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INSTRUMENTS™

NFC and Wireless Charging Test

Microprossa – A National Instruments Company
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Microprossx Introduction

High tech company based in Lille – France

Founded in 1979

+50 employees

3 support centers : France, Asia, USA

Leader & contributor in standardization committees : EMVCo, NFC Forum, ISO, ETSI, ICAO,GCF, Wireless Power Consortium, Airfuel Alliance

Microprossx is part of NI since 2015

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Microprossss technology application

Microprossss supplies test and personalization solutions for business of **Near Field Communication (NFC) and wireless charging**.
We have proven expertise in the design of R&D and manufacturing test tools which are all considered as references in their domains.
These tools allow users to fully characterize and **test the electrical and protocol performance** of products such as **smartcards** and **smartphones** in design, conformance, and production.

Use cases

NFC : data exchange, contactless payment, transportation, assisted pairing, keyless car entry, advertisement, authentication application…
Wireless charging of smartphones (at home, in cars etc…), tomorrow will allow the wireless charging of more powerfull tools like laptops, shavers, power tools, kitchen appliances….cars

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Challenges

NFC testing

- Test NFC sensors
- Ensure of consistency of the performance in manufacturing
- Develop and be ready on the market faster
- Making sure of the conformance of the products according to the international standards (NFC Forum, ISO 10373-6, ISO 10373-7)
- Ensure a seamless experience for the user in the usage of those emergent technologies

Wireless charging testing

- Testing Wireless Charging transmitters and receivers
- Ensure of consistency of the performance in manufacturing
- Develop and be ready on the market faster
- Making sure of the conformance according to the international standards (Qi)
- Give user confidence on the usage of this new technology

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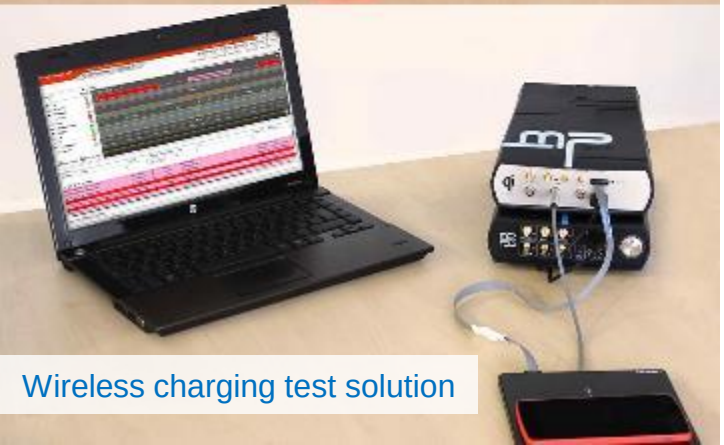
NFC test solution


Wireless charging test solution

Microprоss solutions

NFC test solution

- Coverage of all NFC related test specifications (NFC Forum, ISO 10373-6, EMVCo)
- Evolutivity to Wireless Charging (Qi) testing
- Test solutions vastly deployed at official NFC test laboratories
- Automated test procedures
- Tools certified by EMVCo and the NFC Forum for official conformance testing
- Tools from official NFC Forum members
- External protocol analysers available

Wireless charging test solution

- Full implementation of the Qi test specification (5W & 15W) including foreign object detection
- Automated test procedure
- Turnkey solution (hardware + software + accessories)
- Automated generation of test reports
- Consistency with laboratory made measurement
- Easy evolutivity to manufacturing testing
- Tool from an official Wireless Power Consortium member

How to test Wireless charging?

SOFTWARE

Powerful viewer: For comprehensive debug sessions

- See all the packets exchanges synchronized with the physical measurements (Vr/Ir)
- Perform efficiency measurement for Rx & Tx or coil only
- Zoom on the trace to get accurate information
- Add some triggers for timing measurement
- Look for specific packets, and get a detailed packet information
- Show all the errors

HARDWARE

One single test tool for Rx and Tx testing:

- In Low and Medium Power
- Provided with a single antenna for Rx testing
- Single antenna for Tx testing
- One Foreign object
- Own calibration function for accurate power & efficiency measurement

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R&D : how to test?

MP*500 TCL3*

- Poller, listener & Peer2Peer simulator
- Supports all ISO, EMVCO, NFC related protocol
- Fully digitalised approach
- Embeds a VNA for Resonance, Q factor & field strength measurement
- Embeds an internal oscilloscope
- Supports the technologies and test methods of the future
  - + VHBR
  - + EMD handling and measurement
- Features an arbitrary waveform generator
- Able to test WPC technology, acting as a TPT or TPR

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R&D : how to test?

The Contactless test station

- **Autonomous** contactless test system for conformance
- **All in one box :** PC, Acquisition board, Amplifier, Scope & TCL3 Signal generator
- **Can evolve to SWP/HCI testing** with the addition of a MP300 SC2
- **Scalable solution :** EMVCo, NFC Forum, ISO 10373-6, …
- **Automated test report** generation
- **Clear verdict :** pass / fail with debug information

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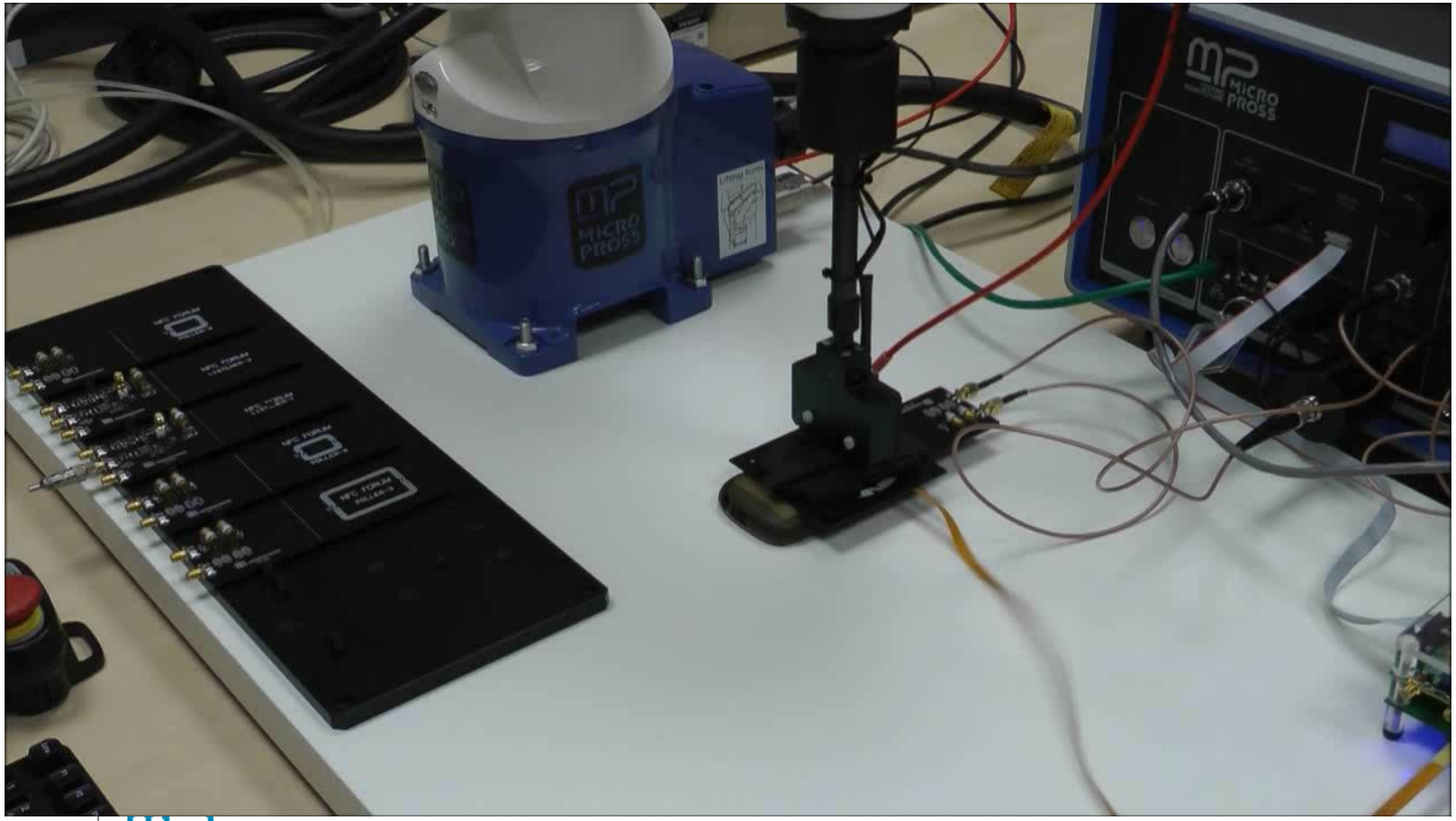

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R&D : how to test?

MP007

- Portable
- Battery powered
- Support of :
  - Contactless (NFC)
  - Contact (SIM cards, banking cards)
- All protocols (contact / contactless) can be spied simultaneously, during the same session
- Multiple business oriented decoders available
  - EMVCo
  - NFC Forum
  - Telecom

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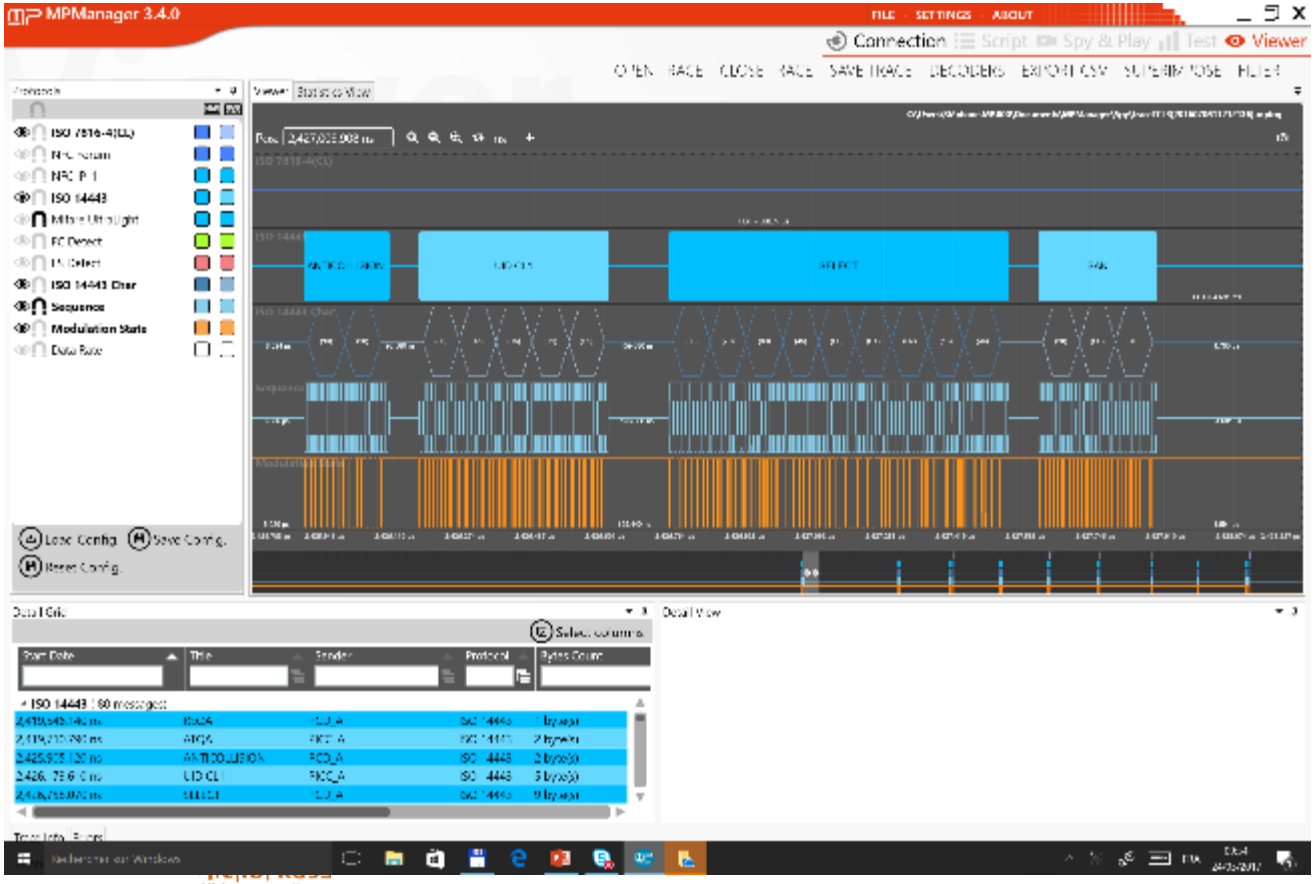

Manufacturing : how to test?

MP500 PT1-NFC

On one station :

- **Terminal simulator** (to test the card mode)
- **Reader simulator** (to test the reader/writer mode)
- **Resonance frequency / Q factor**
- **Analog** measurement available
- Measurement correlable with a **normative test bench**
- **One antenna** to do all
- **Integrated oscilloscope** function
- All NFC functionalities **tested in less than 7s**

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Manufacturing : how to test?

MP500 PT1-NFC

Tests typically performed :

Card mode :

- Load modulation amplitude
- Response time
- Different reader waveshape characteristics
- Resonance frequency
- Q factor
- …

Reader/writer mode :

- Field strength
- Reader waveform characteristics
- Carrier frequency
- …

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Learn more about Microprossss solutions

Join us on the exhibition floor for demo!

NITalk Page : NFC & Wireless charging test group

www.microprossss.com

For any question contact us :

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Summary

NFC & Wireless charging are more and more present in our lives through killer applications : Contactless payment, Transportation, automotive etc…

Those technologies are integrated in more and more smartphones : Low end smartphones now receive NFC, as it can be a revenue generator for the manufacturer – Huge companies are introducing Wireless charging in there devices.

NI proposes to the market : the most complete range of NFC and wireless charging dedicated solutions for design, conformance and production.

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