

Mastercard
2000 Purchase Street
Purchase, NY 10577
USA



PAX Computer Technology (Shenzhen) Co.,Ltd.
4/F, No.3 Building, Software Park, Second Central Science-Tech Road,
High-Tech industrial Park, Shenzhen, Guangdong,
518057 China

September 6, 2022

Mastercard Contactless Reader Vendor Product – Letter of Approval

LoA Identifier: TLOA-PAXT220701-220906(a)
Product Vendor: PAX Computer Technology (Shenzhen) Co.,Ltd.
Product Type: Fully Integrated Terminal
LoA Expiration Date: September 1, 2026

Product Identification	Terminal
Product Commercial Name	D190 Version A
Product Technical Name	D190-0AW-R75-01LA Version A
Application Selection Module	F ENTRY LIB Version 556
Mastercard Contactless Kernel	F MC LIB Version 556
Mastercard Contactless Application	N/A
Operating System	Prolin Version II
Product Registration Number	FIT-PAXT-220701

EMVCo Contactless LoA Level 1:	17509 0821 300 30a 30a BCTS
Test Assessment Level 2:	TTAS-PAXT220701-BCT-2209-T056

Supported Options	
PIN Entry Device	Yes
Contactless Mag-stripe	Yes
Send POI information	Yes
C-2 Spec Bulletin 261	No
Data Exchange / Data Storage	Yes
Integrated Data Storage and Torn Transaction	Yes

Please contact the product vendor to obtain the full description of all the technical features supported by the product.

Under the terms of the Mastercard Contactless Specification License Agreement entered into between Mastercard Europe S.A. (formerly known as Mastercard Europe sprl) and Product Vendor on April 10, 2006 ("**Agreement**"), Product Vendor is required to submit its Implementation (as defined in the Agreement) to Mastercard or, to a third party designated by Mastercard ("**Testing Laboratory**"), for testing and certification prior to being permitted to sell, offer to sell, distribute, supply or otherwise provide ("**Commercialize**") any Implementation (as defined in the Agreement) in accordance with the Agreement.

This Letter of approval ("**LoA**") documents the fact that the Product Vendor has submitted the product (referenced above) ("**Product**") to Mastercard or, to a third party designated by Mastercard, for testing and certification in accordance with the Agreement but is not, and should not be interpreted as, an approval of the Product.

Subject to Product Vendor fully complying with the Conditions of Approval set out in Appendix 1 of this LoA, this LoA permits the Product Vendor to advise its customers that the

Product has, in Mastercard's assessment opinion (and/or the Testing Laboratories assessment opinion, if applicable), appeared to satisfy the requirements of the Specification set out in Appendix 1.

THIS LETTER DOES NOT CONSTITUTE AN ENDORSEMENT OR WARRANTY OF ANY KIND WITH RESPECT TO THE PRODUCT, ITS SECURITY OR FUNCTIONALITY.

MASTERCARD MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE, AND NON-INFRINGEMENT. WITHOUT LIMITATION OF THE FOREGOING, MASTERCARD SPECIFICALLY DISCLAIMS ALL REPRESENTATIONS AND WARRANTIES: (I) REGARDING THE FUNCTIONALITY, SECURITY, QUALITY AND PERFORMANCE OF THE PRODUCT; (II) WITH RESPECT TO ANY THIRD PERSON INTELLECTUAL PROPERTY RIGHTS. PRODUCT VENDOR ASSUMES THE ENTIRE RISK ARISING OUT OF THE USE OF AND/OR RELIANCE ON THE PRODUCT.

The Product Type will be listed on the Mastercard customer portal until the LoA Expiration Date (referred to above). Any change to the Product Type must be promptly notified to Mastercard in writing.

Mastercard reserves the right to use a Product that been granted a LoA as a reference for future testing, certification or approval of other Mastercard Contactless products.

Yours sincerely,

Bruno Parfum
Director, Product Approvals
Digital Devices & IoT | Cyber & Intelligence Solutions

Appendix 1

Specifications and References

For the purpose of this LoA, the following documents will be deemed to be the "Specifications":

EMV Contactless Interface Specification Version 3.0 - February 2018
Mastercard Contactless Reader Specification - Version 3.1.4 - November 2020
EMV Book C-2 - Kernel 2 Specification - Version 2.10 - March 2021
Mastercard Contactless Performance Requirement – Application Note #7 – March 2014

Conditions of Approval

The Product Vendor hereby agrees to comply with the following conditions in order for this LoA to be valid and before it is permitted to Commercialize the Product:

1. This LoA may be updated by Mastercard (in its sole discretion): (a) if Mastercard receives additional information from the Product Vendor about the Product; (b) in the event that Mastercard has a reasonable belief that the Product has a material defect (whether such defect is to hardware or software); (c) if Mastercard deems appropriate as a result of any activity that causes non-compliance with the Specification or any security issue arising with the Product; or (e) if otherwise reasonably required by Mastercard.
2. During the term of the LoA, the Product Vendor shall ensure that all versions of the Product produced must be materially identical with the samples of the Product that were submitted for testing to Mastercard and to which this LoA relates. Any change in any version of the Product that, in Mastercard's sole opinion, generates a different behavior of the Product that was submitted to Mastercard for testing and to which this LoA relates will be considered a material modification (whether such modification is to hardware or software) to the Product (for which this LoA does not apply to) and must be resubmitted to Mastercard for testing and approval.
3. If the Product supports PIN Entry, new installations of the Product must use models with a valid PCI PTS approval. The validity of the PCI PTS approval can be verified on PCI SSC web site. For more details on the Mastercard PIN Entry Device standards please contact POI_security@mastercard.com.
4. Mastercard has provided this LoA for Product in its configuration D190-0AW-R75-01LA Version A. Any changes to the Product's technical reference (D190-XXX-XXX-XXXX) are expected to reflect only minor changes which do not create any regression and do not affect even partially any of the tested items. It is the Product Vendor's responsibility to guarantee such compliance and to provide its customers with a detailed description of discrepancies between versions of the Product. Mastercard reserves the right to revoke this LoA should the discrepancies be considered material (whether such discrepancies are to hardware or software) by Mastercard (in its sole opinion).
5. Due to the shape of the Product, the functional operating volume could be reduced for PICCs larger than ID1 size. This could lead to some limitations in user experience.
6. All Products must go through Mastercard's Terminal Quality Management (TQM) process prior to entering Mastercard's Terminal Integration Process (M-TIP). TQM is

outsourced and managed by TUV Sud UK and can be initiated immediately after the Product has received the Level 1 Letter of Approval from EMVCo. For more details on TQM, vendors can contact Mastercard.TQM@tuv-sud.co.uk.

7. The Product Vendor must make all buyers of the Product aware of the above conditions and the below Product Technical Notes.

Product Technical Notes

1. The 'Mastercard Data Exchange' mechanism in a Product allows data to be exchanged between the Mastercard Contactless Reader kernel and the terminal application during the course of a payment transaction. During Mastercard testing the capability of the Product performed as expected using a test application in place of the final terminal application. However, as the Mastercard Contactless Reader kernel to terminal application interface remains specific to the reader's vendor, any terminal application developer intending to use this mechanism must work closely with the Mastercard Contactless Reader's vendor to ensure successful integration.