MP500 TCL3

A high-performance tester for contactless devices such as smart cards, NFC devices, readers, and more.

The MP500 TCL3 NFC Tester Advantage

As a functional follow-up to the MP300 TCL2, the MP500 TCL3 simulates terminal and smartcard functionality and features numerous possibilities for signal customization. This high-performance tester includes an internal oscilloscope, AWG, and VNA as well as supports ISO 14443A/B, FeliCa™, Mifare™, and ISO 15693. In addition, you can perform advanced conformance test and debugging.

1 General Analog Input
Measurement, reception

2 Trigger
I/O

3 Smart Card Communication
Output and impedance measurement

4 General Accessoires
Measurement, active antenna, load modulation

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Measurement, active antenna, load modulation

6 Communication
Ethernet synchronization, trigger, USB host

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

— Walther Pachler, Infineon

The Ideal Tool

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

Supported Protocols
- ISO 14443 A/B
- ISO 15693
- NFC-IP1 /IP2 (active/passive)
- FeliCa™
- Innovatron™
- Mifare™

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

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, and more)
- Anti tearing test
- All normative tests (ISO, ICAO, EMVCo, and more)

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)

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, and more)
- 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 spiedex changes
- Advanced measurement features (complex impedance,resonance frequency, field strength, and more)
- Presence of a VNA, for qualitative resonance frequency measurement
- Compatible with all ISO 10373-6:2011 amendments,including VHBR (ASK & PSK)
- Compatible with MPManager 3.0

BUSINESS AREAS

| Telecom | Banking | E-health | M2M | NFC enabled | WPC | E-passport | E-ID (driver licences ID cards, and more) |

Supported protocols

ISO/IEC 14443-3 (proximity cards) (Type A/B)	
Supported data rates	106, 212, 424, 828 kbps`
	Asymetrical data rates supported
	VHBR (ASK&PSK) supported
B' (Innovatron™)	
ISO/IEC 15693 (vicinity cards)	
Supported communication speeds	Low & high data dates, 1 out of 4 & 1 out of 256
ISO 18000-3 Mode 1	
Mifare ™	
FeliCa ™ (optionnal through a hardware add-on)	
NFC Forum modes : Peer2Peer, Listening, Polling	
NFC Forum tags (Tag types 1,2,3,4)	
ISO 18092 (NFC-IP1)	
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

Physical Parameters
Field strength, modulation index, rise&fall times
Generation of arbitrary waveshapes
Amplitude of the signal in smart card simulation mode
Logical parameters
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

Electrical testing
Resonance frequency measurement / Q factor)
Complex impedance (chip/antenna)
Magnetic field measurement
Generation of EMD (Electro Magnetic Disturbance)
Logical testing
Numerous timing controlled pre-implemented test sequences
Antitearing
Framing (parity error, CRC error, protocol error)

NI Services and Support

- Maintenance contracts :
  - Firmware/software updates
  - Hardware repair
  - Onsite customer support
  - Replacement tool
- Technical support located in Asia, Europe and Americas

- Training courses customizable :
  - knowledge level based
  - Time constraints
  - Topics of interest
- Debug and pre-certification of contact and contactless devices