Advanced Card Systems Ltd.
Card & Reader Technologies

ACM1251-Z2 User Manual

ACM1251-Z2 User Manual V1.00

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Version History

Date	By	Changes	Version
2016-02-16	Kit Au	• First Release	1.00.00
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Table of Contents

1.0. Introduction

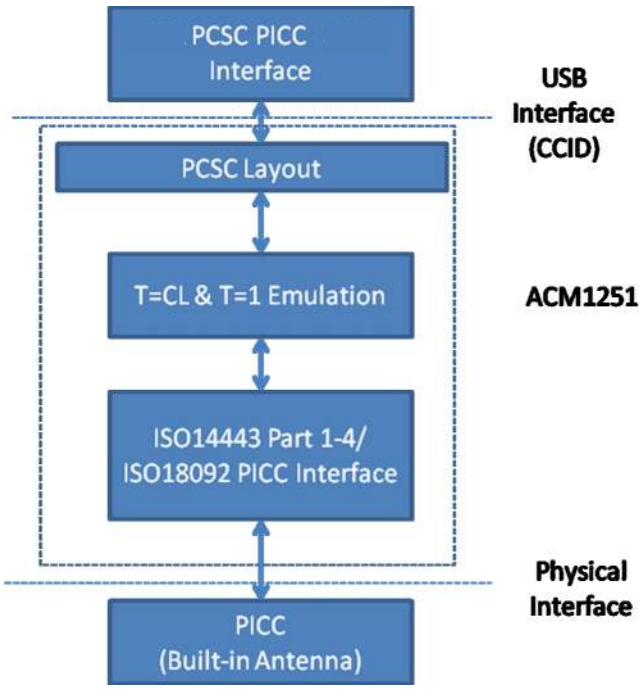
The ACM1251-Z2 is a reader (IFD and PCD) module that supports contactless (PICC) smart cards.

2.0. Features

- ISO 14443 Parts 1-4 Compliant for Contactless Smart Card Interface.
- ISO 18092 Compliant for Contactless Smart Card Interface.
- The ACM1251-Z2 supports the following Tag Types:
    - MIFARE Classic. E.g. MIFARE 1K, 4K, MINI and Ultralight.
    - ISO14443-4 Type A and B.
    - ISO18092 FeliCa, NFC tag
- T=CL emulation for MIFare 1K/4K PICCs
- High Speed (424 kbps) Communication for PICCs
- Energy saving modes for turning off the antenna field whenever the PICC is inactive, or no PICC is found. It prevents the PICC from exposing to the field all the time.
- User-Controllable Peripherals. E.g. LED, Buzzer.
- PCSC Compliant for Contact and Contactless Interfaces.
- USB V2.0 Interface. (12M bps)
- Device Firmware Upgradeable through the USB Interface.

3.0. Architecture

For communication architecture, the protocol between ACM1251-Z2 and PC is using CCID protocol. All the communication between PICC is PCSC Compliant



4.0. ACM1251-Z2 Operating Procedure

4.1. Driver installation Procedure

Hardware requires:

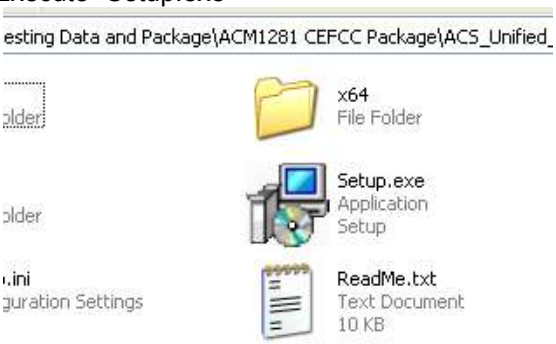
- ACM1251-Z2
- PC with OS windows XP or above

Software requires:

- Driver installer “ACS_Unified_PCSC_Driver_Installer_bin-4.0.6.0-20141114_all.zip”

Steps:

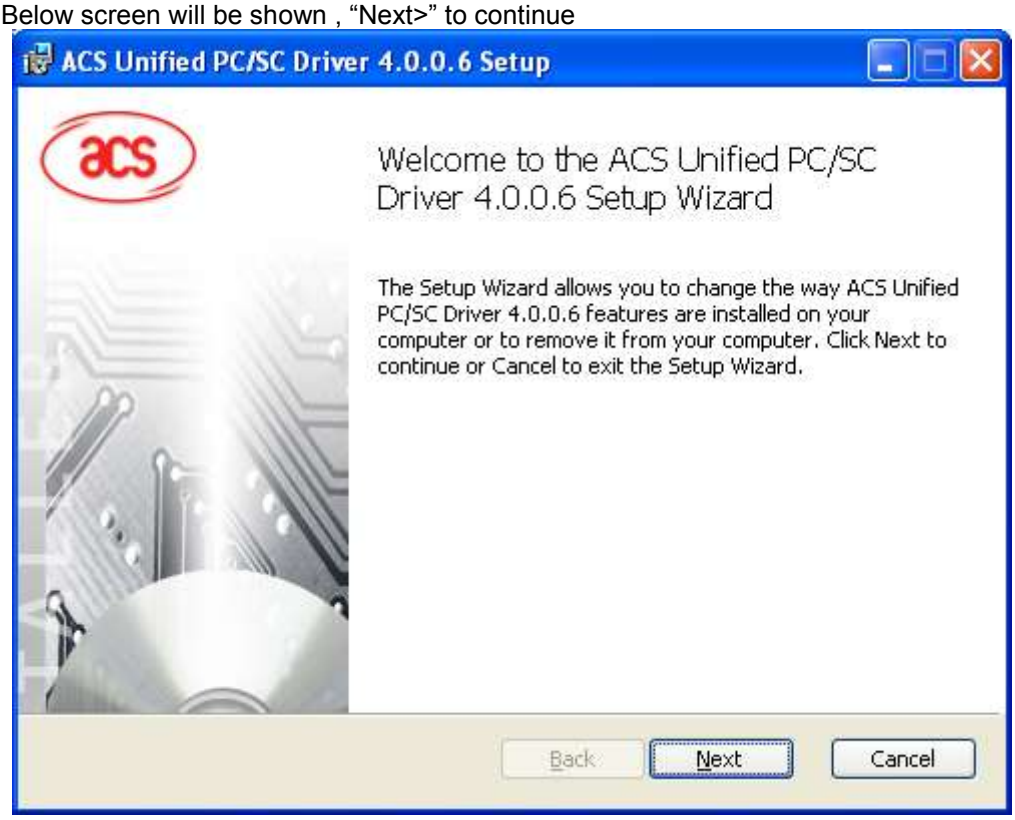
1. Extract the file “ACS_Unified_PCSC_Driver_Installer_bin-4.0.6.0-20141114_all.zip”
2. Execute “Setup.exe”



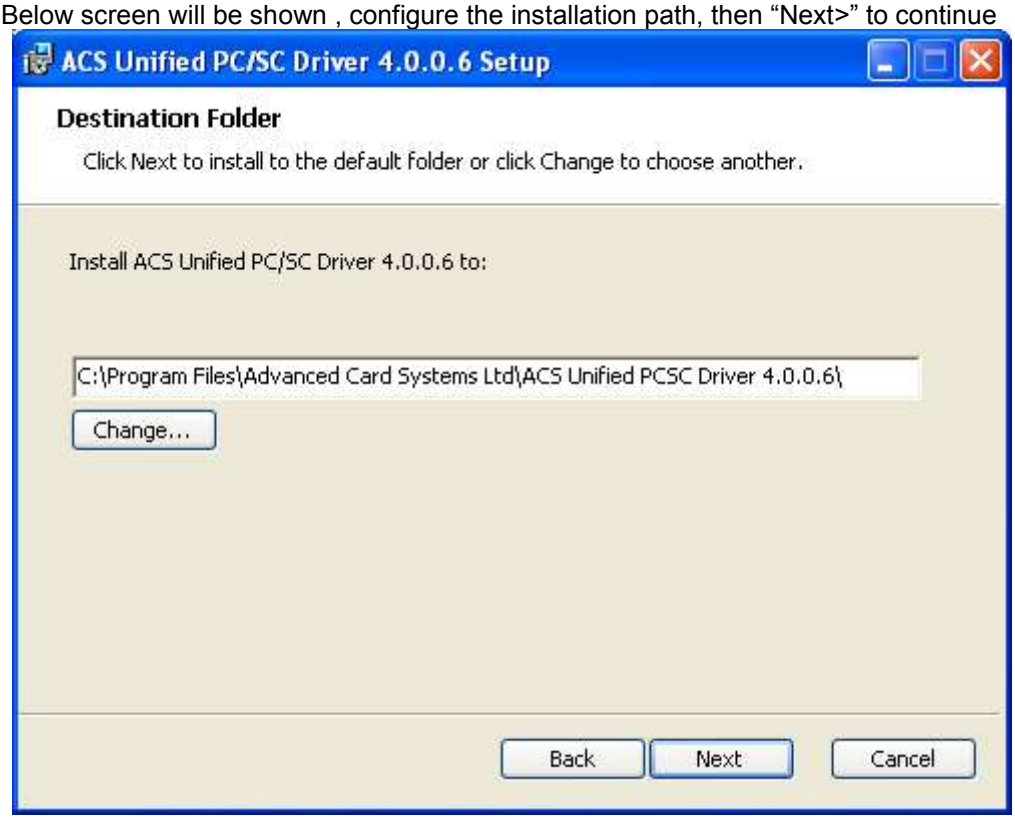
3. Below screen will be shown

Select the language, then Click “OK”

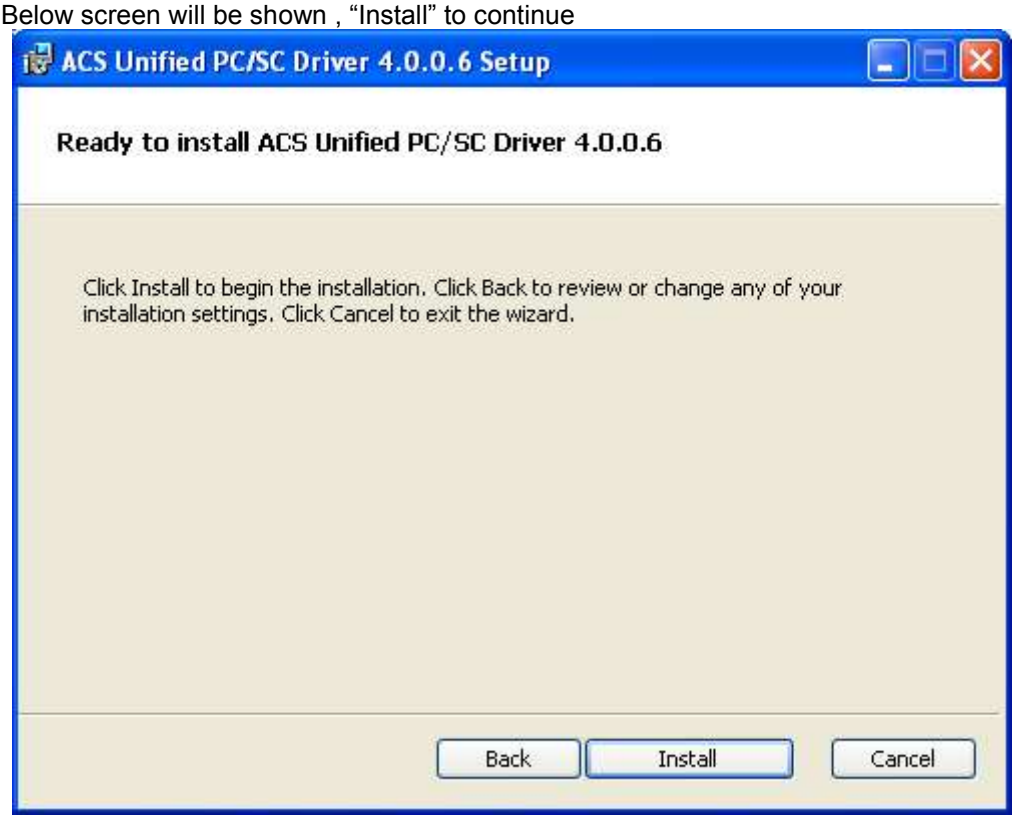
4. Below screen will be shown , “Next>” to continue



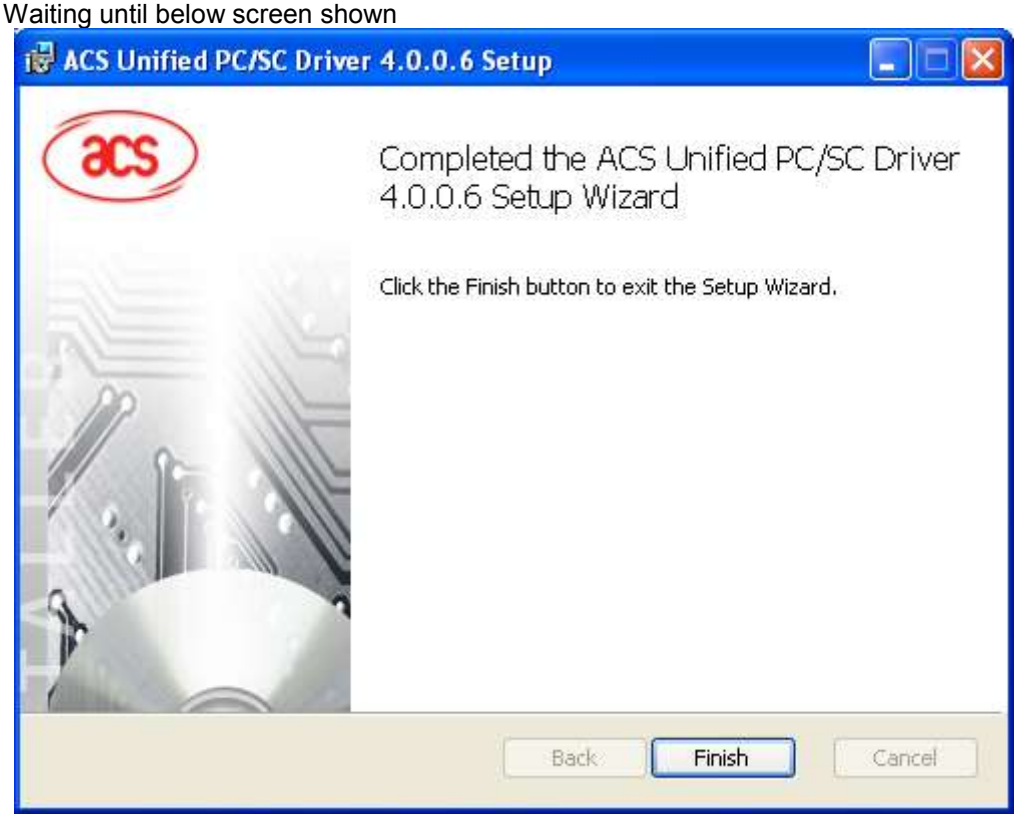
5. Below screen will be shown , configure the installation path, then “Next>” to continue



6. Below screen will be shown , “Install” to continue



7. Waiting until below screen shown



Click “Finish”

8. Driver Installation Complete

4.2. Operation Example

Hardware requires:

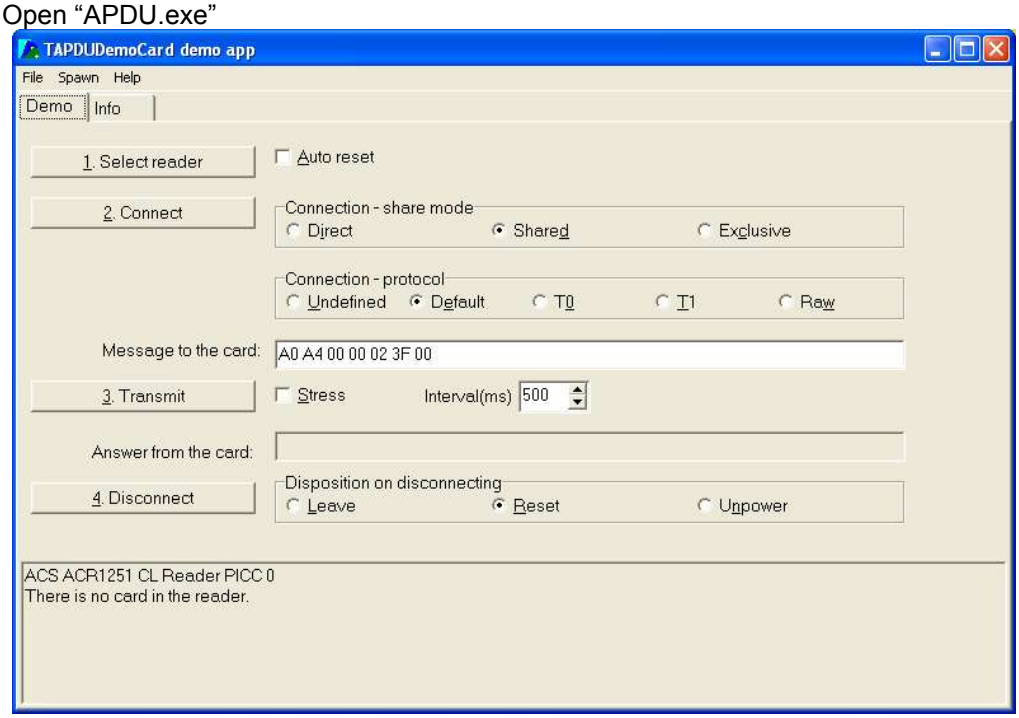
- ACM1251-Z2 x 1
- PC with OS windows XP or above
- Test card x 1 (provided by ACS)

Software requires:

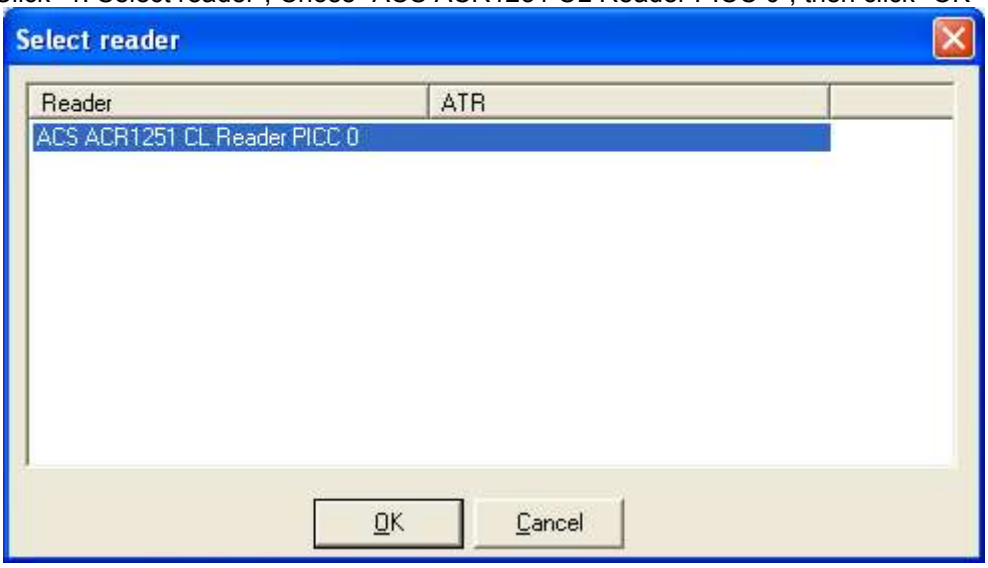
- APDU.exe (for example)

Steps:

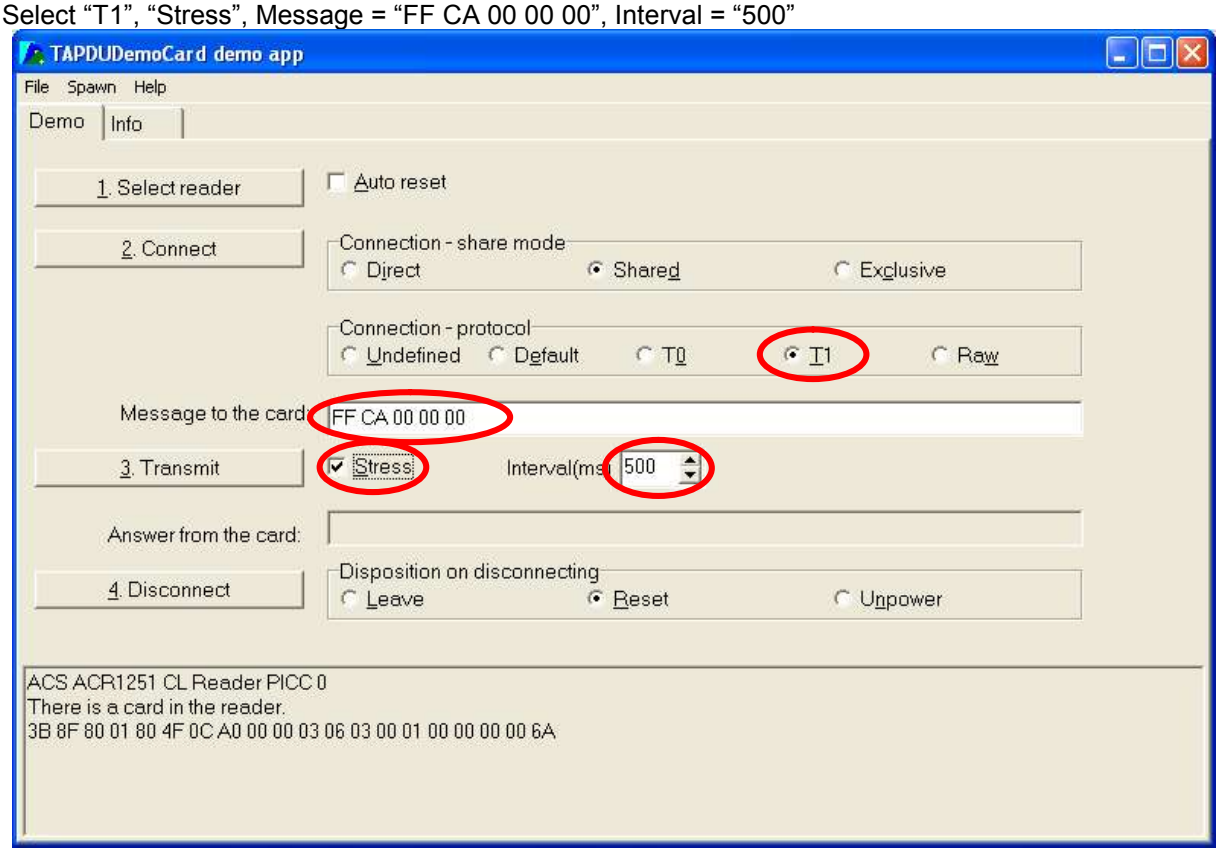
1. Plug in the reader into the PC
2. Place the Test Card on the top of the reader about 5cm
3. Open “APDU.exe”



4. Click “1. Select reader”, Chose “ACS ACR1251 CL Reader PICC 0”, then click “OK”

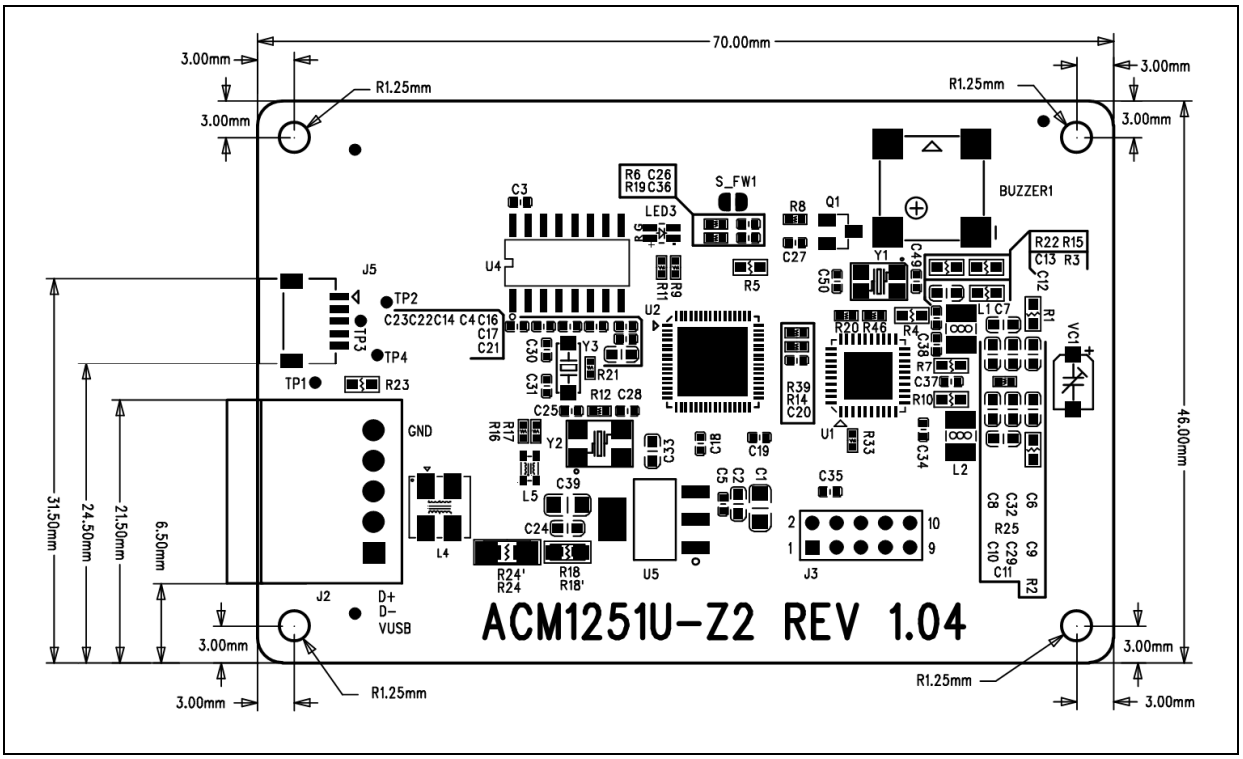


5. Select “T1”, “Stress”, Message = “FF CA 00 00 00”, Interval = “500”



6. Press “Connect”
7. Press “Transmit” to start the testing
8. Complete the operation

Appendix A. Technical Specifications



Universal Serial Bus Interface	
Power Source	From USB
Speed	12 Mbps (Full Speed)
Supply Voltage	Regulated 5 V DC
Supply Current	200 mA (max.)
Serial Interface (for Serial version)	
Speed	9.6kbps – 115kbps
Supply Voltage	Regulated 5 V DC
Supply Current	200 mA (max.)
Contactless Smart Card Interface	
Standard	ISO/IEC 18092 NFC, ISO 14443 Type A & B, MiFARE, FeliCa
Protocol	ISO 14443 T=CL for ISO14443-4 compliant cards and T=CL Emulation for MIFARE 1K/4K, ISO 18092, FeliCa and NFC tags
Operating Frequency	13.56 MHz
Operating Distance	Up to 50 mm (depending on tag type)
Smart Card Read/Write Speed	106 kbps, 212 kbps, 424 kbps
Physical Specifications	
Dimensions	70.0 mm (L) x 46.0 mm (W)
Weight	9.2g
Antenna Size	58 mm x 46 mm
Built-in Peripherals	
Bi-color LED	Red and Green
Buzzer	Monotone
Operating Conditions	
Temperature	0 °C – 50 °C
Humidity	10% - 90%
Application Programming Interface (for USB vesion)	
PC/SC	
CT-API (through wrapper on top of PC/SC)	
Certifications/Compliance	
ISO 18092, ISO 14443, ISO 7816, CE, FCC, VCCI, MIC, RoHS	

Device Driver Operating System Support

Windows® 98, Windows® ME, Windows® 2000, Windows® XP, Windows Vista®, Windows® 7, Windows® 8, Windows® Server 2003, Windows® Server 2003 R2, Windows® Server 2008, Windows® Server 2008 R2, Windows® Server 2012

Linux, Mac, Android 3.1 and above

4.0. Notice

Installation in end-user equipment

This device has been modularly approved and is intended solely for use in Advanced Card Systems Ltd. products. Advanced Card Systems Ltd. will retain control over the final installation of the device, such that compliance in the end-user equipment is assured. The end-user equipment will be tested for spurious and radiated emissions to ensure the end device complies with FCC Part 15 limits.

5.0. Labeling of end-user equipment

This device has been modularly approved. The manufacturer, product name, and FCC ID of this product must appear on the outside label of the end-user equipment as follows:

Contains FCC ID: V5MACM1251

FCC Caution:

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CE 1313

This equipment can be used in member states of the European Union once the corresponding administrative licence is obtained.