

EMVCo PICC Analog Test Solution



Mobile Type Approval with UT³ Platform and Six Axis Robot

With the increase of mobile payment applications launched and the rising number of handsets capable of emulating a credit card over the contactless interface, the number of interoperability issues has increased as well. Experience shows, that the better the low level compliance to standards, the fewer the interoperability issues in the field. Therefore, EMVCo has been regularly updating and amending the specifications for Mobile Type Approval. The test plan PICC Level 1 Analog proves compliance to EMVCo specifications on the physical interface, for both cards and cell phones.

Testing is performed on the well-known UT³ Platform, which simulates a POS terminal requesting a transaction. Since a high number of positions and repetitions are required, a six-axis industry robot flexibly positions the card or mobile handset fast and with the accuracy required by EMVCo. The safety cell protects the test operator and the entire test equipment is conveniently located in the lower part of the cell.

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Purpose

- Mobile Type Approval
- Card Type Approval

Highlights

- Fully integrated and qualified positioning system
- Automated and optimized testing
- Improved safety cell with robot
- Fast test case execution
- Visualized results
- Integrated oscilloscope
- "Live logs": test case results during test execution

Specification

CAPABILITIES

- Automated and fast test case execution including mandatory repetitions
- Automated summary test report with overall verdicts
- Comfortably guided and integrated setup procedures
- Integrated robot dialogs
- Analog Scope
 - Integrated oscilloscope
 - Automated EMVCo measurements of all signals
 - Detailed analysis, manually set measurements as option
 - Integrated screen shot function

TEST SUITES

- UT³ EMVCo PICC L1 Analog Test Bench
- UT³ EMVCo PICC Analog Acceptance Testing (add on)

GENERAL FEATURES

Parameter	Uncertainty EMVCo
V _{s,ov} , V _{s,ov} , RESET	± 2 %
Carrier frequency	± 100 Hz
Bit rate (PCD to PICC)	± 0.2 %
Type A timing (t ₁ , t ₂ , t ₃ , t ₄ , t ₅)	± 2/fc
Type A ringing levels	± 0.5 % of V ₁
Type A overshoots	± 0.5 % of V ₁
Type B modulation index	± 0.5 %
Type B rise and fall times	± 2/fc
Type B overshoots and undershoots	± 1 % of (V ₁ -V ₂)
Type B bit coding t _{PCD,S,1} , t _{PCD,S,2} , t _{PCD,E} , EGTPCD	± 2/fc
Type B bit coding t _{PICC,S,1} , t _{PICC,S,2} , t _{PICC,E} , EGTPICC	± 2/fc

Parameter	Uncertainty EMVCo
Positioning (z, r)	± 1 mm
Positioning (φ, θ)	± 0.1 rad
V _{ov}	± 2 %
V _{SENSE,FREEAIR} , V _{SENSE,PICC}	± 2 %
ΔV _{SENSE}	± 3 %
Load modulation (V _{pp})	± 10 % with a minimum of 1 mV
Subcarrier frequency	± 0.02 %
FDT _{A,PICC}	± 1/fc
Type B TRO, TR1, t _{F_{SOFF}}	± 2/fc
Type A bit rate (PICC to PCD)	± 0.02 %
Type B bit rate (PICC to PCD)	± 0.1 %

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SCOPE OF DELIVERY

Hardware

- Safety cell with lighting
- Robust industry robot (Kawasaki RS003N)
- UT³ Platform, EMVCo Test Equipment, amplifier, robot control unit and power supply located in a 19 inch rack in the lower part of the safety cell
- Comfortable peripherals (flat screen, keyboard)
- EMVCo PICC Analog Accessory Package

Software

- Device Test Center
- Analog Scope
- Contactless (NFC) Simulation (analog)
- UT³ EMVCo PICC L1 Analog Test Bench
- UT³ EMVCo PICC L1 Analog Acceptance Testing (add on)



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