

RFID-Blocking Cards for Shielding Effectiveness Test Report


The following samples were submitted and identified by the client as:

Sample Description	RFID-Blocking Cards
Model Number	TC-805
Date Initial Test Sample Received	2018/05/07
Testing Start Date	2018/05/08
Testing End Date	2018/05/09

Signed for on behalf of SGS



Kenny Lai
Project Manager



Ben Kuo
Laboratory Manager

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1. Report Overview

This report details the results of the testing carried out on TC-805 RFID-Blocking Cards sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS Taiwan Ltd. Wireless Laboratory or testing done by SGS Taiwan Ltd. Wireless Laboratory must approve SGS Taiwan Ltd. in connection with distribution or use of the product described in this report in writing.

2. Manufacturer Declaration or Comments

TC-805 RFID-Blocking Card is a product to protect contactless cards from illegal RFID card reader. Contactless cards each carries a Radio Frequency Identification chip which responds to a certain radio frequencies: 13.56MHz. Most commonly seen in credit card, debit card, travel card, passport, and driver's license. The chip can contain information on card holder's name, card numbers, expiration date, address, phone number, and pertinent account or employee information. TC-805 RFID-Blocking Cards can shield the frequency of the chips and block unauthorized access by hidden RFID card readers. Wireless identity theft can be prevented.

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3. Testing Laboratory

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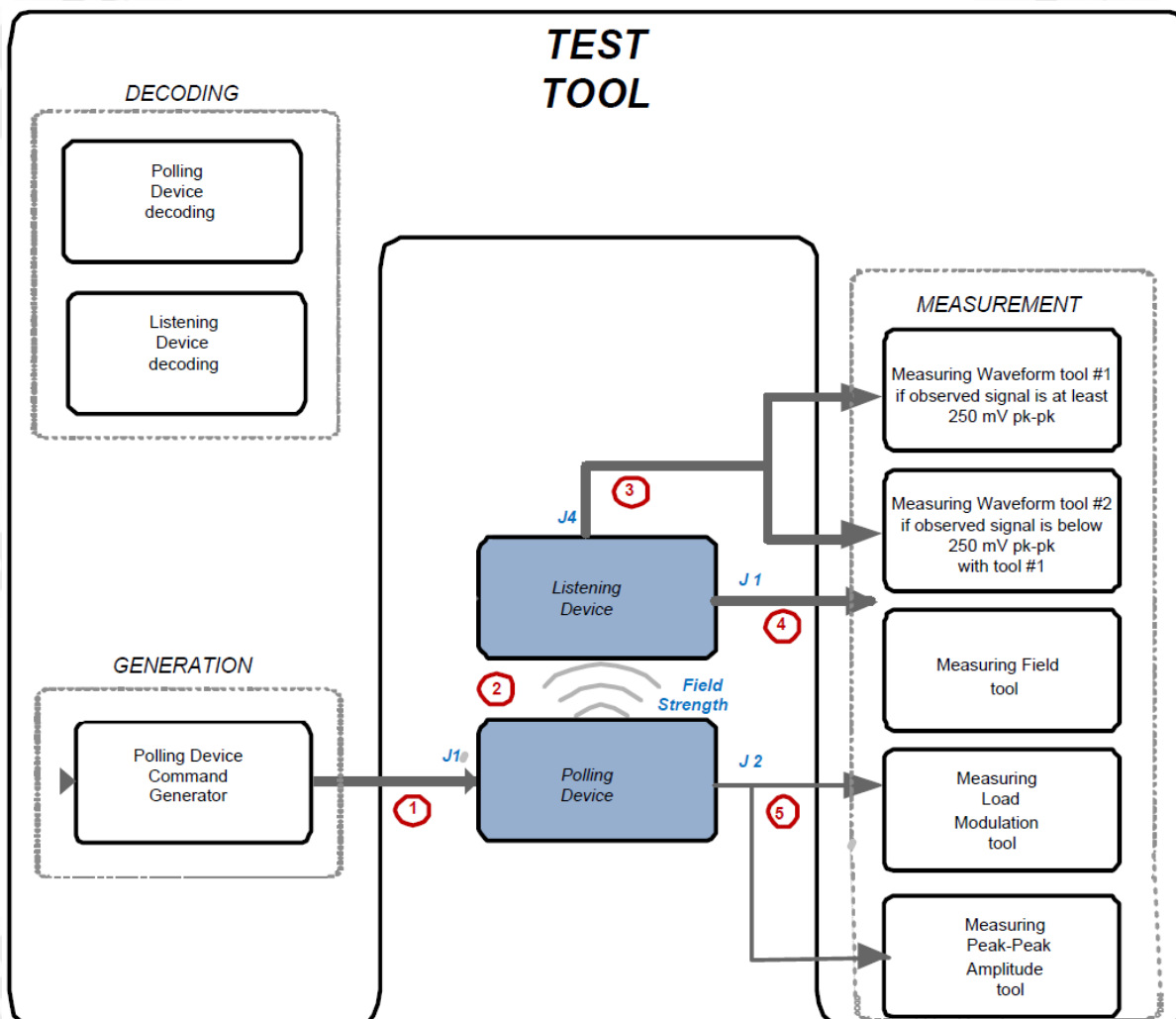
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5. Test Method and Test Bench

“The Amplitude of Load Modulation” measures the RFID chip embedded card at 35 - 45 mVpp, which is in equivalent to the value of 13.56 MHz. If no mVpp is detected, it indicates that there's no RFID transmission signal.



Name	Description
Model	Poller Antenna LMA Flexible Probe for MP300 ACL1 Aardvark USB/I2C Host Controller

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	10 dB attenuator Picoscope 6403 MP300 TCL2 MPRFA Advantech computer with an ADlink 9820 AD converter
Version	MPManager v2.7.9 Analog Test Suites v2.1.0

6. Testing Structure and Type

Measure the Amplitude of Load Modulation to determine whether there is an RFID signal received. If there is a received signal, a mVpp measurement data will be obtained. On the other hand, if no mVpp measurement data detected, meaning no 13.56MHz frequency is detected, this will prove the RFID blocking card successfully block the RFID signal.

Based on the appearance of the DUT (device under test), there are 5 RFID chip embedded cards put between TC-805 RFID-Blocking Cards for measurement. Three types of measurements will be performed: Front, Back and Side, and test the distance between 0 to 4cm, measure interval is every 0.5cm, each test will be repeated three times. The schematic diagram shown as below.

2pcs of RFID-blocking cards



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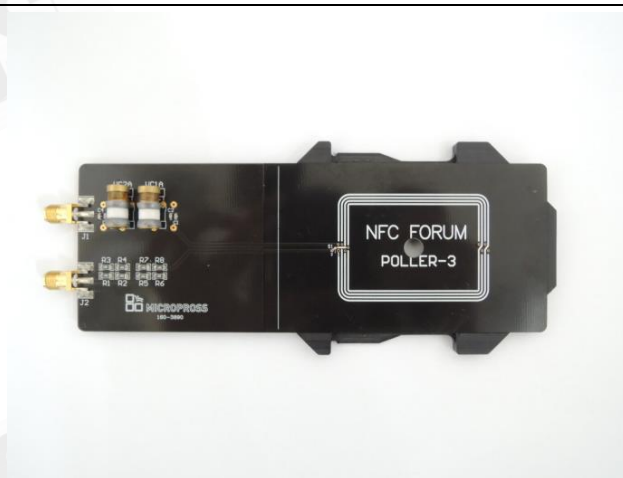
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5pcs of RFID chip embedded cards (credit cards, debit cards and travel cards)

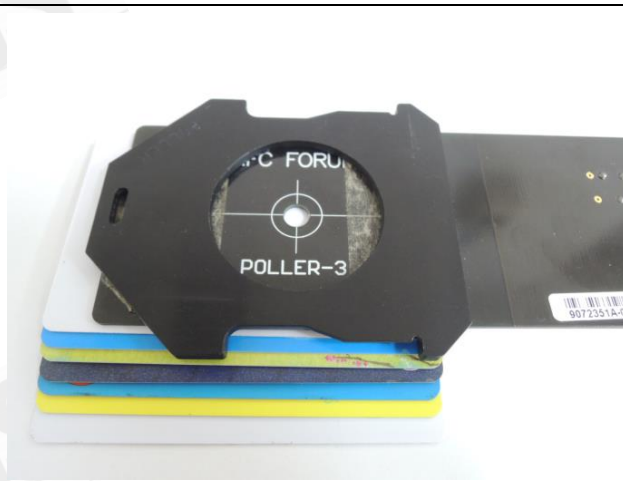


Antenna of testing tool



testing Type 1: Front

5pcs of RFID chip embedded cards put between TC-805 RFID-Blocking Cards and use antenna measure Front.



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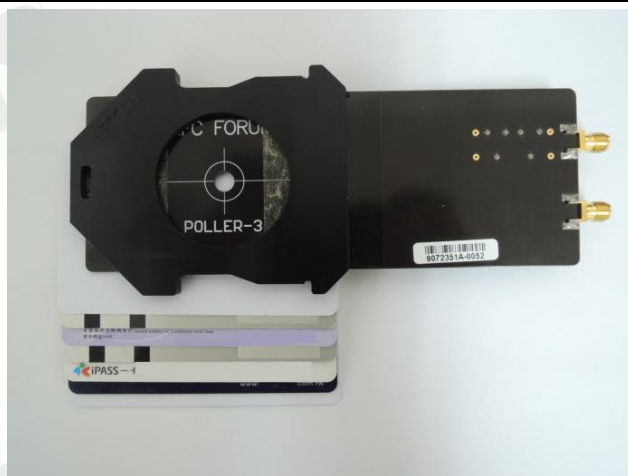
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testing Type 2: Back

5pcs of RFID chip embedded cards put between TC-805 RFID-Blocking Cards and use antenna measure Back.



testing Type 3: Side

5pcs of RFID chip embedded cards put between TC-805 RFID-Blocking Cards and use antenna measure Side.



testing Distance: 0~4cm

0.0cm
0.5cm
1.0cm
1.5cm
2.0cm
2.5cm
3.0cm
3.5cm
4.0cm



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7. Test results

This report uses 3 types of measurements with distance range within 0-4cm, to measure if RFID chip embedded cards are readable or not. The result marked as "X" indicates RFID signal is successfully blocked by TC-805 RFID-Blocking Card.

Type	Distance	5pcs of RFID chip embedded cards put between TC-805 RFID-Blocking Cards, readable?		Measured Value
		Yes	No (no RFID signal received)	
Front	0.0cm	-	x	0 mVpp
	0.5cm	-	x	0 mVpp
	1.0cm	-	x	0 mVpp
	1.5cm	-	x	0 mVpp
	2.0cm	-	x	0 mVpp
	2.5cm	-	x	0 mVpp
	3.0cm	-	x	0 mVpp
	3.5cm	-	x	0 mVpp
	4.0cm	-	x	0 mVpp
Back	0.0cm	-	x	0 mVpp
	0.5cm	-	x	0 mVpp
	1.0cm	-	x	0 mVpp
	1.5cm	-	x	0 mVpp
	2.0cm	-	x	0 mVpp
	2.5cm	-	x	0 mVpp
	3.0cm	-	x	0 mVpp
	3.5cm	-	x	0 mVpp
	4.0cm	-	x	0 mVpp
Side	0.0cm	-	x	0 mVpp
	0.5cm	-	x	0 mVpp
	1.0cm	-	x	0 mVpp
	1.5cm	-	x	0 mVpp
	2.0cm	-	x	0 mVpp
	2.5cm	-	x	0 mVpp
	3.0cm	-	x	0 mVpp
	3.5cm	-	x	0 mVpp
	4.0cm	-	x	0 mVpp

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8. Test Log

Test the mVpp value for: RFID chip embedded card stand alone

Device configuration

Poller: Reference Poller Antenna

Listener: RFID card

DUT configuration

Mode: Listener Mode

Condition at 820 Ω Load, Vs,ov nominal and fs,c nominal with Poller Antenna: Attempt 1

Send ALL_REQ:

SENS_RES = 0004

The Amplitude Measurement of Load Modulation

The amplitude of the load modulation of the Listening Device under test shall comply with the minimum and maximum limits.

Minimum expected load modulation amplitude = 9.5 mVpp

Maximum expected load modulation amplitude = 53 mVpp

Va value = 172.8 mV

Vb value = 135.89 mV

Load modulation amplitude measured = 36.92 mVpp

mVpp minimum < mVpp measured < mVpp maximum: OK

The listening device under test is able to work correctly at 820 Ω Load, Vs,ov nominal and fs,c nominal with Poller Antenna

With RFID embedded card stand alone, RFID signal (equivalent at 36.92 mVpp) is detected.

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Test the mVpp value for: 5pcs of RFID chip embedded cards put between TC-805 RFID-Blocking Cards:

Device configuration

Poller: Reference Poller Antenna

Listener: TC-805 RFID-Blocking Cards

DUT configuration

Mode: Listener Mode

Condition at 820 Ω Load, Vs,ov nominal and fs,c nominal with Poller Antenna: Attempt 1

Send ALL_REQ:

Listening device did not answer.

Condition at 820 Ω Load, Vs,ov nominal and fs,c nominal with Poller Antenna: Attempt 2

Send ALL_REQ:

Listening device did not answer.

Condition at 820 Ω Load, Vs,ov nominal and fs,c nominal with Poller Antenna: Attempt 3

Send ALL_REQ:

Listening device did not answer.

The listening device under test is not able to work correctly at 820 Ω Load, Vs,ov nominal and fs,c nominal with Poller Antenna

With RFID chip embedded card sandwiched between 2pcs of TC-805 RFID Blocking Card, no RFID signal (equivalent at 36.92 mVpp) is detected.

9. End of Report

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