YSoft SafeQ® USB Card Reader v2

Administrator's Guide

Version 1.1

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1.1   PURPOSE OF DOCUMENT

This documentation provides essential information on installation and configuration of **YSoft SafeQ® USB Card Reader verison 2.**

1.2   VALIDITY OF DOCUMENT

This document applies to YSoft SafeQ® USB Card Reader v2.

1.3   GOALS AND OBJECTIVES

The YSoft SafeQ® USB Card Reader v2 that could be simply connected to the multi-functional device and serves for user authentication using card. Card must be assigned to any user in the YSoft SafeQ system. After the successful authentication the user is able to manipulate with device and perform his print jobs, copy jobs or scan jobs (depends on the device).

The YSoft SafeQ® USB Card Reader v2 could be also connected to workstations and can be used with the credit charger application or with the SQ client for authentication.

1.4   COMPATIBLE DEVICES AND SYSTEM REQUIREMENTS

Compatibility with following **YSoft SafeQ** editions is guaranteed:

- YSoft SafeQ PCAS 3.1.5.16 and newer
- YSoft SafeQ PCAS 3.5 Instant Edition
- YSoft SafeQ PCAS 3.2.43m
- YSoft SafeQ PCAS 3.3
- Possible vendors MFD's allow connection between USB readers

Note1: Each vendor device has specific steps needs to be activated on the machine before connection of USB reader v 2 to work with machine.
Note2: Support of USB serial mode possible only from Windows XP SP2 or Windows 2003 SP1

1.5   TERMS AND ABBREVIATIONS

MFD
Multi-Functional Device

USB Card Reader v2
YSoft SafeQ® USB Card Reader version 2

1.6 PREREQUISITE KNOWLEDGE

The person who installs USB Card Reader v2 must meet the following requirements:

- knowledge of the YSoft SafeQ system (installation / administration / attendance)
- knowledge of OS Win 2000, Win 2003 (installation / administration)

Basic knowledge on previous version of YSoft SafeQ Terminal Embedded is required.

1.7 DISCLAIMER

The user that makes changes or modifications not expressly approved by the party responsible for compliance (Y Soft Corporation a.s.) could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

2   OVERVIEW

2.1   SYSTEM OVERVIEW

YSoft SafeQ® USB Card Reader has following characteristics:

- Connection and power supply of the card reader via the USB host interface.
- Exchange of card reader possible without MFP turning off (hot-plug)
- Compatibility with some MFD additions.

2.2   HARDWARE COMPONENTS

Picture 1 – YSoft SafeQ® USB v2 card reader – all variants

2.3   USB CARD READER SPECIFICATION

Parameter	Value
Identification	Using a card reader
Voltage	5V DC
Maximum current input	0.5A
Working temperature	+5°C to +35°C
Storage temperature	0°C to +50°C

Working air humidity	20% to 85% without condensation
Storage air humidity	8% to 85% without condensation
Resistance to magnetic field	no added resistance

3   INSTALLATION

Following chapter displays how to mount USB reader v2 to device. The configuration could be different from type of device or vendor type. Other thing is that reader can't be mounted only to device, because it can work as card reader for SafeQ Client application or Recharging point for SafeQ Credit Application, so mounting should be different according to usage.

3.1   MOUNTING OF THE READER MODULE

The mounting kit (plastic holder) enables both right-handed and left-handed installation to the MFD.

First prepare the components from the package:

- plastic holder
- screws
- reader module

Prepare the plastic holder for the reader and remove the plastic "fork". See the following pictures.

Picture 2 - mounting part 1

When the plastic construction is prepared, it can be mounted with crews directly to the machine. See Picture 3 - Mounting kit on the device (when not many screws is possible to mount, use double side tape for better fixing)

Picture 3 - Mounting kit on the device

If holder is fixed to the machine, we can stick the reader to holder together by clipping the reader to the mounting kit.

Picture 4 - Mounting part 2

Finally, connect the USB connector of the reader into a free USB slot.

3.2 UNMOUNTING OF THE READER MODULE

Removing from the device can be handled by plastic "fork" from the step 3 or screw driver or similar tool.

When reader is connected with holder to device, we have to remove reader from the mounting kit first. Use plastic "fork" or screw driver and push the reader part, with moving the reader upwards. Steps 1,2 and 3.

Picture 5 - Removing procedure

Reader should recover from the holder. Now we can unscrew the mounting kit from the device and disconnect the reader with following procedure.

4 CONFIGURATION

USB Card reader v2 can be configured only with software utility called "usbrdrtool". The software runs in a system console. It is not a gui application, it is an application running in text mode.

The *usbrdrtool* configuration tool is designed for USB readers v2 only!

The *usbrdrtool* prerequisites:

- Windows 2000 and higher
- Linux kernel 2.4 or higher with glibc 2.3.2 or higher
- Root access on Linux or possibility of sudo
- usbfs support for libusb-0.12 library on Linux
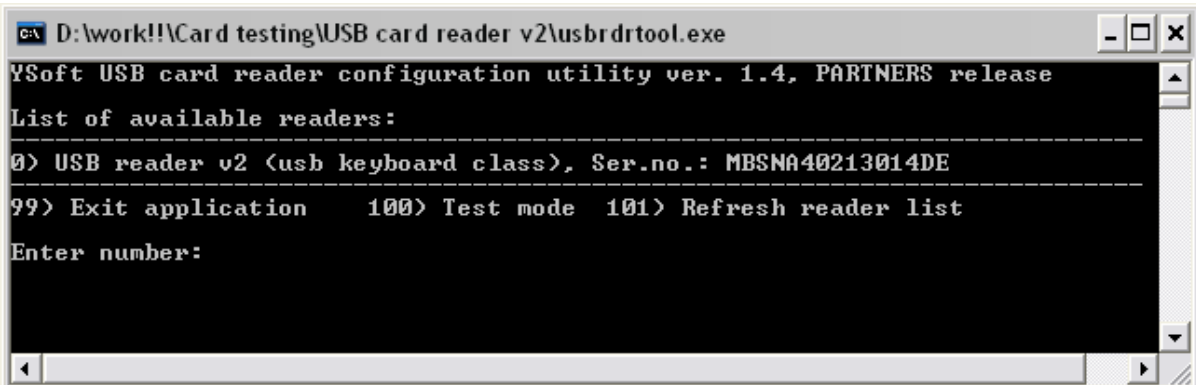- usbrdrtool.exe (WIN32) or usbrdtool (Linux) exacutable binaries

Note: The program requires "root" privileges under Linux, therefore it must be run as user root or sudo must be used.

The purpose of the *usbrdrtool* is:

- Show information about connected USB readers.
- Set basic parameters of each reader such as USB reader class type, reader protocol, debug mode etc.
- Card testing for verifying correct reader functionality and reading distance.
- Display of card type during testing (with readers where applicable)
- Update of USB reader normal firmware.
- Update of USB reader service firmware.
- Download log from USB reader for debugging purposes.

4.1 CONFIGURATION OF THE USB READER BY USBRDRTOOL

Start the *usbrdrtool* under your operation system. When the program is run without any command line parameter the following screen is shown. The main menu should appear with the selection you want to do. See example on the Picture 6 – Main menu.
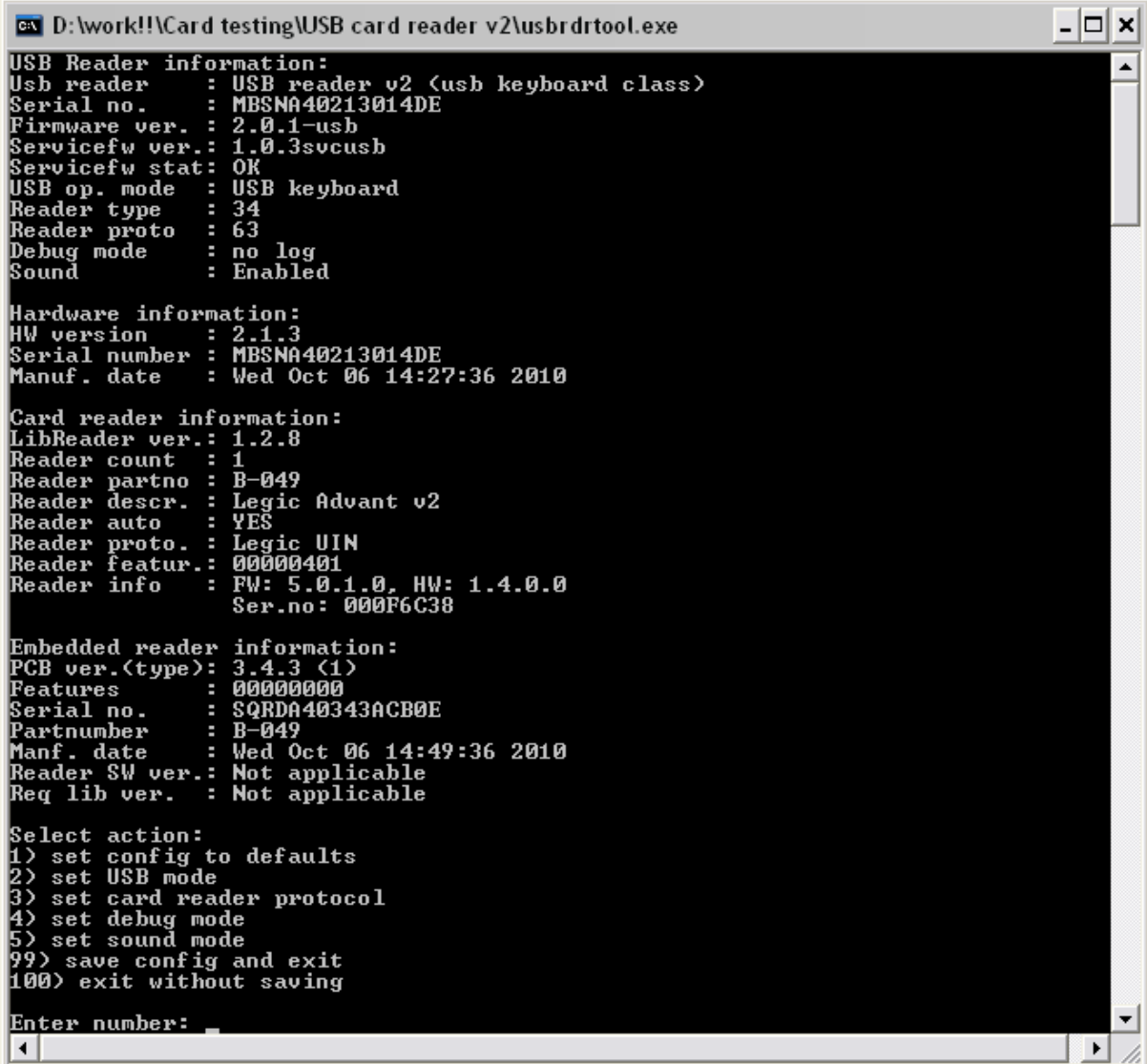

Picture 6 – Main menu

Here can user select the following numbers depends on the intervention administrator wants to do.

4.2 CARD READER CONFIGURATION SCREEN

When administrator selects the number of the reader from the reader list, the reader configuration screens will be shown with general information about reader and following steps for next administration:

```
D:\work!!\Card testing\USB card reader v2\usbrdrtool.exe                    _ □ ×
USB Reader information:
Usb reader      : USB reader v2 (usb keyboard class)
Serial no.      : MBSNA40213014DE
Firmware ver.   : 2.0.1-usb
Servicefw ver.: 1.0.3svcusb
Servicefw stat: OK
USB op. mode    : USB keyboard
Reader type     : 34
Reader proto    : 63
Debug mode      : no log
Sound           : Enabled

Hardware information:
HW version      : 2.1.3
Serial number : MBSNA40213014DE
Manuf. date     : Wed Oct 06 14:27:36 2010

Card reader information:
LibReader ver.: 1.2.8
Reader count  : 1
Reader partno : B-049
Reader descr. : Legic Advant v2
Reader auto     : YES
Reader proto. : Legic UIN
Reader featur.: 00000401
Reader info     : FW: 5.0.1.0, HW: 1.4.0.0
                  Ser.no: 000F6C38

Embedded reader information:
PCB ver.(type): 3.4.3 (1)
Features        : 00000000
Serial no.      : SQRDA40343ACB0E
Partnumber      : B-049
Manf. date      : Wed Oct 06 14:49:36 2010
Reader SW ver.: Not applicable
Req lib ver.    : Not applicable

Select action:
1) set config to defaults
2) set USB mode
3) set card reader protocol
4) set debug mode
5) set sound mode
99) save config and exit
100) exit without saving

Enter number: _
```

Picture 7 - Reader configuration screen

- **Action 1** sets the USB reader configuration to defaults. This includes USB mode, reader protocol, debug mode and other parameters. This option does not format data that are stored on USB reader internal file system.

- **Action 2** sets USB mode. This option is available onlyfor specific OEM USB reader type. Available usb modes are described in chapters 4.2.1 and 4.2.2.

- **Action 3** sets card reader protocol. For some card readers it is necessary to enable support for another card types. Default card reader protocol is 0 which means that the reader default protocol will be used. If invalid card reader protocol is selected then the default protocol will be used.

Note: Please see Y Soft Card Readers Protocols.pdf for more details about card reader protocols. This*. pdf file is always attached to the zip file with released FW of the USB reader.

- **Action 4** enables debugging in case something goes wrong with the reader (for example hang-up or reboot or anything similar). **Please note that debugging enabled causes wear-out of the internal flash so enable it only in cases when it is necessary!**

- **Action 5** enables or disables sound on the USB reader. **Please note that there is no visual identification of successful card reading so users in some cases cannot guess what may be wrong if the card reader makes no sound**

- **Action 99** returns user to the previous menu. If any changes are made, the card reader is rebooted and the changes are applied.

- **Action 100** returns user to the previous menu. If any changes in settings are made they are discarded and original settings remain.

4.2.1   USB KEYBOARD

USB keyboard – Optional mode

In this mode the USB reader works as a standard USB keyboard and can be switched to mode 3 only.

NOTE:

Typing of the keys is emulated as numeric keypad for 0-9 and A-F keys on standard EN/US keyboard layout. If the card number contains any other characters, they are ignored. Caps-lock and Num-lock are enabled and disabled if necessary and returned back to previous state after the card number is read.

The "Shift", "Ctrl", "Alt" keys must not be held during card placing or it will collide with caps-lock and num-lock setting and incorrect card number will be read

If a national keyboard layout is used (such as French, Russian, Chinese or other) a wrong card number will be entered. In such cases a switch to US/EN keyboard layout is necessary before placing the card.

4.2.2   USB SERIAL

USB serial – Optional mode

This mode emulates operation of COM port and can be switched to mode 1 only.

On Windows platform the installation of the USB reader in this mode requires *usb2-reader.inf* file. This file is distributed along with the *usbrdrtool* application and should be selected in the "new hardware" wizard after the USB reader plugging/reconfiguration.

On Linux platform the driver for the serial port is installed automatically.

Card testing in *usbrdrtool* application will work in this mod

4.3   ACTION 3 SETTING CARD READER PROTOCOL

When you are on the main page select appropriate number of the reader. If you want to change card reader protocol for specified reader type (selected number), then you need to open the value 3 "Set card reader protocol"

*Picture 8 - Selecting of card reader*

To choose appropriate reading protocol, please see Y Soft Card Readers Protocols.pdf for more details about card reader protocols. This*. pdf file is always attached to the zip file with released FW of the USB reader.

Select the number and confirm by "enter" confirmation.

Picture 9 - Reader protocol confirmation

After selecting the appropriate number of protocol, you will be navigated to submenu page, when you need to save currently changed settings. Select "99" to save settings for changed reading protocol and confirm.
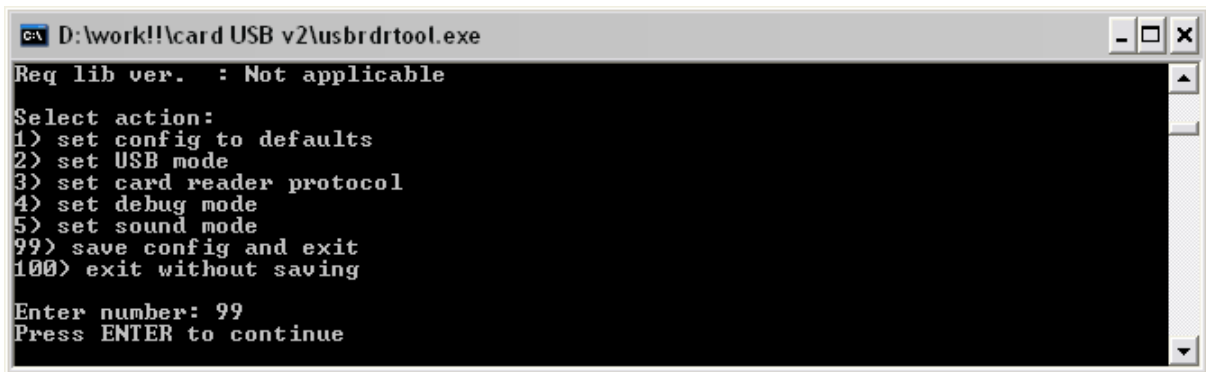
**Picture 10 - Saving of changes after protocol change**

4.4 CARD READER TESTING SCREEN

Card testing screen menu can be started by number 100 from the main menu. See Picture 6 – Main menu. When testing window will appear you can test the reader by placing a card above the reader.
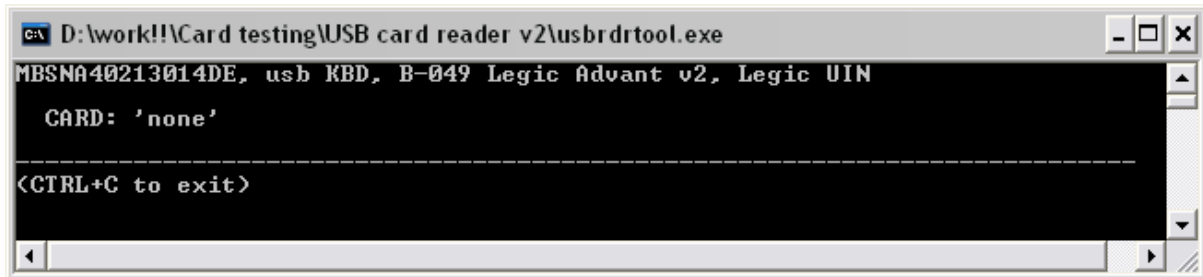
Picture 11 - Test card window 1

Reader should display result from reading inside this window like example on the Picture 12 - Card testing result.
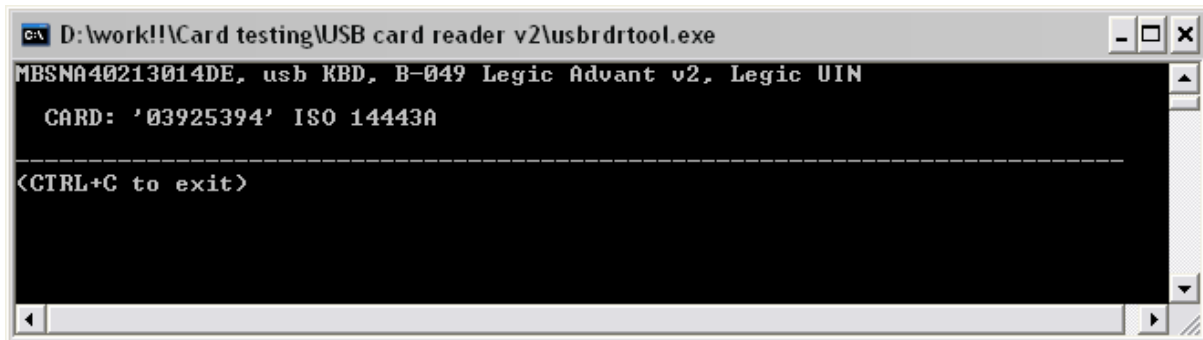
Picture 12 - Card testing result

Multiple card readers can be tested at once. The screen automatically recognizes disconnected and newly connected readers so it may be used for mass-production card reader testing.

If the connected reader supports card presence detection then the card number and type is visible only when the card is placed at the card reader.

If the connected reader does not support card presence detection, a "tmout" is displayed.

The card number will be automatically erased after a couple of seconds of inactivity. This feature is intended to make sure that the reader works properly and card numbers are read correctly every time a card is placed.

Please note that displaying the correct card type depends on card reader used and card reader protocol set.

Before using *usbrdrtool* as a tool for customer card testing please consult USB card reader testing guidelines.

It is also possible to start the card testing screen directly by specifying -t command line option to the *usbrdrtool* application.

4.5 CARD READER UPDATE FIRMWARE

Update of firmware for USB card reader can be done by issuing the following command in the Windows command like (CMD) or on Linux OS:

Windows:
```
usbrdrtool.exe -u -i usb2-2.0.1.fw –k
```


Picture 13 - FW update example

Linux:
```
sudo ./usbrdrtool -u -i usb2-2.0.1.fw -k
```

'-k' option will cause the new firmware to be booted after successful update.
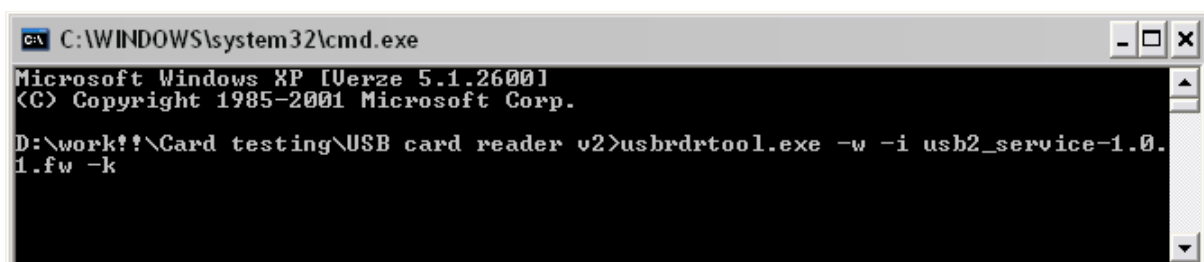
Note: This command can be run form CMD windows or Linux, this is not a command inside the usbrdrtool.

4.6 CARD READER UPDATE SERVICE FIRMWARE

Update of service firmware for USB card reader can be done by issuing the following command in the Windows command like (CMD) or on Linux OS:

Windows:
```
usbrdrtool.exe -w -i usb2_service-1.0.1.fw -k
```


Picture 14 - Example of the service firmware update

Linux:
```
sudo ./usbrdrtool -w -i usb2_service-1.0.1.fw –k
```

'-k' option will cause the new firmware to be booted after successful update.

Note: This command can be run form CMD windows or Linux, this is not a command inside the usbrdrtool.

4.7 CARD READER SETTINGS FOR DOWNLOADEING THE LOG FILES

For the configuration of USB card reader to downloading log files from the reader is possible to run following command in the Windows command like (CMD) or on Linux OS:

Windows:
```
usbrdrtool.exe -j -o USBLOG.TXT
```


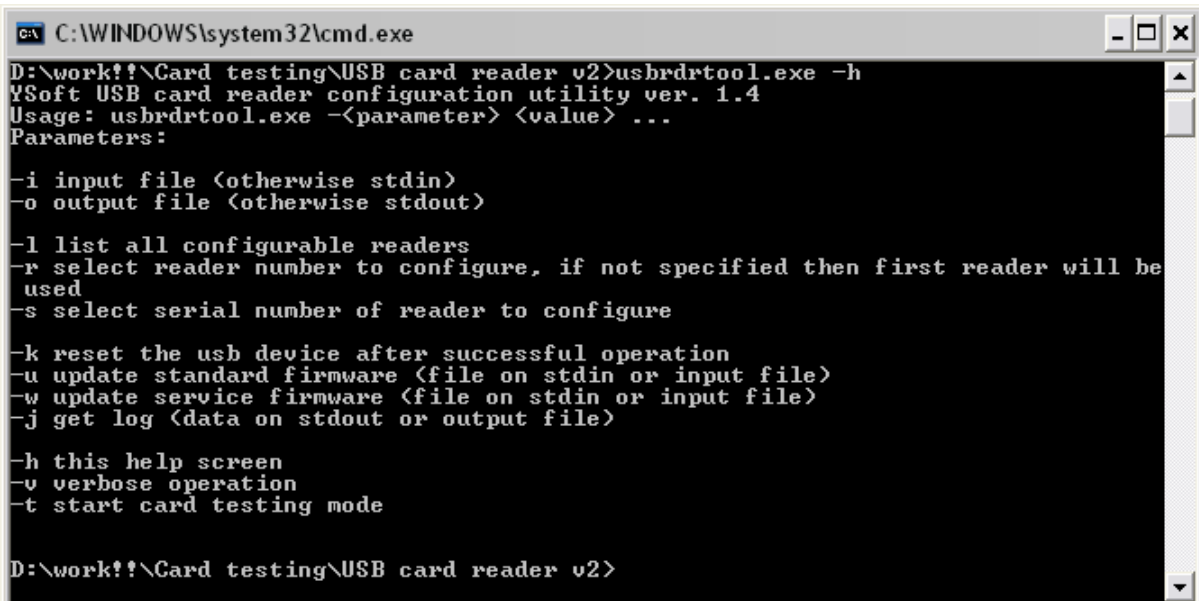*Picture 15 - Get log enabling*

Linux:
```
sudo ./usbrdrtool -j -o USBLOG.TXT
```

Note: Please note that logging must be enabled before using this function

4.8 CARD READER USBRDRTOOL STARTING WITH PREDEFINED COMMANDS

Administrator can start the USB card reader configuration with predefined usage. The pre-configuration list is listed bellow as command lines parameters. For example write in cmd windows command line:

Picture 16 -Command line starting with pre-configuration

In the Linux OS the usage is similar with command:

Usage: `./usbrdrtool -<parameter> <value> ...`

Parameters:

- -i   input file (otherwise stdin)
- -o   output file (otherwise stdout)
- -l   list all configurable readers
- -r   select reader number to configure, if not specified then first reader will be used
- -s   select serial number of reader to configure
- -k   reset the usb device after successful operation
- -u   update standard firmware (file on stdin or input file)
- -w   update service firmware (file on stdin or input file)
- -j   get log (data on stdout or output file)
- -h   this help screen
- -v   verbose operation
- -t   start card testing mode

5 INFORMATION BEEP CODES

Here is the list of beep codes, which give the result on the behavior of USB reader v2.

Legend:
- *Long beep sound*
. *Short beep sound*

- - Card read error. Please try placing the card again or use the different card.
- ...- Hardware configuration damaged cannot continue in booting.
- .-.- Update of firmware failed.
- --.- Software configuration cannot be saved. Probably faulty onboard eeprom.
- ..-- Software configuration damaged, loading defaults.
- .--- Firmware damaged.
- -... No reader connected and reader required for correct functionality.
- -.-. Service firmware damaged, re restore required.
- .--. Error in reader power-up sequence

Note: This option is available only if sound is enabled.

6   RELATIONSHIP WITH OTHER DOCUMENTS

This section describes how this guide is related to other documentation:

Nr.	Document	Version	Author
1.	Y Soft Card Readers Protocols.pdf		
2.			
3.			
4.			
5.			
6.			
7.			

7 VERSION HISTORY

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Version	Date	Change	Status	Author
0.1	10/2010	Initial version	Draft	SZA
0.2	10/2010	Essential changes in chapters 3,4; Chapter 5 added	Final	SZA
0.3	10/2010	Essential changes in chapters 1,3,4, added screenshots	Final	SZA
0.4	10/2010	Essential changes in chapters 4	Final	SZA
1.0	01/2011	Public version	Final	SZA
1.1	06/2011	Minor Changes	Final	VSL