Fast development of a cost-efficient POS terminal with EMV Level 1 stack

Based on proven NXP components, this easy-to-use reference design enables fast development of a low-cost, EMV-compliant POS terminal. It includes an EMV Level 1 compliant software stack, for contactless and contact payments.

Key features

▸ EMVCo compliant contactless smart card reader based on PN512/C2 with RF amplifier
▸ EMVCo compliant contact smart card reader based on TDA8026
▸ EMV Level 1 compliant contact and contactless software stack
▸ First step of contact and contactless EMV payment application selection with card/phone showcase
▸ Closed-loop payment showcase
▸ NFC peer-to-peer communication showcase

Key benefits

▸ Easy integration of NXP components into a cost-efficient POS reader
▸ Fast development of a certifiable software stack, due to reuse of source files with EMV L1 certification
▸ Reusable showcase of closed-loop payment, contact and contactless payment card selection as well as NFC functionality

Applications

▸ Contactless and contact payment

Engineers now have a quick way to develop a cost-effective point-of-sale (POS) terminal. This reference design builds on proven NXP components and includes an EMV Level 1 compliant software stack for contactless as well as contact payment.

The user interface includes an LCD screen and a keyboard, for easy demonstration of the following showcases:
- First steps of contact and contactless EMV payment with JCOP dual-interface card.
- First steps of payment with a mobile phone, including peer-to-peer (P2P) data exchange
- Closed-loop payment based on MIFARE DESFire™ EV1, together with MIFARE™ SAM AV2

All necessary design files, including hardware Gerber Files and software source files are available on the web. Power can be delivered to the board using the included USB cable or over an external power supply connected to the power plug.

POS reference design package

The package includes:

- Hardware reference design board including software and USB cable (for power supply)
- Personalized JCOP dual-interface payment card
- MIFARE DESFire EV1 card

For MIFARE SAM AV2 configurations, a different setup is required. Documentation for this setup is available online.

POS reference hardware

- Latest version of transmission module PN512/C2 for EMV compliance
- RF amplifier to support PN512

- Proof-of-concept configuration of RF amplifier for NFC front-ends (mandatory for EMV compliance)
- 5-slot contact smart card IC TDA8026
- ARM Cortex-M3 microcontroller LPC1768
  - Clock frequencies to 100 MHz
  - 512 KB flash memory, 64 KB data memory
  - High level of peripheral integration
  - Low power consumption
- LCD display for user interface
- Key pad for PIN entry (used with closed-loop payments)

Key specifications

Parameter	Typical value
Supply voltage (V_{DD})	5.0 V
Ambient temperature (Tamb)	+25 °C

Ordering information

Type number	Description
OM5597/RD2612	Design package with POS reference design board, USB cable, MIFARE DESFire EV1 card, and personalized JCOB payment card

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