



Advanced Card Systems Limited
Card & Reader Technologies

AMR220-C mPOS reader

User Manual V0.01

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Prepared by:			
Reviewed by:			
Approved by:			



Version History

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1.0. Introduction

Mobile devices have an easy and intuitive interface that enables fast and convenient access to different applications, and provides myriad opportunities to shop, network, and explore. Leveraging on this, ACS introduces the AMR220-C mPOS reader, which can support EMV™ chip-enabled contact cards, contactless cards, and most mobile NFC devices.

This mPOS reader supports mobile devices running on the Android™ platforms. It connects wirelessly with these devices via Bluetooth. Four LEDs and a speaker make transactions using AMR220-C easy to follow.

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This document provides general procedures on how to read a contact card and contactless card with AMR220-C mPOS reader and an Android Bluetooth device (tablet or smartphone).

1.1. Install the Bluetooth demo application on Bluetooth device

1. Install the app “BLE test” on a Bluetooth device
2. Prepare the script for reading card in order to run the test.



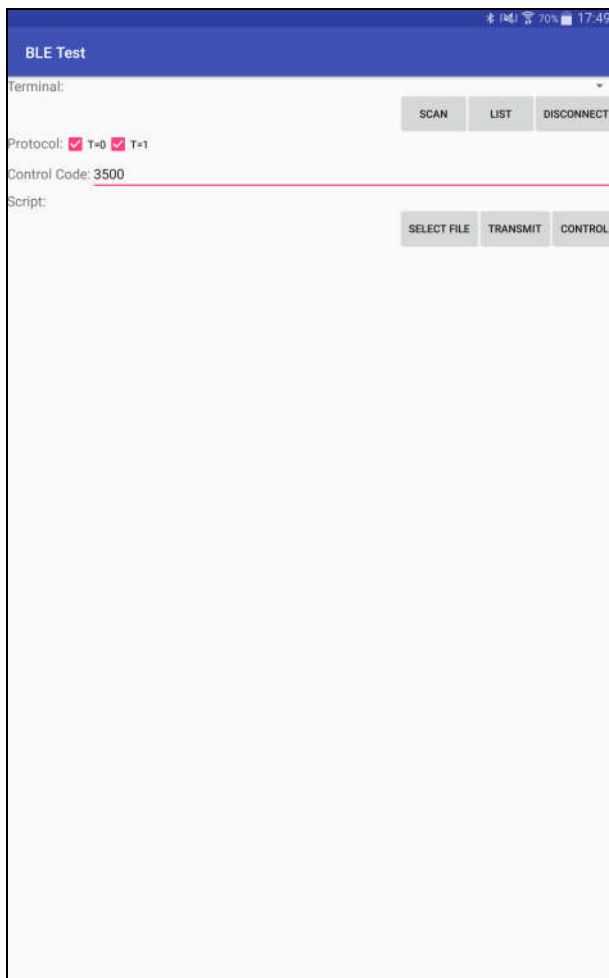
1.2. How to read a contact card

1.2.1. Connect AMR220-C to a bluetooth device

1. Press the power button for 2 seconds to turn on AMR220-C.



2. On the bluetooth device (tablet or smartphone), execute the app “BLE Test”.



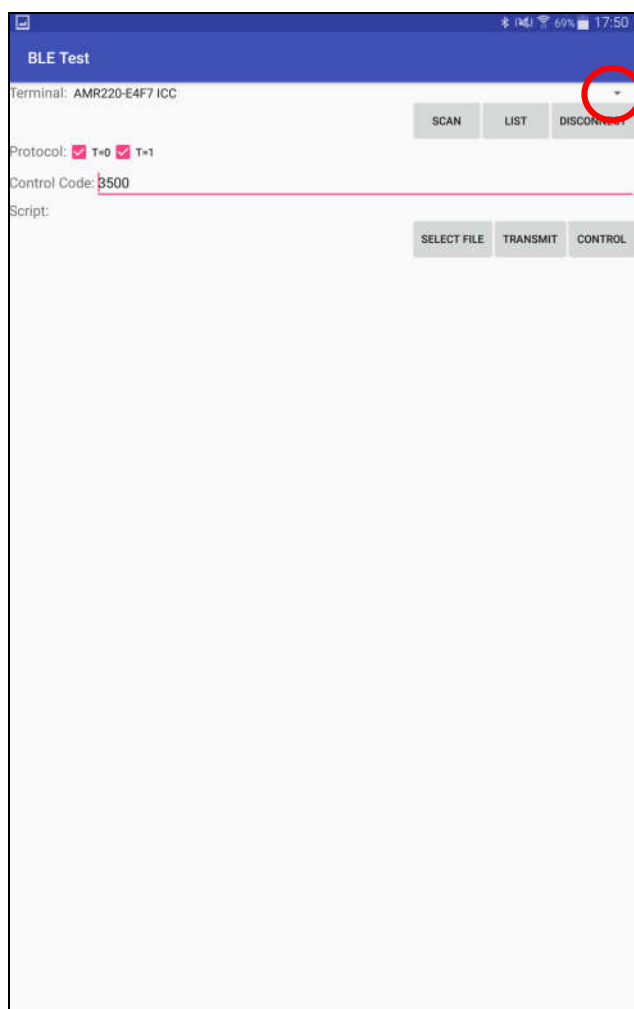
3. For Control code, please input 3500



4. Press the bluetooth button to turn on the bluetooth feature on AMR220-C.



5. In the App, Tap “SCAN” to search Bluetooth device
6. Tap the ▼ button to select the name of Bluetooth device and type of reader (ICC) going to connect



Remark: Select **ICC** for reading contact card while select **PICC** for reading contactless cards



1.2.2. Read a contact card

1. On the app, Tap “SELECT FILE” and choose “scripts”
2. Select “acos3.txt” as the script for running



3. Insert a contact card (ACOS3 card) on AMR220-C
4. Tap “Transmit” on the app



For reading the contact card successfully, similar information would be shown as below

The screenshot shows the BLE Test application interface. At the top, it displays 'Terminal: AMR220-E4F7 ICC'. Below this, there are buttons for 'SCAN', 'LIST', and 'DISCONNECT'. The 'Protocol' section shows 'T=0' and 'T=1' both checked. The 'Control Code' is set to '3500'. The 'Script' path is '/storage/emulated/0/scripts/acos3.txt'. There are buttons for 'SELECT FILE', 'TRANSMIT', and 'CONTROL'. The main area displays a log of commands and responses, including hex data and performance metrics like 'Transfer Time' and 'Transfer Rate'. The log ends with 'Closing /storage/emulated/0/scripts/acos3.txt...' and 'Disconnecting from the card (AMR220-E4F7 ICC)...'.

```
BLE Test
Terminal: AMR220-E4F7 ICC
SCAN LIST DISCONNECT
Protocol: ☒ T=0 ☒ T=1
Control Code: 3500
Script:/storage/emulated/0/scripts/acos3.txt
SELECT FILE TRANSMIT CONTROL

Command:
80 A4 00 00 02 FF 02
Response:
90 00
Bytes Sent : 7
Bytes Received: 2
Transfer Time : 81 ms
Transfer Rate : 111.11 bytes/second
Expected:
90 00
Compare OK
Command:
80 D2 01 00 04 00 00 00 00
Response:
90 00
Bytes Sent : 9
Bytes Received: 2
Transfer Time : 183 ms
Transfer Rate : 60.11 bytes/second
Expected:
90 00
Compare OK
Command:
80 B2 01 00 04
Response:
00 00 00 00 90 00
Bytes Sent : 5
Bytes Received: 6
Transfer Time : 77 ms
Transfer Rate : 142.86 bytes/second
Expected:
00 00 00 00 90 00
Compare OK
Command:
80 D2 01 00 04 12 34 56 78
Response:
90 00
Bytes Sent : 9
Bytes Received: 2
Transfer Time : 230 ms
Transfer Rate : 47.83 bytes/second
Expected:
90 00
Compare OK
Command:
80 B2 01 00 04
Response:
12 34 56 78 90 00
Bytes Sent : 5
Bytes Received: 6
Transfer Time : 134 ms
Transfer Rate : 82.09 bytes/second
Expected:
12 34 56 78 90 00
Compare OK
Closing /storage/emulated/0/scripts/acos3.txt...
Disconnecting from the card (AMR220-E4F7 ICC)...
```

5. Tap “Disconnect” after reading the card and disconnect AMR220-C from the bluetooth device.

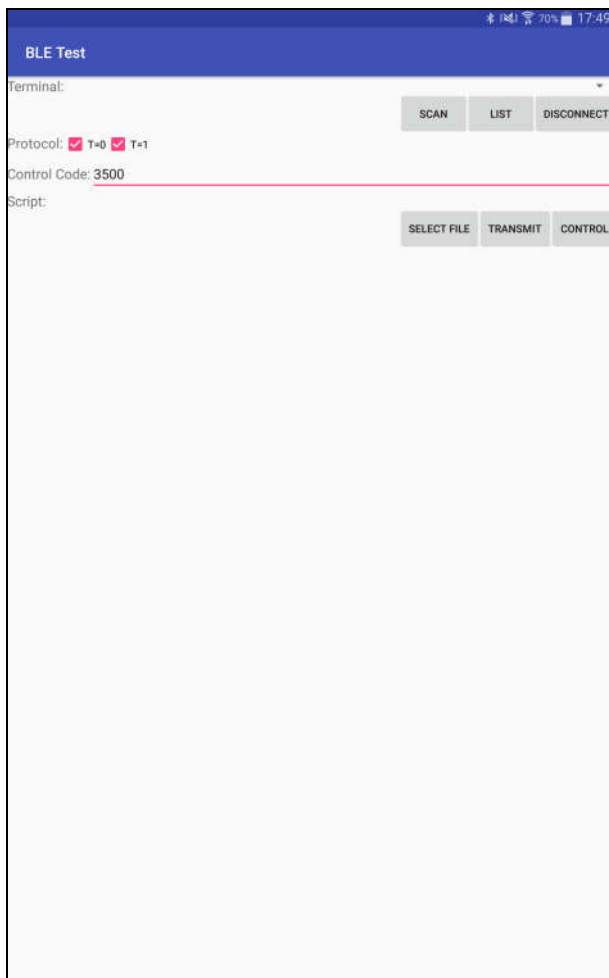
1.3. How to read a contactless card

1.3.1. Connect AMR220-C to a bluetooth device

1. Press the power button for 2 seconds to turn on AMR220-C.



2. On the bluetooth device (tablet or smartphone), execute the app “BLE Test”.



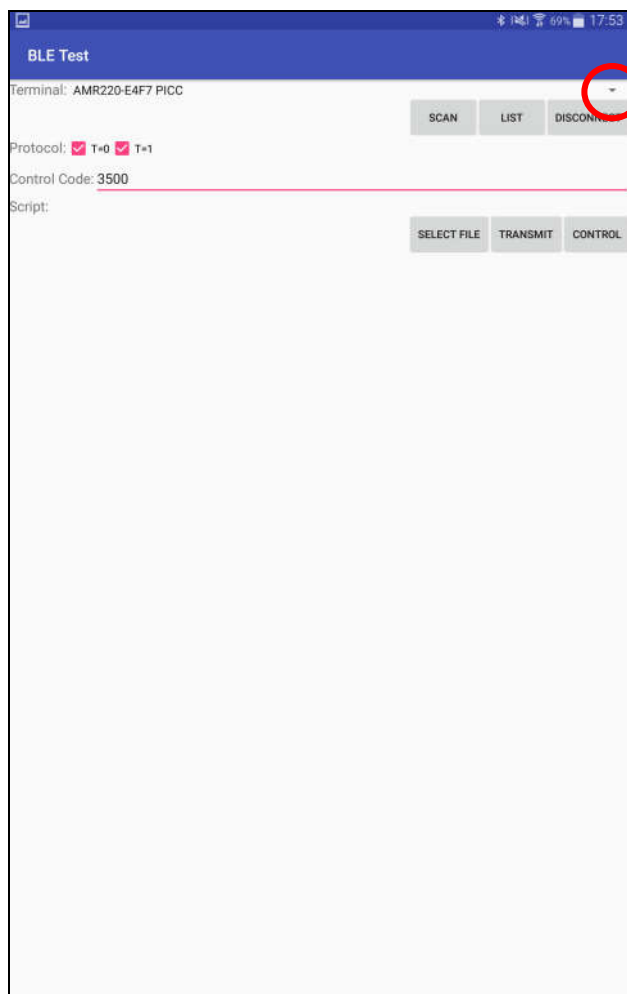
3. For Control code, please input 3500



4. Press the bluetooth button to turn on the bluetooth feature on AMR220-C.



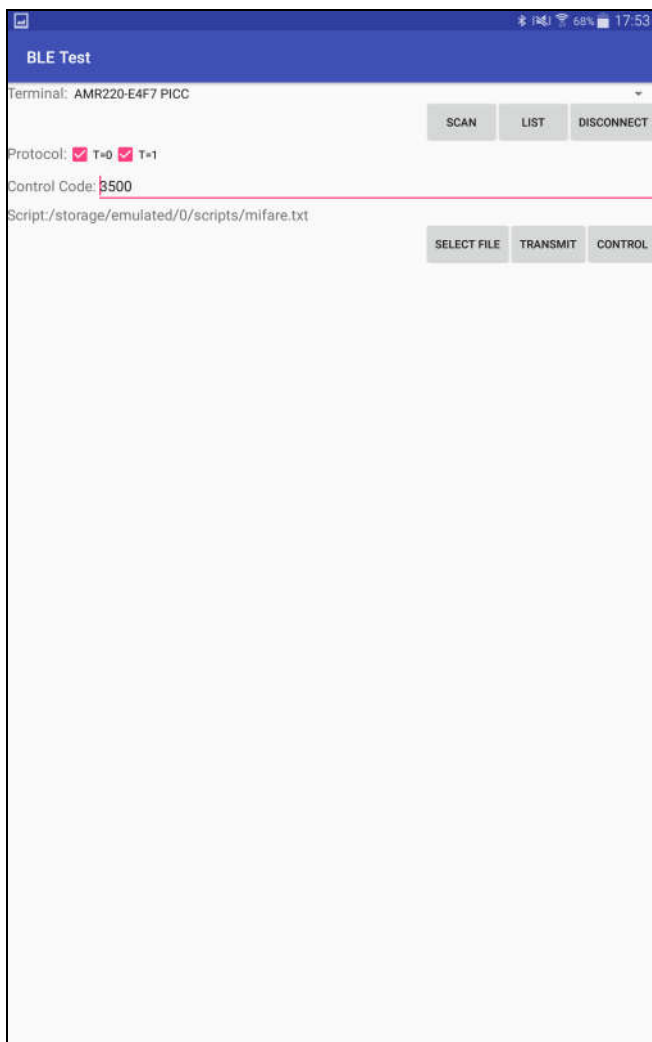
5. In the App, Tap “SCAN” to search Bluetooth device
6. Tap the ▼ button to select the name of Bluetooth device and type of reader (PICC) going to connect



Remark: Select **ICC** for reading contact card while select **PICC** for reading contactless cards

1.3.2. Read a contactless card

1. On the app, Tap “SELECT FILE” and choose “scripts”
2. Select “mifare.txt” as the script for running



3. Tap a contactless card (mifare card) on AMR220-C
4. Tap “Transmit” on the app



For reading the mifare card successfully, similar information would be shown as below

The screenshot shows the BLE Test application interface. At the top, it says "Terminal: AMR220-E4F7 PICC". Below this, there are buttons for "SCAN", "LIST", and "DISCONNECT". The "Protocol" section shows "T=0" and "T=1" both checked. The "Control Code" is set to "3500". Below this, there is a "Script" field with the path "/storage/emulated/0/scripts/mifare.txt" and buttons for "SELECT FILE", "TRANSMIT", and "CONTROL". The main area displays the results of the operation, including transfer times, rates, and hex data for commands and responses. The process ends with "Closing /storage/emulated/0/scripts/mifare.txt..." and "Disconnecting from the card (AMR220-E4F7 PICC)...".

```
Transfer Time : 79 ms
Transfer Rate : 151.90 bytes/second
Expected:
00 00
Compare OK
Command:
FF D6 00 04 10 00 00 00 00 00 00 00 00 00 00 00
Response:
00 00 00 00
Bytes Sent : 21
Bytes Received: 2
Transfer Time : 93 ms
Transfer Rate : 247.31 bytes/second
Expected:
00 00
Compare OK
Command:
FF B0 00 04 10
Response:
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00
Bytes Sent : 5
Bytes Received: 18
Transfer Time : 140 ms
Transfer Rate : 164.29 bytes/second
Expected:
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00
Compare OK
Command:
FF D6 00 04 10 00 01 02 03 04 05 06 07 08 09 0A
0B 0C 0D 0E 0F
Response:
00 00
Bytes Sent : 21
Bytes Received: 2
Transfer Time : 71 ms
Transfer Rate : 323.94 bytes/second
Expected:
00 00
Compare OK
Command:
FF B0 00 04 10
Response:
00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F
00 00
Bytes Sent : 5
Bytes Received: 18
Transfer Time : 92 ms
Transfer Rate : 250.00 bytes/second
Expected:
00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F
00 00
Compare OK
Closing /storage/emulated/0/scripts/mifare.txt...
Disconnecting from the card (AMR220-E4F7 PICC)...
```

5. Tap “Disconnect” after reading the card and disconnect AMR220-C from the bluetooth device.



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.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment .

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.