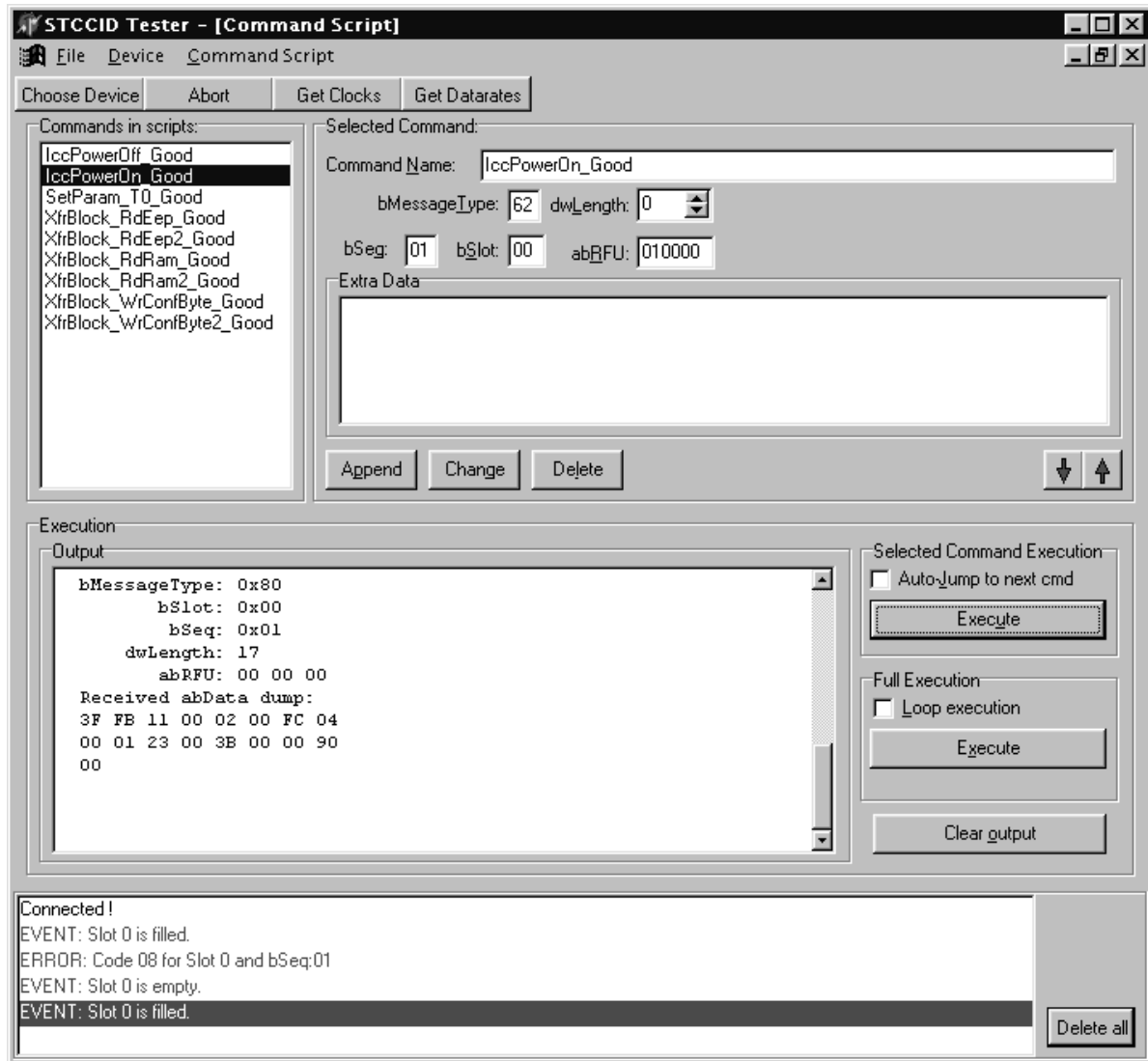
```
Connected ;  
Unconnected (Device selection window appears automatically) ;  
Slot 0 is filled ;  
Slot 0 is empty ;  
And all other error messages described in the CCID spec .
```

3.4 COMMAND SCRIPT EDITOR

This editor allows you to enter any of the BULK OUT messages defined in the CCID specification and get the BULK IN response.

Software Description

The 10-byte header is made up of all the fields in the upper right part of the dialog box and the Extra data editor allows you to enter the extra bytes of the command (if any).



The “Commands in scripts” list box allows you to save commands as a script in order to execute them sequentially.

Create a command:

- Fill all the fields in the “Selected Command” panel
- Click “Append”. A new command is then added. It can be moved up or down in the script to change the execution order by pressing the up-arrow or down-arrow

Modify a command:

- Select the command in the “commands in scripts” list box
- Change the parameters in the “Selected Command” panel
- Click “Update” to apply the changes

Save a script file on hard disk:

- Select the “Save” item in the “Command Script Menu”
- Choose the location and the name of the file to save (.cmd file)
- Click “Save”

Load a command file:

- Select the “Load” item in the “Command Script Menu”
- Choose the command file and validate the choice
- You can now execute, modify and save this command file.

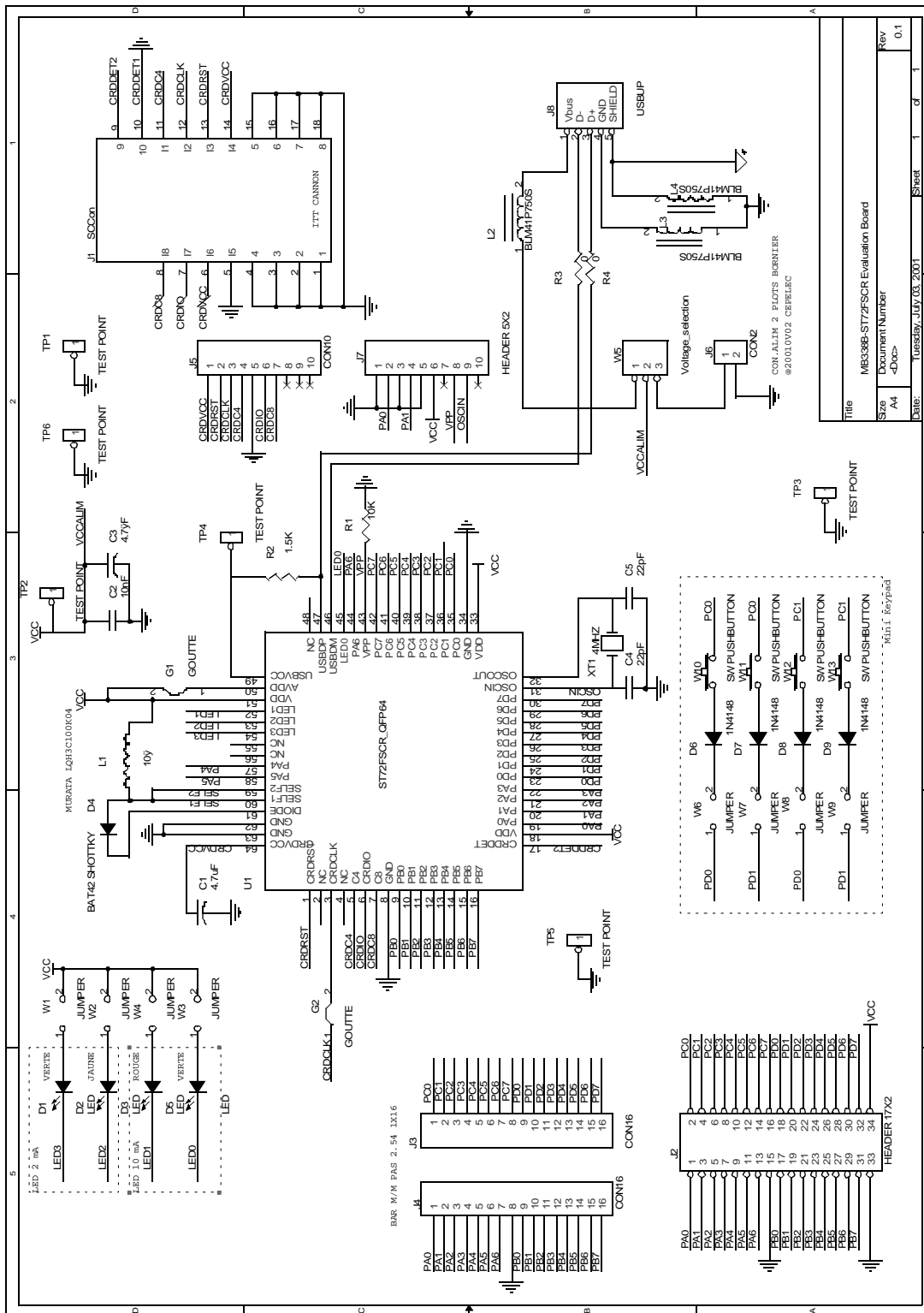
Button descriptions:

- “Choose Device”: This button has the same function as the “Choose...” item in the “Device” menu.
- “Abort”: This displays a dialog box requesting the sequence number of the Abort answer message. Click “Send” to send the Abort Request to endpoint 0.
- “Get Clocks” and “Get Datarates” are not implemented.

4 FIRMWARE DESCRIPTION

The firmware embedded in the ST7FSCR for this evaluation board is described in a separate document: Application Note AN1527: “ST7 Smart Card Reader evaluation Firmware Description”.

5 EVALUATION BOARD SCHEMATIC



| | |
|-----------------|----------------------------------|
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