

# MP500 TCL3

HIGH END AND ULTRA PERFORMANT TESTER FOR CONTACTLESS DEVICES (SMART CARDS, NFC DEVICES, READERS, ...)



“Working with Micropross as a long-time partner help us to accelerate our development and to offer to the market innovative products. Indeed the Micropross testing equipment always provide groundbreaking features. At Infineon, we have especially integrate the MP500 TCL3 of Micropross for its VHBR features and its versatile testing capabilities.”

**Walther Pachler**

## SUPPORTED PROTOCOLS

- ▶ ISO 14443 A/B
- ▶ ISO 15693
- ▶ NFC-IP1 /IP2 (active/passive)
- ▶ Felica™
- ▶ Innovatron™
- ▶ Mifare™

## APPLICATION FIELDS

- ▶ Characterisation of contactless smart cards & readers
- ▶ Protocol debug
- ▶ Personalisation
- ▶ Pre-personalisation
- ▶ OS loading

## SUPPORTED TESTS

- ▶ Resonance frequency/Q factor-complex impedance (L, R, C)
- ▶ Hmin measurement
- ▶ Accurate definition of test parameters
- ▶ Timing measurement
- ▶ Protocol verification (parity error, CRC, ...)
- ▶ Anti tearing test
- ▶ All normative tests (ISO, ICAO, EMVCo, ...)

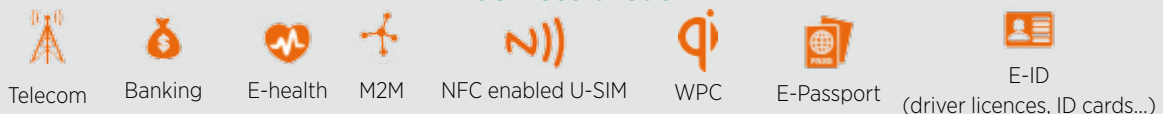
## AVAILABLE TEST SUITES

- ▶ ISO 10373-6 and ISO 10373-7 (analog / digital)
- ▶ ICAO layers 1-2, and 3-4
- ▶ NFC-IP1 and IP2 (analog / digital)
- ▶ EMVCo L1 PICC & PCD (analog / digital)
- ▶ NFC Forum (analog / digital / LLCP / SNEP)
- ▶ Qi for transmitters and receivers (low power / medium power)

## AVAILABLE OPTIONS

- ▶ Misc. Communication antennas (terminal simulation, tag simulation, resonance frequency measurement)
- ▶ Normative test benches (ISO 10373-6, -7, EMVCo, NFC Forum, ...)
- ▶ Contactless Test Station

## Business areas



## KEY POINTS

- ▶ Operates under Linux Operating System
- ▶ Performs both terminal and smart card simulation tasks
- ▶ Support of ISO 14443, ISO 15693, ISO 18092, Mifare™, FeliCa™ protocols
- ▶ Support NFC-IP1 and -IP2 specifications, in all modes (active, passive, initiator, target)
- ▶ Support of all NFC Forum defined test cases (analog, digital, LLCP, SNEP)
- ▶ Support of the NFC peer to peer mode
- ▶ Adjustment feature of all physical parameters (field strength, carrier frequency, modulation index, ...)
- ▶ Presence of an arbitrary waveform generator, for accurate signal definition
- ▶ Support of active load modulation computers
- ▶ Ideal tool for emd measurement and generation
- ▶ Spy feature, with graphical display of the spied exchanges
- ▶ Advanced measurement features (complex impedance, resonance frequency, field strength, ...)
- ▶ Presence of a VNA, for qualitative resonance frequency measurement
- ▶ Compatible with all ISO 10373-6:2011 amendments, including VHBR (ASK & PSK)
- ▶ Compatible with new MPManager 3.0

## SUPPORTED PROTOCOLS

▶ <b>ISO/IEC 14443-3 (proximity cards) (Type A/B)</b>	
Supported data rates	106, 212, 424, 828 kbps
	Asymmetrical data rates supported
	VHBR (ASK&PSK) supported
▶ <b>B' (Innovatron™)</b>	
▶ <b>ISO/IEC 15693 (vicinity cards)</b>	
Supported communication speeds	Low & high data rates, 1 out of 4 & 1 out of 256
▶ <b>ISO 18000-3 Mode 1</b>	
▶ <b>Mifare™</b>	
▶ <b>FeliCa™ (optional through a hardware add-on)</b>	
▶ <b>NFC Forum modes : Peer2Peer, Listening, Polling</b>	
▶ <b>NFC Forum tags (Tag types 1,2,3,4)</b>	
▶ <b>ISO 18092 (NFC-IP1)</b>	
Modes supported	Active/passive mode, in both Initiator/Target variantes
Raw mode : implementation of custom protocols and support of out of standard chips	

## PROGRAMMABLE PARAMETERS

<b>PHYSICAL PARAMETERS</b>	
Field strength, modulation index, rise&fall times	
Generation of arbitrary waveshapes	
Amplitude of the signal in smart card simulation mode	
<b>LOGICAL PARAMETERS</b>	
Type A pause, FWT, type B framing, communication speed	

## SPY FEATURE

Signals displayed	Field presence, modulation, sequences, bytes, I/O direction, baudrate change, triggers...
-------------------	---

## AVAILABLE TESTS

<b>ELECTRICAL TESTING</b>	
Resonance frequency measurement / Q factor	
Complex impedance (chip/antenna)	
Magnetic field measurement	
Generation of EMD (Electro Magnetic Disturbance)	
<b>LOGICAL TESTING</b>	
Numerous timing controlled pre-implemented test sequences	
Antitearing	
Framing (parity error, CRC error, protocol error)	