

Is SoftPOS on the path to becoming a regular payment terminal ?

EMV level 1 Reduced Range testing

Tips and insights from 3 complementary organizations involved in EMV and SoftPOS development and certification : EMV technology experts, qualified testing center, and best-in-class business tablet provider

Content

1.	Introduction	2
1.1.	Key statistics	2
1.2.	New challenge ahead, Reduced Range testing process	3
2.	The purpose of RR testing and regulatory constraints - Alcinéo	4
2.1.	Performance and interoperability criteria	4
2.2.	Regulatory constraints – Requirements from international card networks ..	5
3.	Many challenges for mobile devices manufacturers - ICUBE.....	6
3.1.	Conformity Testing Aspects	6
3.2.	Technological and Market Challenges	7
4.	A journey to RR2 certification - oona	8
4.1.	Technical challenges	8
4.2.	Administrative and organizational challenges	9
5.	Conclusion.....	10
5.1.	Understand the constraints and objectives	10
5.2.	Collaborate with experts	10
6.	Companies presentations and media contact	11
6.1.	About Alcinéo.....	11
6.2.	About ICUBE	11
6.3.	About oona.....	11

1. Introduction

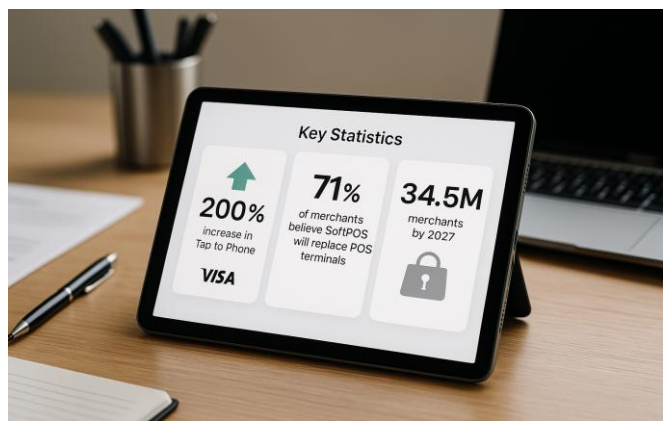
Growing expansion of SoftPOS lead to more regulatory constraints.

SoftPOS technology is a game changer in the payment ecosystem. This innovative payment method relies on the NFC functionality of mobile devices. Merchants can simply download an app and easily turn their smartphone into contactless card readers. It eliminates the need for hardware peripherals and facilitates the onboarding of small and medium businesses to start accepting contactless cards at lower costs and minimized infrastructure constraints.



1.1. Key statistics

Year on year the market share of SoftPOS rises in all regions, and all actors in the payment ecosystem are now involved in the expansion of “Tap to Phone”, “Tap on Phone”, “Tap on Mobile” or “Tap to Pay” solutions.



Visa Tap to Phone

*“Tap to Phone has experienced a **200% increase over the past year**”*

Source :

<https://investor.visa.com/news/news-details/2025/Visa-Tap-to-Phone-Adoption-Soars-200-Year-over-Year-Growth-Worldwide/default.aspx>

Merchant adoption

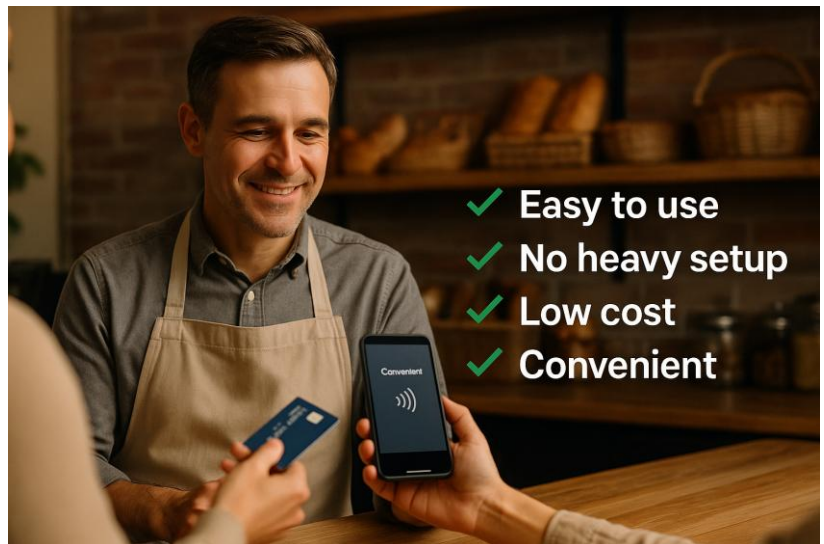
*According a report from Juniper Research, the number of merchants utilizing SoftPOS is projected to soar from **six million in 2022 to 34.5 million by 2027.***

SoftPOS solutions are now present on many markets. It offers many advantages to businesses of all size : easy to use, no heavy set up, convenient. The adoption rate among merchants is surged to increase rapidly, as **71% of them think that SoftPOS will replace traditional POS systems.**

Source : <https://www.pymnts.com/news/point-of-sale/2024/71-percent-of-merchants-expect-software-to-replace-traditional-point-of-sale-terminals>

1.2. New challenge ahead, Reduced Range testing process

To be globally adopted by merchants and consumers, the Tap to Phone solution must be reliable and secure to offer an attractive and reliable experience. SoftPOS transaction rules are edited by payment schemes, to ensure an efficient transaction flow, while the protection of sensitive data is evaluated against PCI MPoC standard.



A THIRD REGULATORY STEP MUST BE CONSIDERED BY PAYMENT SOLUTION PROVIDERS DEVELOPING A SOFTPOS PRODUCT :

THE EMV LEVEL 1 REDUCED RANGE TESTING PROCESS

2. The purpose of RR testing and regulatory constraints - Alcinéo

The Level 1 Reduced Range testing process echoes the analogue and digital testing procedure performed during type approval for traditional smartcard readers. It is based on the EMV Level 1 PCD test plans.



The analogue and digital testing process and specifications are handled by EMVCo, the global entity in charge of editing EMV technology specifications and test plans.

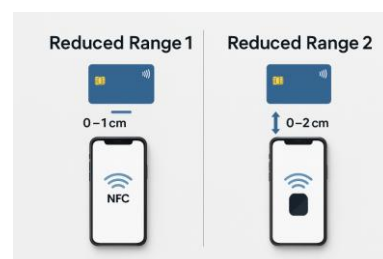
These EMV Level 1 tests are essential to check that contactless card readers meet the minimum requirements to detect and read cards and other contactless wearables.

EMVCo has defined Reduced Range testing guidelines to validate that mobile devices used as contactless card readers, can reach the minimum card reading requirements and provide a sufficient acceptance rate on the field.

2.1. Performance and interoperability criteria

The Reduced Range testing process consists in a series of analogue tests, as defined by EMVCo, as part of the EMV contactless Level 1 type approval procedure. The Reduced Range testing campaign measures the capability of the NFC antenna of the smartphone or tablet to detect and read contactless card data at variable distances.

The NFC antenna of the tested device shall reach a certain success rate calculated between the position of the card and its distance from the device RF field. **The reading distance for the Reduced Range 1, must be established within 0 and 1 cm, while for the Reduced Range 2, the testing positions are set within 0 and 2 cm.**

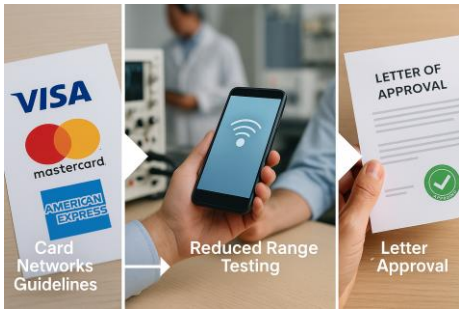
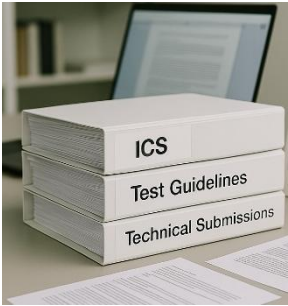


Within the Reduced Range testing process, the product is also submitted to interoperability acceptance criteria, which determines its capability to read several types of cards or mobiles.

ACCORDING TO THE RESULTS OF THESE REDUCED RANGE TESTING, THE DEVICE WILL RECEIVE A RR 1 OR RR2 LETTER OF APPROVAL, VALIDATING THAT THEY REACH THE ACCEPTANCE CRITERIA TO BE USED IN THE FIELD.

2.2. Regulatory constraints – Requirements from international card networks

Tap to Phone solution providers shall refer to the guidelines released by international card networks to determine if their product is under obligation to perform the Reduced Range testing process and obtain a Letter of Approval to be launched on the market and used as a SoftPOS terminal.



Visa and Mastercard set frameworks to classify hardware devices concerned by the Reduced Range testing process, with different timelines depending on their characteristics.

Mastercard

Personal mobile device	Reduced Range LoA recommended
Specific mobile device built for business	Reduced Range tests required As of January 2027, RR1 LoA required

Source : Tap on Phone – Level 1 requirements

Visa

Regular smartphone	RR1 recommended
Regular tablet	RR2 recommended
Mobile computer	RR2 required for new requirements
Tablet computer	Full EMV L1 PCD required for new deployments

Source : Visa Tap to Phone framework version 5.2.1

As of January 2027, all mobile and tablet computers made for business must be certified.

Mobile device manufacturers shall consider this new requirement for the development of their new products.

Notwithstanding the fact that it is strongly recommended by card networks, complying with the RR testing allows better performances of these devices on the field and an improved user experience for merchants and consumers.

3. Many challenges for mobile devices manufacturers - ICUBE

Icube's insights on the compliance and technological challenges to overcome for Reduced Range successful testing

3.1. Conformity Testing Aspects

A key difference between Reduced Range (RR) certification and traditional PCD Terminal Approval lies in the scoring-based approach for certain RF performance tests.

With RR, a device does not need to be fully compliant at every single point within the operational volume. Instead, compliance is achieved once the percentage of conformant positions reaches the EMVCo-defined threshold.



However, this flexibility has clear limits:

- *Scoring does not apply to all test categories. Full compliance is still mandatory for digital tests and emitted waveform quality.*
- *Test coverage is actually broader in some areas, with more test positions required in both analog and interoperability (IOP) testing.*
- *Interoperability tests are significantly strengthened compared to TTA PCD, with additional devices such as contactless cards being introduced.*
- *Operational volume is tested beyond the compliance limit. For example:*
 - *RR2: operational volume tested up to $z = 4$ cm, but compliance assessed only up to $z = 2$ cm.*
 - *RR1: operational volume tested up to $z = 2$ cm, but compliance assessed only up to $z = 1$ cm.*

THIS RESULTS IN A UNIQUE BALANCE, GREATER FLEXIBILITY IN SOME AREAS, BUT ALSO STRICTER COVERAGE OVERALL.

3.2. Technological and Market Challenges

The EMVCo RR certification program has had very limited adoption so far, only three devices certified in its first year.

This raises an important question: why is adoption so low?

Several technological challenges may explain this:

- *Chipset limitations: some widely used NFC Forum-compliant chipsets fail EMVCo RR digital tests, making them ineligible for certification. This forces difficult choices between costly redesigns or EMVCo waivers (rarely granted).*
- *Integration constraints: manufacturers must carefully select hardware components to ensure designs can pass RR certification without major rework.*

At the same time, Reduced Range certification represents a strategic opportunity:

- *There is strong alignment with public transport performance requirements – as also highlighted in ICUBE's recent announcement (<https://x72s0.mjt.lu/nl3/eRfQP1xeePUmxqqnJlbsrg?hl=fr>).*
- *It opens the door to new market segments, especially for devices previously unable to meet EMVCo PCD Level 1 certification.*

However, the combination of stricter digital requirements and chipset limitations has already caused several certification projects to be aborted, a key reason behind the slow market uptake.

This is why we strongly recommend supporting manufacturers right from the very start of their RR projects, so that ICUBE's expertise and experience can help anticipate challenges and avoid costly pitfalls.





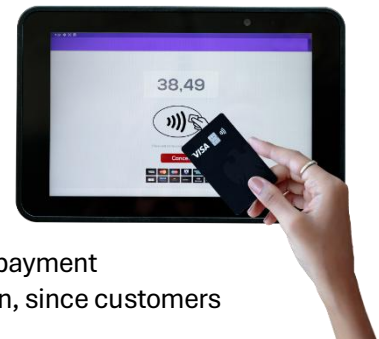
4. A journey to RR2 certification - oona

As the very first company to successfully achieve EMVCo Reduced Range Level 2 certification in the SoftPOS environment, oona bring hands-on experience with this newly established testing process.

oona's journey has revealed several key challenges that SoftPOS device providers need to be aware of. Below, some of the most critical pain points are highlighted, which had been overcome on the path to certification.

4.1. Technical challenges

- **Shortened NFC range:** Traditional payment terminals internally use NFC electronics specialized for payments, supporting the required read distances of 4 cm and more. In contrast, Android tablets and smartphones are general purpose devices. While the NFC electronics designed for those support a vast variety of NFC features, they often struggle to reach more than few millimeters read range. When those devices are used for NFC payment acceptance, such short read ranges would cause customer frustration, since customers must position their cards or wearables very precisely.



oona carefully chose and designed NFC electronics which combine both characteristics: supporting all state-of-the-art NFC features of modern electronic devices, as well as great read ranges.

- **Adapted EMVCo testing:** The EMVCo Reduced Range process introduces specific measurement parameters and setup requirements tailored to these constraints, making precise hardware tuning essential.

During the design and testing process, oona ensured that the NFC read range spans across the whole 3D area required by RR specification, as well as ensuring that all electronic, radio and NFC communication protocol standards are met.



- **EMVCo testing tools:** EMVCo testing is a mostly automated process, where the EMVCo test bench communicates with the tested device in a specific manner. This requires a proper device configuration and test application on the device, which are commonly established for traditional payment terminals. It took some effort to identify and enable the respective configuration and test application for an Android device.

Thanks to close cooperation with and support from the NFC IC vendor, oona could finally provide this configuration and test application.

oona insight: oona had to redesign and test NFC electronics and antenna configurations in multiple prototype cycles, to achieve stable read performance. This – along with the studying and understanding of new EMVCo Reduced Range specification – extended development timelines and added complexity, compared to traditional Android NFC implementation.

4.2. Administrative and organizational challenges

- **Extensive documentation:** Reduced Range Level 1 certification requires additional paperwork, including the Implementation Conformance Statement (ICS), detailed test guidelines, interoperability criteria, and technical submissions.
- **Test setup & device samples:** Providers must submit multiple identical units, ensure test-ready firmware environments, and provide supporting materials – demanding careful logistics and preparation.
- **Accredited labs & limited timelines:** Only selected laboratories are accredited for this process. In the early adoption phase, EMVCo even offered a temporary fee waiver, which created deadlines and coordination pressure.



oona insight: We had to plan for some extra workload to get the submission docs ready and coordinate with an accredited lab, which initially tied up additional resources

5. Conclusion

The Reduced Range testing process adds constraints to mobile device providers who need to navigate the challenges of EMV certification. It can become a cumbersome situation for organizations who are not familiar with the specific requirements of EMV technology standards.

While the adoption of SoftPOS - aka *Tap to Phone, Tap on Phone, Tap to Pay, Tap on Mobile*- is expanding at a rapid pace, it is important to ensure a convenient and efficient, as well as secure user experience. The EMV Level 1 Reduced Range testing process validates that mobile devices meet the specific requirements for payment card read capabilities, which is crucial for a global adoption of this new payment method.

5.1. Understand the constraints and objectives

Carefully analyze the specifications and other type approval documents, to understand the challenges and identify the constraints, before entering the Reduced Range testing process. SoftPOS product providers may not fully manage EMV technology requirements and objectives.

It is important to be supported by technological partners to avoid pitfalls and have a clear understanding of the specific requirements of this new testing process for mobile devices.

5.2. Collaborate with experts

The challenge behind the Reduced Range testing process, is to design an NFC interface compatible with EMVCo requirements, right from the start, to avoid development delays and testing failures. Smartphone and tablet manufacturers are not familiar with EMV technology requirements.

Collaborating with EMV technology experts and experienced chipset manufacturers can help them develop compliant products that will offer a better user experience and the right time to market formula.

6. Companies presentations and media contact

6.1. About Alcinéo

Alcinéo is a leading provider of embedded payment software for various industries in the payment ecosystem. With a focus on innovation and security, Alcinéo helps its customers deploy reliable payment systems tailored to their specific needs. Alcinéo SoftPOS SDK is a comprehensive toolbox with a fully certified payment suite and dedicated tools to build innovative solutions compliant with international payment and security standards.

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6.2. About ICUBE

ICUBE is a testing laboratory specialized in smart card technology and related products. ICUBE conducts conformance testing in accordance with ISO/IEC 10373-1/3/6 (contact and contactless), ISO/IEC 18745-1/2, CEN/TS 16794, RCTIF 5.0, EMVCo, NFC Forum, ICAO, EAC, CIPURSE, CALYPSO and ISO/IEC 18013 standards.

ICUBE is ISO/IEC 17025 accredited by COFRAC (French Accreditation Committee), since 2008.

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6.3. About oona

About oona: oona is the brand for professional tablet and kiosk solutions that combines ruggedness, durability and reliability for contactless payment - intuitively directly on the screen. With hundreds of thousands of devices in use around the world, oona devices are trusted by a wide range of industries - particularly in retail, hospitality and restaurants.

The oona product family includes professional tablets in 8 or 10 inch in Android or Windows versions, as well as an Android-based self-service kiosk in 15 or 22 inch.

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