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**VERIFICATION OF SCANNER GUARD
CARDS EFFECTIVENESS IN SHIELDING CREDIT CARDS
FROM ILLEGAL
RFID SCANS**

Prepared For:

SCANNER GUARD CORPORATION

Tests performed by:

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Scanner Guard Corp.

RFID

Revision History

| Revision | Report Date | Reason for Revision |
|----------|------------------------------|---------------------|
| Ø | June 28 th , 2012 | Initial Issue |
| 1.0 | July 3, 2012 | Updated Summary |

Tested by:

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Test Date(s): 06/27/2012 – 06/28/2012

Introduction

Some Credit cards are enabled with a RFID chip (13.56 MHz) that can store information and which can be retrieved by a RFID reader. These chips are meant to enhance the capabilities of the credit card and allows for a longer read range. The credit card does not need to be swiped using conventional methods and can be read by a RFID reader several inches of feet away. There has been ever increasing concern by privacy advocates that illegal RFID readers can be used by individuals to secretly obtain credit card information by scanning for nearby credit cards enabled with RFID chips. The scanning could be performed at a distance and although the credit card is in some ones wallet it can still be read. Scanner Guard Corporation claims they have developed a shielding card that can block these RFID scanners from reading your credit card. This card, the size of a credit card, is placed in the wallet in such a manner that it sandwiches the credit card. Scan Guard claims this will stop any one from illegally scanning your credit card when it is in your wallet.

Test Method

A National Instruments RFID test system was used as the RFID scanner. A RFID chip that operates at 13.56 MHz (ISO 15693) was used as the credit card (the chip was attached to a credit card to mimic a RFID enabled credit card). The following procedure was used:

1. RFID chip was initially placed in front of the RFID scanner. The scanner was activated and performed a read operation.
 2. The chip was placed between two Scan Guard cards and placed in front of the RFID scanner.
 3. The scanner was activated and performed a read operation.
 4. The chip was placed in a wallet. The scanner was activated and performed a read operation.
- The chip was placed in the wallet sandwiched between two Scanner Guard Cards. The scanner was activated and performed a read operation.

The results obtained relate only to the items tested.

DUT (Device Under Test) Specifications

There are two models. Both models are identical except for the fact that one card has a reflective surface that can be used as a mirror for putting on your make-up, etc.



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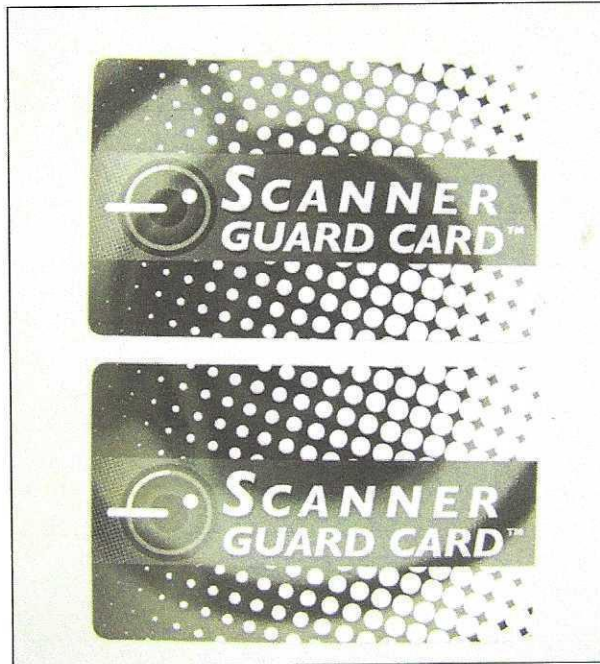


Figure 1- Picture of Model 1 (front)

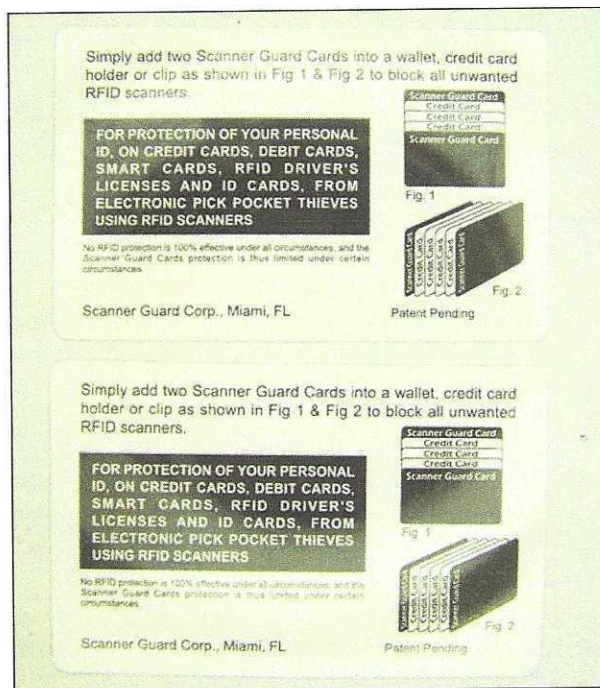


Figure 2 - Picture of Model 1 (back)

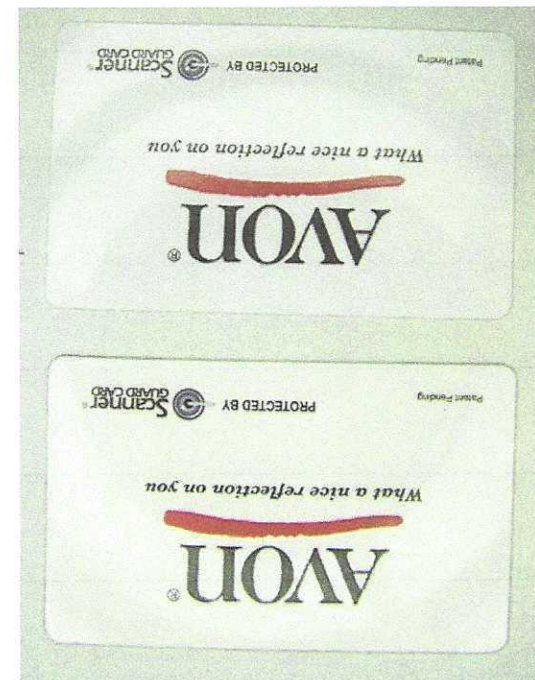


Figure 3 – Picture of Model 2 (front)

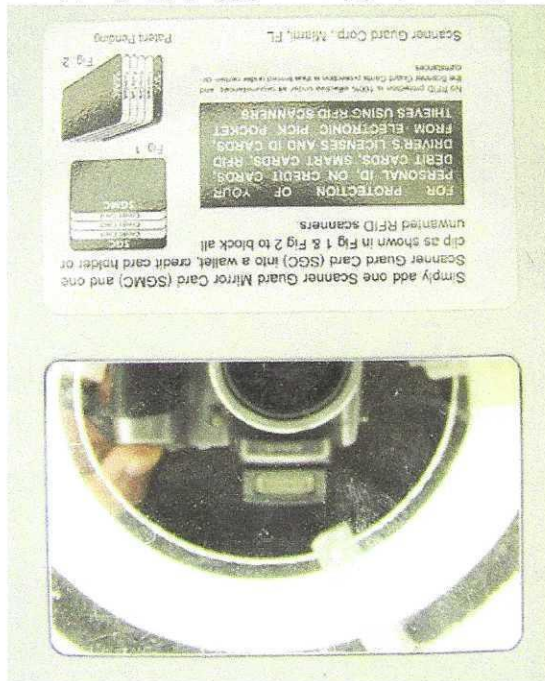


Figure 4 – Picture of Model 2 (back)



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Summary

The RFID chip was not able to be read when placed between either of the two models of Scanner Guard Cards. The Scanner Guard Cards have effectively shielded the RFID 13.56 MHz chip. Up to six RFID enabled credit cards can be blocked from being scanned when four enabled credit cards are put between the upper and bottom slot of a wallet, and two RFID chipped credit cards are put directly behind the scanner guard cards in the upper and bottom slot of a wallet. This protection applies to an open or closed wallet. In addition when the scanner guard cards in this configuration are on one side of the wallet, and the wallet is closed any chipped RFID credit cards in the slots on the other side of the wallet when the wallet is closed and come in close proximity or contact of the scanner guard cards will receive the same protection from being scanned while the wallet is closed.



Test system and Environment

Testing was performed using the National Instruments PXIe hardware platform with the following main components (see Figure 5):

1. 8106 embedded controller
2. 5610 RF up converter
3. 5600 RF down converter
4. 5641R transceiver
5. HF Antenna assembly

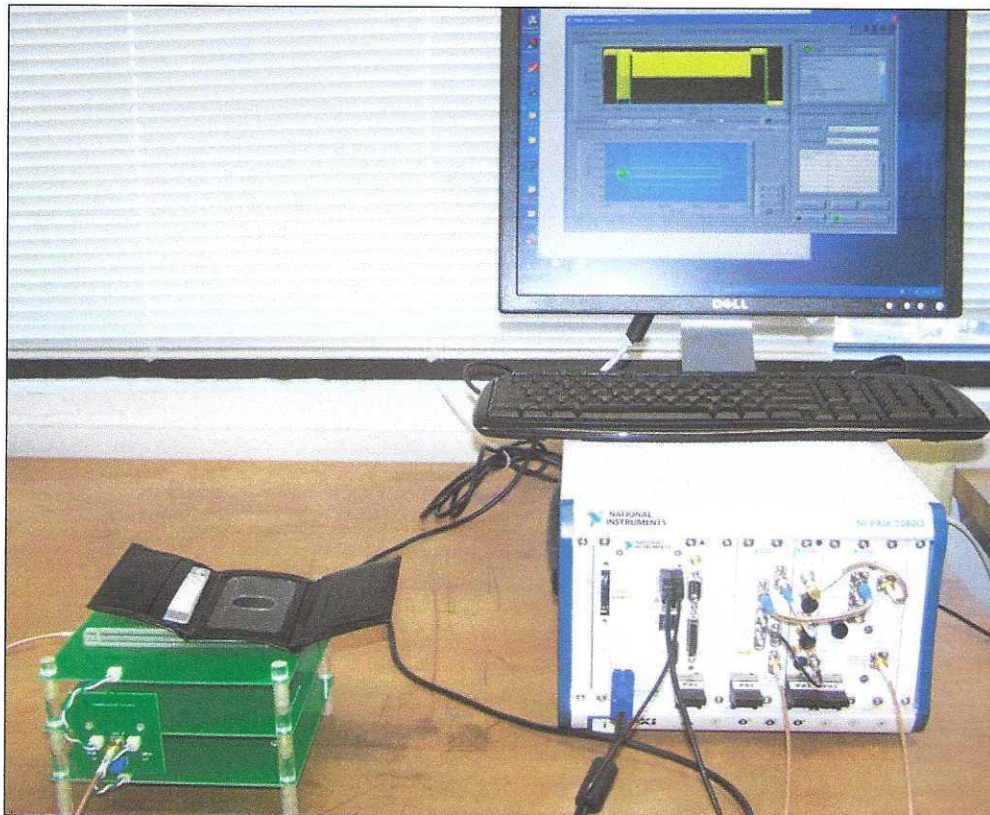


Figure 5- NI RFID Scanner

The NI test system is able to emulate a RFID scanner operating at 13.56 MHz.



Test Results

| Configuration | Was the RFID Scanner able to Read Chip? | |
|--------------------------------------|---|-----|
| | NO | YES |
| Stand-alone chip | | ✓ |
| Chip between Model 1 Cards | ✓ | |
| Chip between Model 2 Cards | ✓ | |
| Stand-alone chip in Wallet | | ✓ |
| Chip between Model 1 Cards in Wallet | ✓ | |
| Chip between Model 2 Cards in Wallet | ✓ | |

The below Figures show the outputs from the NI test system (i.e. RFID Scanner). The RFID Scanner performs a Read operation and if a chip is nearby responds back. If there is no chip or something is blocking the RF signal then there will be no response.

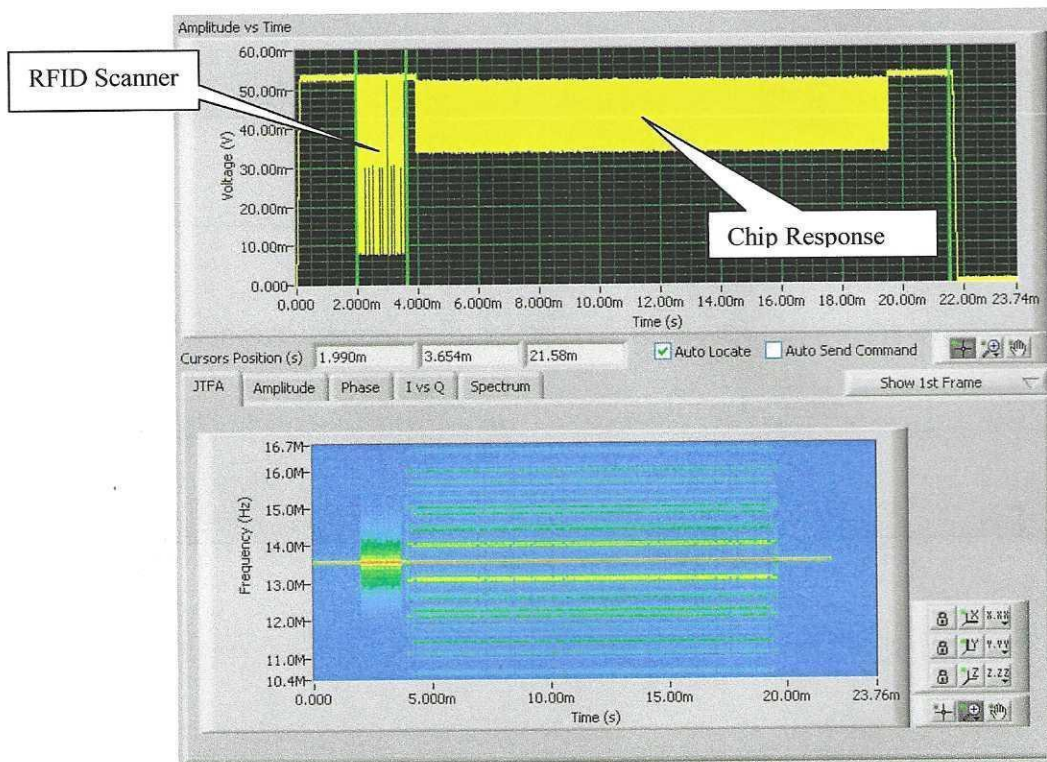


Figure 6 – Stand-alone chip

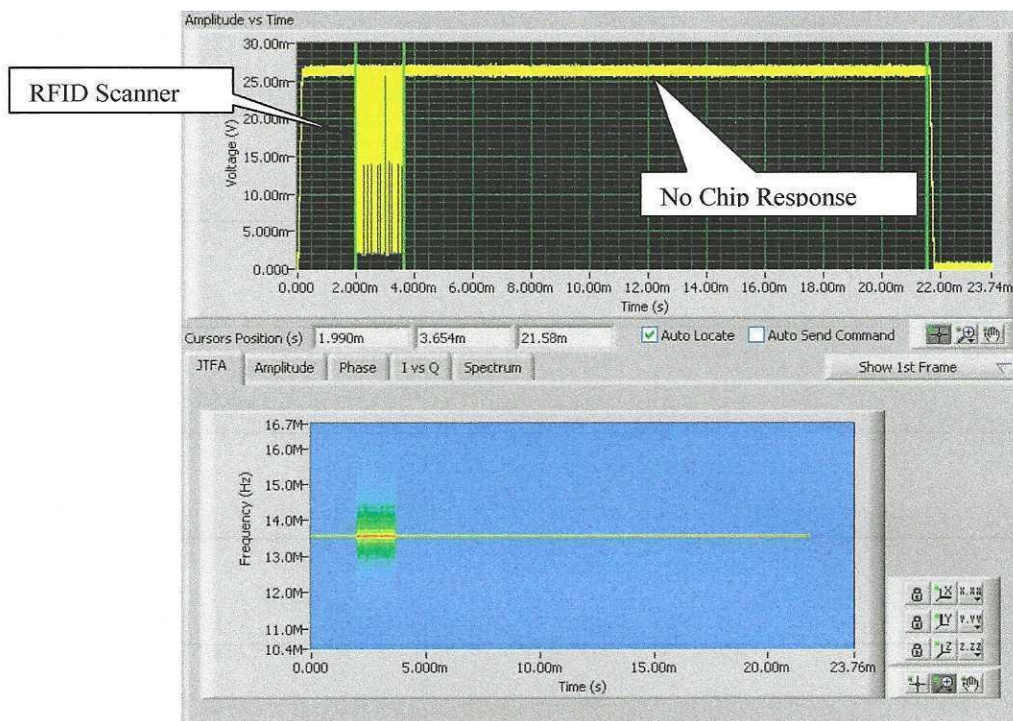


Figure 7 – Chip between Model 1 Cards

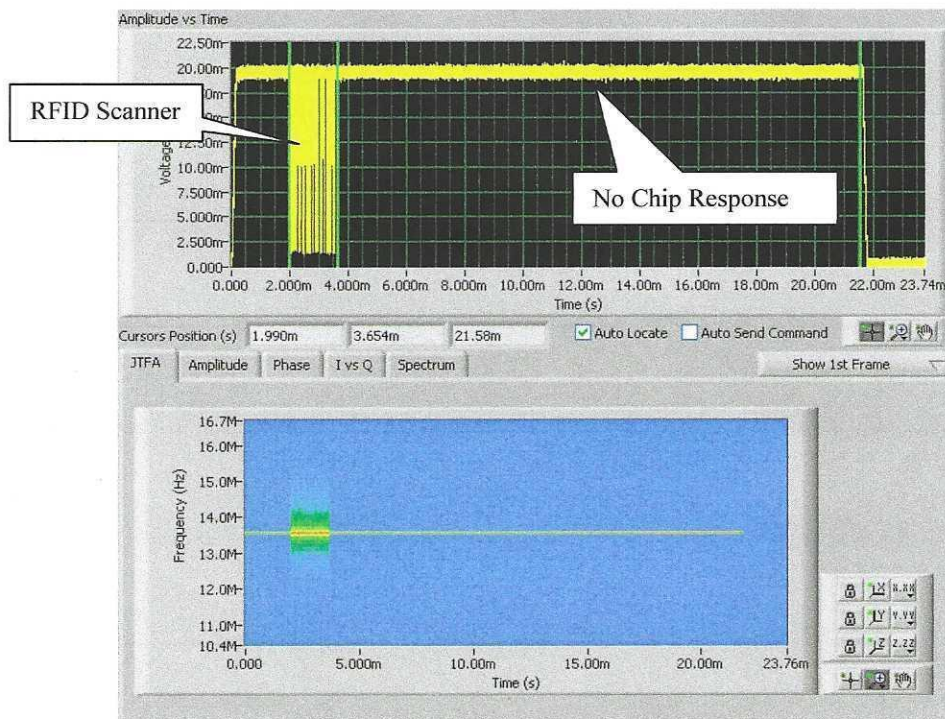


Figure 8 – Chip between Model 2 Cards

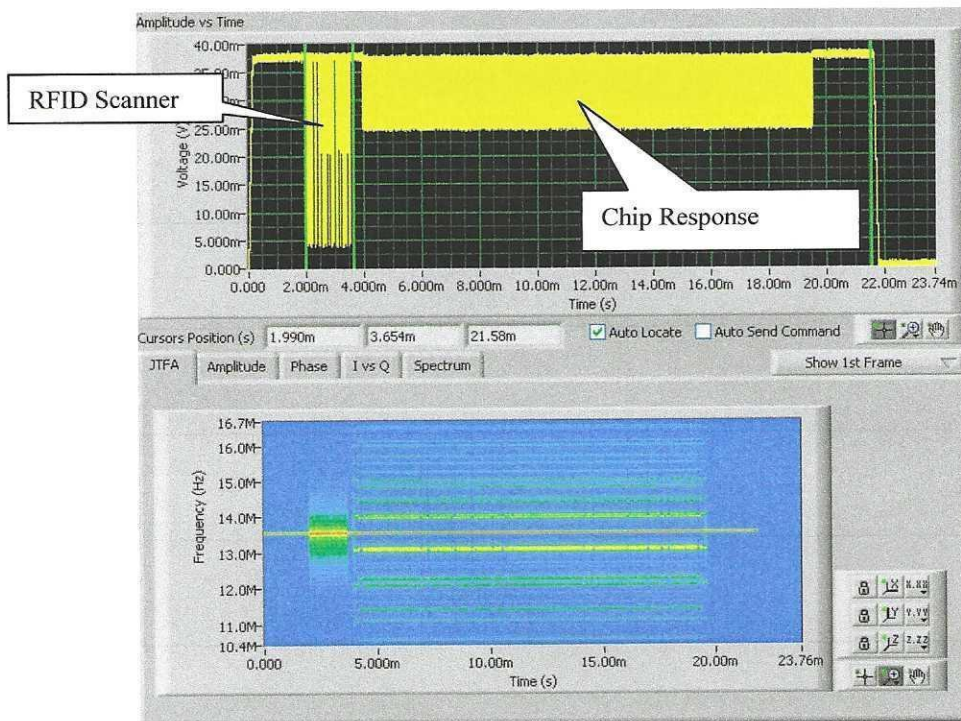


Figure 9 – Stand-alone Chip in Wallet

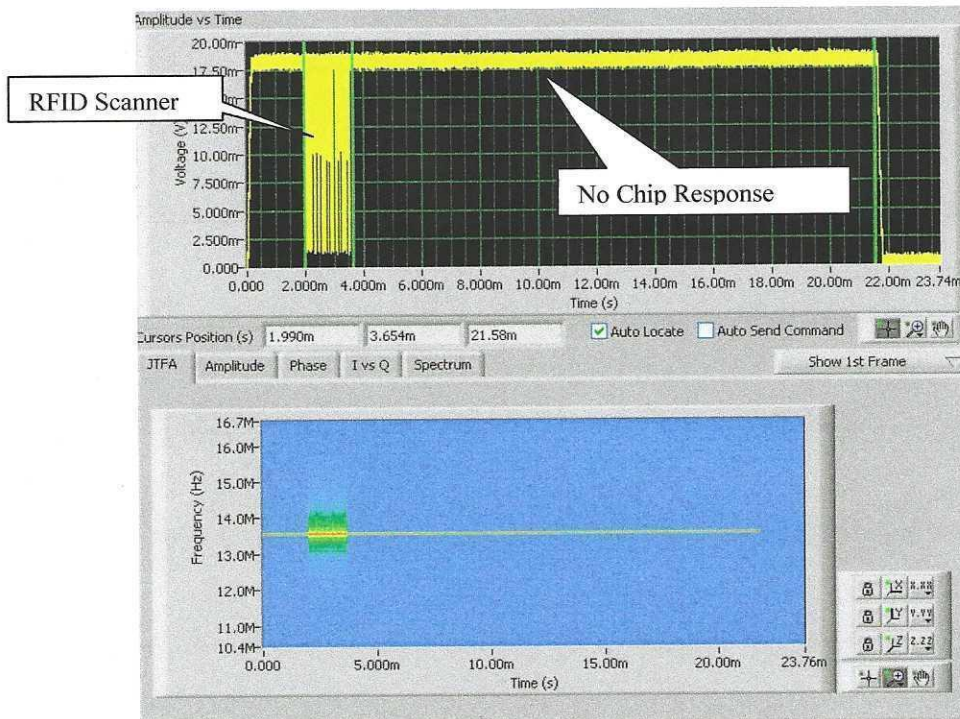


Figure 10 - Chip between Model 1 Cards in Wallet

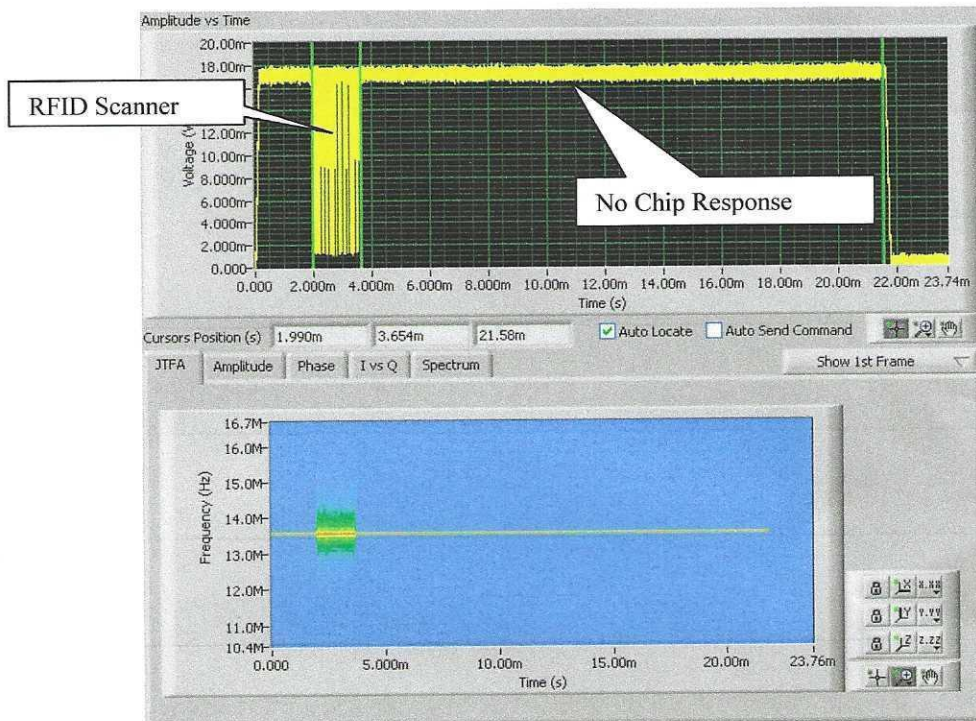


Figure 11 - Chip between Model 2 Cards in Wallet



Test Setup Photos



Figure 12 – RFID Chip placed between Model 1 Cards

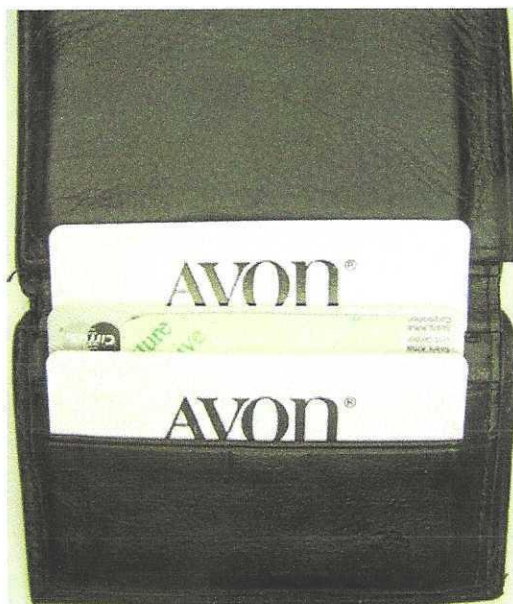


Figure 13 – RFID Chip placed between Model 2 Cards



Figure 14 – Wallet placed in front of RFID Scanner