

# MP300 TCL2

Laboratory Range

The ultimate laboratory solution for contactless and NFC device characterization



- ✓ Contactless smart cards reader and tester
- ✓ Numerous adjustable parameters
- ✓ Support of NFC standards:
  - NFC-IP1
  - ISO 14443 A/B
  - Mifare™
  - FeliCa™
  - ISO 15693
- ✓ Spy function included for trace visualization & analysis
- ✓ Magnetic field, resonance frequency and chip impedance measurements

## MP300 TCL2 Overview

Always ahead of the latest smartcard related technologies, Micropross brings you the most complete solution for the characterization of contactless and NFC devices.

Fully implementing the NFC-IP1 specification, this tool will allow you to define in a very accurate manner the test conditions (both physical and protocolary settings), whereas its integrated spy functionality will allow you to check the exchanges that have happened, and thus establish diagnosis about protocolary issues.

Finally, its embedded physical measurement features will make it possible to complete the full characterization of your NFC device.

# MP300 TCL2

## Technical specifications

### ■ Protocols

**ISO 18092 (NFC-IP1):** active, passive and peer to peer modes

**ISO/IEC 14443-3 Type A/B (proximity)**

Managed anticollision, T=CL protocol handling

**Innovatron**

**ISO/IEC 15693 (vicinity)**

**ISO 18000-3 Mode 1**

**Mifare™**

Support of Mifare Classic, Light, Ultra-light

**Felica™ 212/424 kbits/s**

Polling, read and write features

**Raw mode**

Gives the possibility to exchange frames without any protocolary encapsulation

**Support of out of standard chips**

Benefit from Micropross' experience in smartcard programming

### ■ Programmable parameters

#### Physical parameters

Field strength

Modulation index (0 to 100% step 1%)

Field rise time (from 0 to 5ms step 10us)

Carrier frequency (from 12.56 MHz to 14.56 MHz step 100 Hz)

Modulation rise and fall times (from 0 to 10us)

#### Timings

Type A pause width (0 to 10 us)

Frame waiting time (set in ETU)

Type B framing: SOF, EGT, EOF, and each bit duration, independantly programmable in clock cycles

Communication speed: 106kbit/s, 212kbit/s, 424 kbit/s, 848 kbit/s

TR2 timing (with sequencer)

### ■ Spy feature

Visualisation of the exchanges using MPManager (file format available upon request)

Resolution: 20ns

Visualisation of carrier/sub carrier detection, sequences, characters, phase changes, I/O direction and much more  
Comprehensive protocol analysis, including NFC-IP1 exchanges in all modes

### ■ Sequencer

Have the total control over the timings surrounding your test scenario using the sequencer

### ■ Others

#### Communication

USB 2.0

TCP/IP 10/100 Mbits/s

#### Development

Development in C,C++, VB, Java, .NET environments

### ■ Tests

#### Automatic testing

Send type A command, wait, send type B command and receive answer (for type B cards)

Send type B command, wait, sent type A command and receive answer (for type A cards)

Switch on field, wait, send request command (A or B), receive answer

Send request, wait, send request, receive the answer

Antitearing

PICC reset characterization

Check minimum FDT (frame delay time)

Response time measurement (FDT, TR0, TR1)

Sending out of standard frames

Sending misformed blocks (wrong number of bits)

Retro modulation ratio measurement

Distance simulation testing

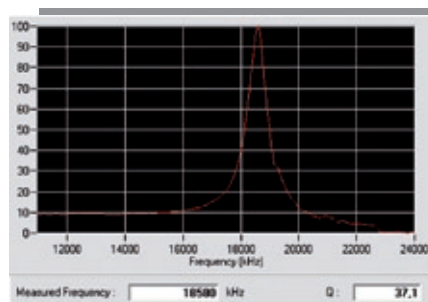
Separated RX channel allowing communication using a RF amplifier

### ■ Physical measurement

Chip impedance (done at 13.56MHz)

Resonance frequency and Q factor (from 11MHz to 24MHz)

Example of resonance frequency measurement done with our MPscope user interface :



### ■ Communicates with and tests :

Wafers

Micro-module

e-Passport

RFID tags (13.56MHz)

Inlays

Prelaminates

Smartcards

NFC Handsets

Smart objects

### ■ Our service

We provide you not only an useful product but also an efficient technical support and our experience. Micropross is at your disposal for any user requirement.

Micropross is an ISO 9001 V 2000 certified company.