

MP300 TCL1

The laboratory solution for contactless device characterisation

- ◆ Supports ISO/IEC 14443 A/B, Mifare™, FeliCa™ protocols
- ◆ Numerous physical and protocolary adjustable parameters
- ◆ Gives the possibility to spy the exchange with the device under test
- ◆ Features chip impedance measurement, and smartcard resonance frequency measurement



OVERVIEW :

This tester will typically be used in the following contexts :

- Debug of a smartcard operating system
- Quality inspection tasks
- Compliance checking of a smartcard with defined standards
- Electrical qualification of a smartcard or a micro-module

The main features of the MP300 TCL1 are :

- Emulation of a contactless smartcard reader
- Compatibility with smartcards, RFID tags, inlays, e-Passports, micro-modules
- Support of the ISO/IEC 14443-3 & 4, Mifare™, FeliCa™ protocols
- Endless possibilities of protocolary customisation
- All physical parameters can be adjusted (field strength, carrier frequency, modulation index, ...)
- Spy of the exchanges happening between the tester and the device under test
- Accurate timing measurement features
- Sequencer, for a perfect test scenario repetition and advanced protocol testing
- Advanced physical measurement functionalities (chip impedance, resonance frequency measurement)
- Compatible with Micropross\'Universal Contactless Bench and ISO 18047 Test Bench
- Open platform : integrate the MP300 TCL1 inside your own test platform
- Supplied with the MPManager software suite, enabling the complete control of the tester without any programming knowledge

SPECIFICATIONS :

Supported protocols

ISO/IEC 14443 (proximity cards)	
Type A	Supported
Type B	Supported
Anticollision	Supported

T=CL protocol	Supported
Supported data rates	106, 212, 424, 828 kbps Asymmetrical data rates supported
B^v (Innovatron)	
Supported	
Mifare TM	
Types supported	Classic Light Ultra Light Ultra Light C Many more
Encryption	Assisted by hardware
FeliCa TM	
Available data rates	212 and 424 kbps
Encryption	Available through an external device
Raw mode	
Gives the possibility to exchange frames without any protocolary encapsulation	
Out of standard chips	
Benefit from Micropross ^v experience in smartcard programming	

Programmable parameters

Physical parameters	
Field strength	Adjustable
Modulation index	From 0% to 100%
Field rise time	0ms to 5ms
Carrier frequency	12.56MHz to 14.56MHz
Modulation rise and fall times	0µs to 10µs
Logical parameters	
Type A pause width	0 to 4.4µs
Frame waiting time	Adjustable in ETU
Frame waiting time	Adjustable in ETU
Type B framing (SOF, EGT, EOF, bit duration)	Adjustable in clock cycles
TR2 timing	Adjustable with the sequencer
Communication speed	106, 212, 424, 848 kbps

Spy feature

Resolution	20ns
Events displayed	Carrier and subcarrier detection Type A sequences Phase changes Bytes Frames User events I/O direction Data rate changes (asymmetrical data rates are supported)

Available tests

Electrical measurement	
Resonance frequency measurement	
Range	11 to 24 MHz
Chip impedance	
Logical testing	
Automatic testing	
Send type A command, wait, send type B command and receive answer (for type B cards)	
Send type B command, wait, send 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)	
Testing through API manipulation	
Response time measurement (FDT, TR0, TR1)	
Sending of out of standard frames	
Sending misformed blocks (wrong number of bits)	
Retro modulation ratio measurement	
Distance simulation checking	
Separated RX channel allowing communication using a RF amplifier	
Measurement done at 13.56 MHz	

Triggers

The MP300 TCL1 offers triggers, to synchronise or to be synchronised by external laboratory devices (oscilloscopes,...)

Physical information

Weight (Desktop package)	3.10 kg
Dimensions (Desktop package)	Width : 130mm Height : 240mm Depth : 320mm
Weight (Unitary rack package)	1.98 kg
Dimensions (Unitary rack package)	Width : 150mm Height : 78mm Depth : 270mm

Communication parameters

USB 2.0
TCP/IP 10/100 Mbps
RS 232

Software development

Remote development (the code is executed from the PC)	
Elements available	MPSDK .NET library available on demand Communication Dll supplied
Supported programming languages	C, C++, VB, Java, .NET Any language that supports Dll

Embedded development (the code is executed directly by the MP300)

Recommended cross compiler

Windriver compiler (preferred version : 4.4b)

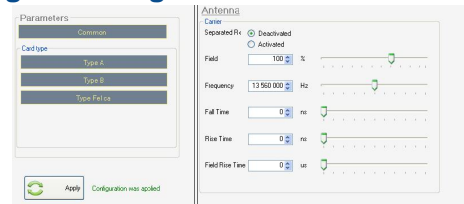
User Interface

MPManager

SOFTWARES :

The MP300 TCL1 is supplied with the MPManager software. The aim of this software, is to allow the user to access the power of the tester without any programming knowledge.

First, the MPManager software allows you to define the physical conditions that will be used for the communication session with the smartcard



Then, MPManager allows you to define the exchanges that will happen. A multitude of commands are available, which have been thought to cover all of the customer needs.



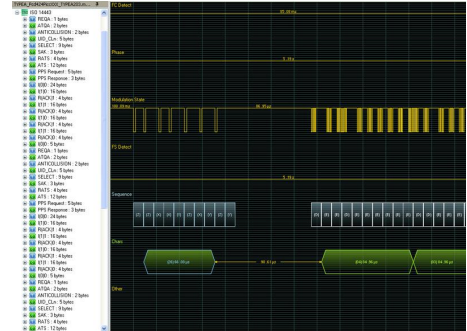
Using those commands, the user can build his own test script.

Line	Command	Parameters	Expected response
1	Select Card Type	Type A	
2	Power On		
3	Request	Request Type A	
4	Anticollision		
5	Send RATS	Nb bytes : 2 - Command : E001	
6	Send PPS	DID : 1 - DRI : 848 - DSI : 848	
7	Iso14443:Select Data Rate	PCD->PICC : 848, PICC->PCD : 848	
8	Iso7816:Send Adu	AIDC0F03-00	
9	Iso7816:Send Adu	800E009E-01-55	
10	Iso7816:Send Adu	8008009E-01-55	
11	Power Off		

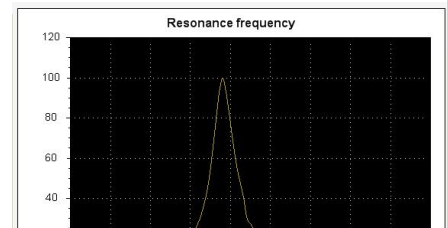
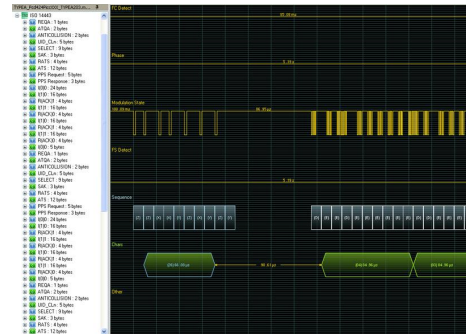


Once this script is built, it is possible to run it step by step, in continuous mode, or even specify how many times it is needed to run it.

Just by clicking a button, it is possible to launch the spy of the exchanges between the MP300 TCL1 and the smartcard. This will give an exact display of the frames that have been exchanged, as well as protocol analysis. A tree and a graphical representation of the data is available. Among the graphical representation are the characters, sequences, modulations, presence of the field, phase changes...



MPManager can also perform with the MP300 TCL1 some physical measurement. To qualify the assembly micromodule + antenna inside the smartcard, the resonance frequency + Q factor measurement is very handy.



Frequency (MHz)

Frequency measured : 115550 kHz

ACCESSORIES :

Micropross supplies a complete range of accessories for the MP300 TCL1, that include :

- Different sizes of antennas
- Different sizes of cables
- Test benches, to perform RF testing

We also supply packages to extend the warranty of the tester. Please ask us for the maintenance contracts available.

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-->Iso14443:select Data Rate PLD->PILL
: 848, PICC->PCD : 848
-->Iso7816:Send Apdu A0CADF20- 00
<--9F-6A-05-47-44-00-B3-00-9F-6B-08-04-
21-07-28-00-30-31-37-9F-6C-08-03-00-39-
00-08-00-9F-6F-07-00-F8-01-25-00-F8-01
  
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