



Card Personalization Validation

11 May 2011

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Summary of Changes, 11 May 2011

This document reflects changes associated with the 11 May 2011 update. To locate these changes online, on the Adobe toolbar, click Find. In the Find box, type *chg*, and then press ENTER. To move to the next change, press ENTER again.

Description of Change	Where to Look
To ensure that members have access to current contact information and standards used for MasterCard documentation, MasterCard has created the Member Publications Support page. As a result, MasterCard has removed some content from this document, including times expressed, language use, and contact information, which members now can find online.	Member Publications Support page on MasterCard OnLine®
Updated Chapter 1 to clarify the CPV process objectives, applicability, and prerequisites	Introduction
Modified the term Self Assessment CPV step to CPV Preliminary Assessment	Overview
Modified the term, CPV Tracking Number, to CPV Reference Number	Throughout manual
Updated tables in Appendix A. Changed EMV to ALL. Added a footnote to Table A.1.	Appendix A
Revised the CPV Sample Submission process diagram and description	Appendix B
Revised terms and definitions in the Glossary. Removed Change Management System, CPV Management, CPV Sample Test, Personalization Compliance Report, and Vendor Product.	Glossary
Removed details about the ordering and invoicing of the CPV service	

Table of Contents

Chapter 1 Introduction.....	1-i
Purpose.....	1-1
Audience.....	1-1
Card Personalization Validation Objectives.....	1-1
When to do Card Personalization Validation	1-1
Technical Products Subject to Card Personalization Validation.....	1-2
Prerequisites for Doing Card Personalization Validation.....	1-3
Card Personalization Validation Contact Information.....	1-3
Related Information	1-4
Business Process Diagram Conventions.....	1-5
Chapter 2 The Card Personalization Validation Process	2-i
Implementation.....	2-1
Overview	2-1
Preliminary Assessment	2-1
Sample Submission	2-2
Change Notification Submission	2-2
Chapter 3 Preliminary Assessment.....	3-i
Overview	3-1
Process.....	3-1
Chapter 4 Sample Submission	4-i
Overview	4-1
Process.....	4-3
Chapter 5 Change Notification Submission.....	5-i
Overview	5-1
Process.....	5-1
Appendix A Data Packages.....	A-i
Introduction	A-1
Data Presence—Notation.....	A-1
Data Packages—Contents	A-2

Table of Contents

Data Package 1—Card Risk Management	A-2
Data Package 2—EMV Data.....	A-4
Data Package 3—Cardholder Data	A-5
Data Package 4—Certificate and Key Data	A-5
Data Package 5—Internal Variables	A-6
Data Package 6—Other Data, Minor Impact.....	A-7
Data Package 7—Other Data, Major Impact	A-8
Data Package 8—Thresholds	A-9
Appendix B How To Complete the CPV Sample Submission Form	B-i
Prerequisites	B-1
Completing the CPV Sample Submission Form	B-1
Glossary	1

Chapter 1 Introduction

This chapter provides an introduction to Card Personalization Validation, describing what it is, the products subject to the process, and when it should be done.

Purpose..... 1-1

Audience..... 1-1

Card Personalization Validation Objectives..... 1-1

When to do Card Personalization Validation 1-1

Technical Products Subject to Card Personalization Validation..... 1-2

Prerequisites for Doing Card Personalization Validation..... 1-3

Card Personalization Validation Contact Information..... 1-3

Related Information 1-4

Business Process Diagram Conventions..... 1-5

Purpose

This guide details the Card Personalization Validation (CPV) process that issuers or their authorized agents must follow before issuing a Technical Product supporting either an EMV contact interface, a contactless interface, or both.

NOTE

Refer to the Glossary for the definition of Chip Card and Technical Product.

Audience

MasterCard provides this guide for issuers and their authorized agents. Specifically, the following personnel should find this guide useful:

- Program managers and Project managers for issuers implementing new or amending existing Technical Products bearing a MasterCard® brand mark
- Personnel executing an instance of the Card Personalization Validation process

Card Personalization Validation Objectives

CPV is a process ensuring that every Technical Product offers a sufficient level of service, acceptance, interoperability, performance, and security to cardholders and acceptance locations.

CPV verifies the Chip Card approval statuses from the functional, security, and quality perspectives and ensures that the Technical Product is compliant with the chip-related MasterCard payment product requirements and best practices.

MasterCard payment product requirements and best practices related documents are listed in the [Related Information](#) section.

If present, data held on the magnetic stripe itself is not subject to any form of CPV testing or validation, except for consistency checks against the magnetic stripe equivalent data that is held on the chip.

When to do Card Personalization Validation

Issuers or their authorized agents must perform Card Personalization Validation each time they issue a Technical Product. This would occur when:

- Issuers migrate existing BINs to chip or add new BINs to an existing chip program
- Issuers issue a Technical Product that is based on another Chip Card
- Issuers change their personalization bureau
- There are changes in the personalization process
- Issuers have an existing Technical Product that is CPV-approved and want to amend any of the personalization characteristics, excluding cardholder related data and expiration dates

- Issuers have an existing Technical Product that is CPV-approved and want to add a co-residing application, such as CAP, or any other proprietary application.

Technical Products Subject to Card Personalization Validation

Card Personalization Validation is applied to any Technical Product that has an EMV contact interface, or a contactless interface (*PayPass*), or both and that supports one or more of the following applications:

- ***M/Chip***—Technical Products supporting this Application have a contact interface and a traditional magnetic stripe. CPV validates the personalization of the application via the contact interface.
- ***PayPass – M/Chip***—When in ID-1 form factor, Technical Products supporting this Application have a contact interface, contactless interface, and a traditional magnetic stripe. CPV validates the personalization of the Application via the contact and contactless interfaces. When in a non-ID-1 form factor, CPV validates the personalization of the Application via the contactless interface only.
- ***PayPass – M/Chip Flex***—When in ID-1 form factor, Technical Products supporting this Application have a contact interface, contactless interface, and a traditional magnetic stripe. CPV validates the personalization of the Application(s) via the contact and contactless interfaces. When in a non ID-1 form factor, CPV validates the personalization of the Application(s) via the contactless interface only.
- ***PayPass – Mag Stripe***—Technical Products supporting this Application only have a contactless interface. CPV validates the personalization of the Application via the contactless interface.

NOTE

For ***PayPass – Mag Stripe*** only Technical Products, the Card Personalization Validation process is detailed in a separate guide, the ***Card Personalization Validation Guide for PayPass – Mag Stripe***, available on www.paypass.com.

For Technical Products supporting the ***PayPass – Mag Stripe*** application and another application, issuers need the ***Card Personalization Validation Guide for PayPass – Mag Stripe*** and this manual to perform the full Card Personalization Validation of their Technical Product.

- ***Common Payment Application***—CPV validates the personalization of the Application via a contact interface.
- ***CAP***—CPV validates the personalization of the Application via the contact interface.
- ***Other Chip Applications***—For Technical Products that are based on non-M/Chip applications (such as UKIS, VSDC, SECCOS), CPV only validates the personalization of the card specific data elements as described in *M/Chip Requirements*.

Prerequisites for Doing Card Personalization Validation

There are three prerequisites for CPV:

- Issuers or their authorized agents must select and use a personalization bureau that has completed the MasterCard Global Vendor Certification Program. Certified vendors are listed in the Certified Vendors document for card production services of any MasterCard, Maestro, or Cirrus Branded Card that is regularly published as an attachment to the Global Security Bulletin, available on MasterCard OnLine®.
- Issuers or their authorized agents must select an approved Chip Card. Issuers must provide the Letter of Approval (LoA) of the Chip Card they intend to use.
 - **Chip Cards supporting M/Chip**—Issuers must get the LoA from the card vendor.
 - **Chip Cards supporting *PayPass Mag Stripe, PayPass M/Chip or PayPass M/Chip Flex***—*PayPass* Vendor Product LoAs are published on www.paypass.com.
 - **Chip Card supporting EMV CPA**—CPA Vendor Product LoAs are published on www.emvco.com.
 - **Chip Cards supporting other Applications**—Issuers willing to deploy Chip Cards supporting other Applications (such as UKIS, VSDC, and SECCOS) need to contact chip_waivers@mastercard.com and apply for a waiver.

M/Chip, *PayPass – M/Chip*, *PayPass – M/Chip Flex*, and CPA products offer many opportunities for customization during the initialization or the personalization phase. As a consequence, it may happen that a given Chip Card LoA does not cover that specific Chip Card customization. MasterCard recommends issuers or their authorized agents check with their card vendor to ensure the exact configuration that they intend to issue is covered by the Chip Card LoA.

For more information, please contact card_approval@mastercard.com.

NOTE

Issuers or their authorized agents must select a MasterCard-accredited CPV Service Provider with whom they will interact with during the CPV process. CPV Service Providers accredited by MasterCard are listed in the *M/Chip Accredited Third Parties*.

Card Personalization Validation Contact Information

Issuers should contact the CPV Service Provider selected for any questions the issuer has about CPV.

Related Information

Descriptions of these documents are available in the List of Manuals in the Member Publications product on MasterCard OnLine. The documents listed below provide information related to the subjects discussed in this document.

Definitions of specific terms used in this document are available in the [Glossary](#). Other terms are explained in the [MasterCard Dictionary](#).

To order MasterCard documents, use the Ordering Publications tool, available in the Quick Links section on the Member Publications home page, or contact the Customer Operations Services team.

General Related Information

- [M/Chip Accredited Third Parties](#)
- [M/Chip Qualified Test Tools](#)

EMV Contact Related Information

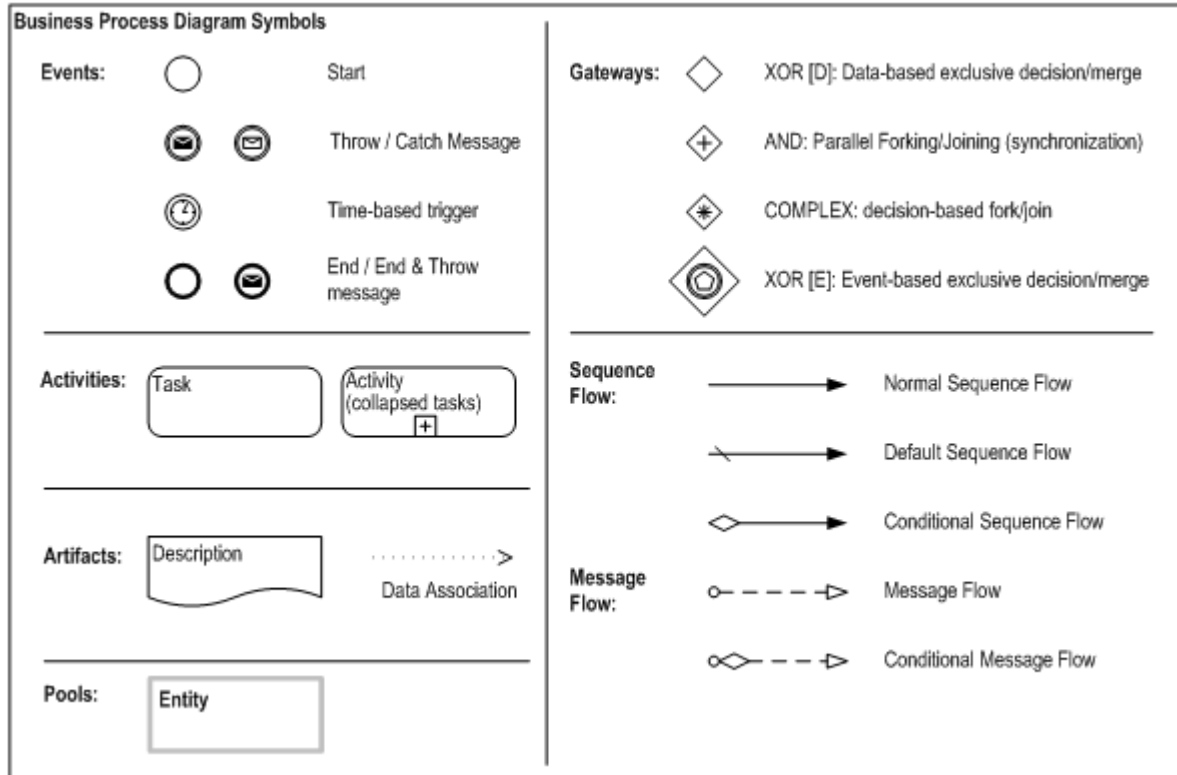
- [Migrating Card Issuance to Chip](#)
- [M/Chip Requirements](#)
- [M/Chip Personalization Data Specifications and Profiles](#)
- [M/Chip Card Personalization Standard Profiles](#)
- [M/Chip 4 Version 1.0 Issuer Guide to Debit and Credit Parameter Management](#)
- [M/Chip 4 version 1.1 Issuer Guide to Debit and Credit Parameter Management](#)
- [MasterCard CPA Issuer Guide to Parameter Management](#)
- Chip Authentication Program — Implementation Guide

PayPass

- Adding PayPass to M/Chip Issuance
- PayPass Personalization Data Specifications
- [M/Chip Card Personalization Standard Profiles](#) (Including PayPass)
- PayPass Mag Stripe Issuer Implementation Requirements
- PayPass—M/Chip Issuer Guide
- Card Personalization Validation Guide for PayPass – MagStripe

Business Process Diagram Conventions

The business process diagrams in this guide use the following symbols.



Descriptions of the symbols are as follows:

- A pool is used to contain activities within an organization.
- An activity can be atomic (task) or compound (can contain multiple activities).
- An activity is started or triggered by a Start Event, a Time-based Trigger, or a sequence or message flow from another activity.
- Sequence flow lines with solid lines and arrowheads connect one activity to another, to a gateway, or to an end event.
- Gateways signal a split in a process flow or a merger of multiple process flows.
- Message flow lines with dashed lines and open arrowheads connect activities across pools, usually via an artifact.
- A process contains activities interconnected by means of flow lines.

Chapter 2 The Card Personalization Validation Process

This chapter provides an overview of the Card Personalization Validation process and a summary of its subprocesses.

Implementation.....	2-1
Overview	2-1
Preliminary Assessment	2-1
Sample Submission	2-2
Change Notification Submission	2-2

Implementation

The CPV process is a collaboration process involving the following entities:

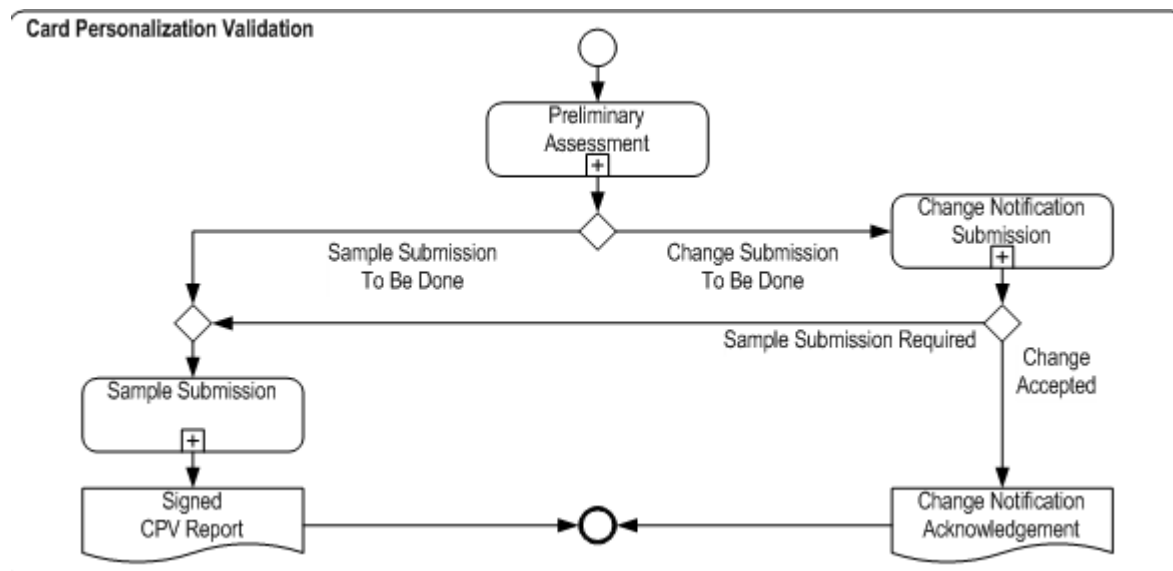
- The issuer or its authorized agent
- A CPV Service Provider
- MasterCard

Overview

The Card Personalization Validation (CPV) process comprises the following subprocesses:

- Preliminary Assessment
- Sample Submission
- Change Notification Submission

Figure 2.1—Card Personalization Validation Process



Preliminary Assessment

In this subprocess the issuer or its authorized agent evaluates the Technical Product that they want to issue and choose to either submit samples for testing via Sample Submission or to submit a change notice for assessment via Change Notification Submission.

A prerequisite for being able to do Change Notification Submission instead of Sample Submission is that the issuer or its authorized agent must be able to manage the different versions of its Technical Products using appropriate industry best practices.

This subprocess is detailed in [Chapter 3, Preliminary Assessment](#).

Sample Submission

In this subprocess, the issuer or its authorized agent submits the CPV Sample Submission Form to the CPV Service Provider selected. The issuer will personalize a sample Physical Card and create a Card Image from it using a Qualified CPV Test Tool or the MasterCard Card Image Extraction Tool. At the same time, the issuer will send an e-mail containing the Card Image and use a secure courier to send the sample Physical Card to the CPV Service Provider that tests them for conformance with the appropriate personalization specifications.

The issuer or its authorized agent then receives a CPV Report specifying whether the personalization validation test was successful or not.

This subprocess is detailed in [Chapter 4, Sample Submission](#).

Change Notification Submission

In this subprocess, the issuer or its authorized agent provides a change list from an existing Technical Product and requests an assessment from a CPV Service Provider to use the modified Technical Product. If the result of this assessment is negative, the issuer or its authorized agent is requested to perform the Sample Submission subprocess.

This subprocess is detailed in [Chapter 5, Change Notification Submission](#).

Chapter 3 Preliminary Assessment

This chapter details the Preliminary Assessment subprocess.

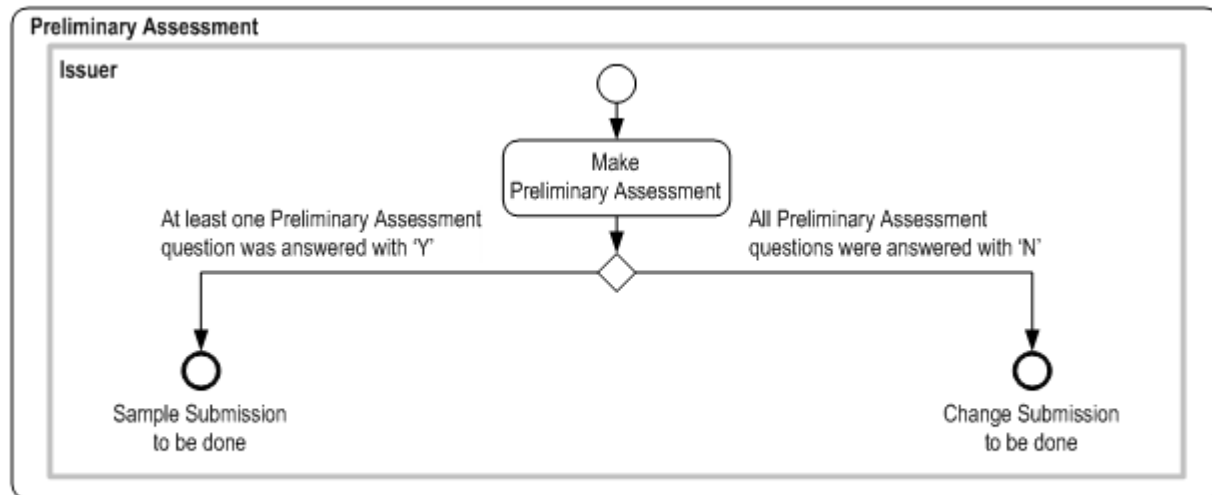
Overview 3-1

Process..... 3-1

Overview

The following figure shows the Preliminary Assessment subprocess:

Figure 3.1—Issuer Self-Assessment Subprocess



The end result of this subprocess is the decision to either submit samples for testing using the Sample Submission subprocess or to submit a change notification statement for assessment using the Change Notification subprocess.

Process

The Preliminary Assessment subprocess consists of answering the following series of questions. Most questions refer to Data Packages, which are groups of data elements. Each Data Package is associated with a Major or Minor Attribute, indicating the impact of a change to one or several of its data elements. Data Packages are described in [Appendix A](#).

By default, the CPV default route is Change Submission. Issuers need to follow the Sample Submission route when answering **Yes** to any of the following questions:

1. Is it the first time that this Technical Product is issued? Technical Product refers to a unique combination of the Chip Card, personalization profile, card personalization bureau, and card.
2. Are parameters from Data Package 1, Card Risk Management, or Data Package 2, EMV Data changing to values that are not compliant with the MasterCard Personalization Data Specifications and Profiles?
3. Is information from Data Package 4, Certificates and Key Data, being modified in such a way that the data organization within the file structure is changed?

Preliminary Assessment

Process

4. Are parameters from Data Package 7, Other Data, Major Impacts changing?
5. Are parameters from Data Package 8, Thresholds changing in such a way that it will result in a different Technical Product behavior? Some examples follow:
 - Altering parameter values from a zero value to a non-zero value may result in an original online-only product to behave as an offline capable product, hence requiring other settings such as a different CVM list.
 - Altering parameter values may result in the deactivation of a velocity check; for example, a consecutive online limit is set in such a way that it will never be reached during the life cycle of this card and may result in the card behaving as an offline-only product.

For MULTOS-based and Non-MULTOS-based chip cards:

1. **MULTOS based**—is a different Application Loading Unit (ALU) other than the CPV approved Technical Product being used?
2. **Non-MULTOS-based**—are any of the following being changed?
 - a. The card personalization file structure or data organization?
 - b. The chip card personalization scripts?
 - c. The record padding?

Chapter 4 Sample Submission

This chapter describes the Sample Submission subprocess.

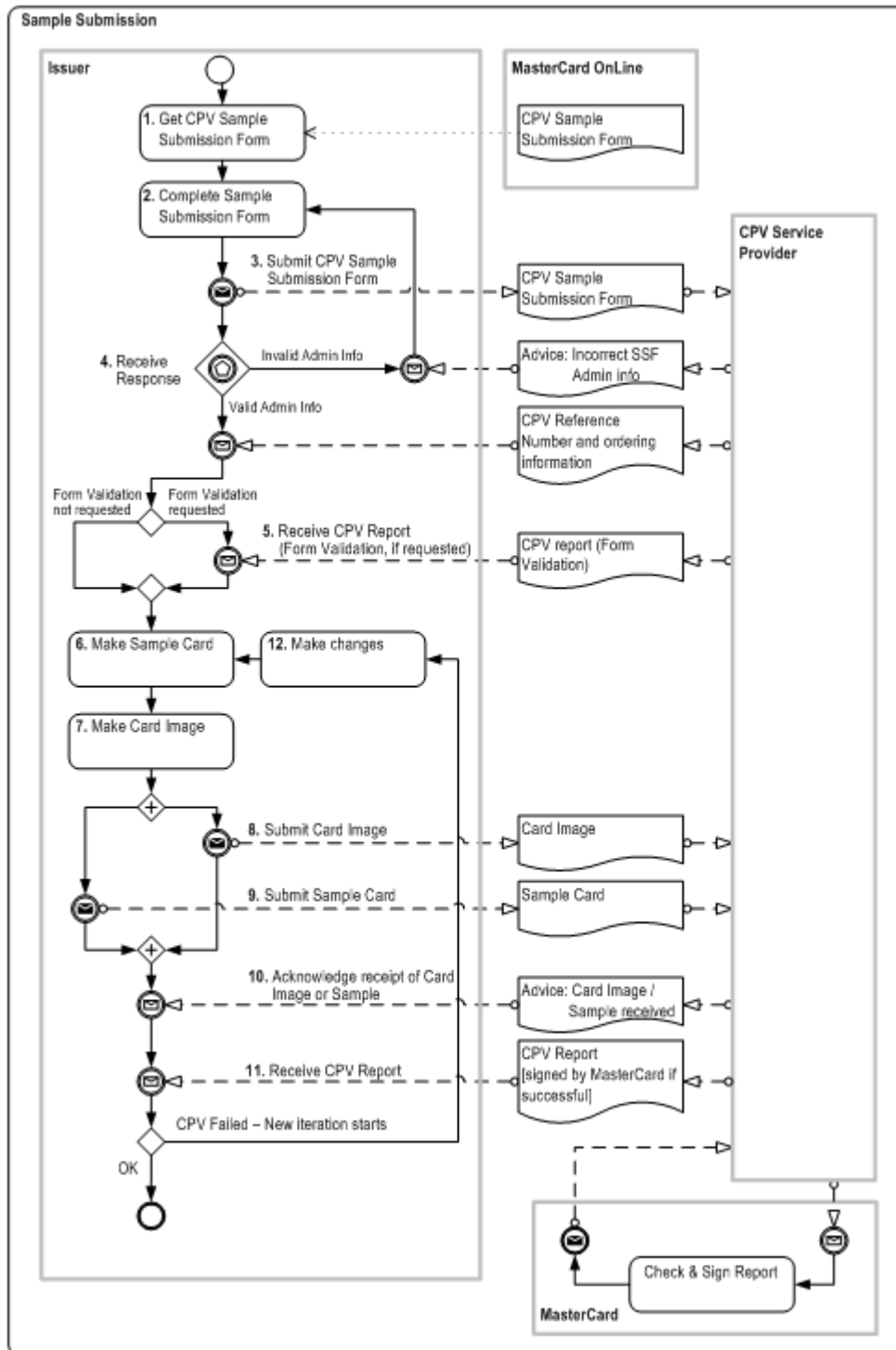
Overview	4-1
Process.....	4-3

Overview

During Sample Submission, issuers personalize a Technical Product and submit it to the CPV Service Provider that tests it for conformance with the appropriate personalization specifications. Issuers will receive a Personalization Compliance Report as a formal record of the result of the CPV Test, whether successful or not.

As part of Sample Submission, issuers can opt for the Personalization Setting Review or Form Validation. This option allows issuers to validate their personalization profile/parameters on paper before personalizing a Sample. In this case, issuers must fully complete the SSF form for each of the Applications that the card will support.

Figure 4.1—Sample Submission Subprocess



Process

Follow the below steps to complete the Sample Submission subprocess:

1. Obtain the CPV Sample Submission Form and complete.
2. The CPV Sample Submission Form includes a CPV Administrative section and a detailed technical section. While the administrative section must always be completed, the detailed technical section must only be completed when issuers are opting for the CPV Sample Submission Form. For more information, refer to [Appendix B, How To Complete the CPV Sample Submission Form](#).

NOTE

Before completing the CPV Sample Submission Form, issuers must verify that the Type Approval LoA for the Chip Card they are using is still valid.

3. Send the completed *CPV Sample Submission Form* by e-mail to the CPV Service Provider. Refer to the *M/Chip Accredited Third Parties* manual for the CPV Service Providers.
 4. Issuers will receive an e-mail response that will contain either:
 - An advice indicating that the information in the administrative section of the Sample Submission Form is incorrect or incomplete.
 - The CPV Reference Number. Issuers must quote the CPV Reference Number on all further correspondence related to this instance of Card Personalization Validation for Technical Products. Depending on the CPV Service Provider that issuers choose, CPV Service ordering information may need to be exchanged with the CPV Service Provider before receiving the CPV Reference Number.
 5. Issuers that request a CPV Sample Submission Form Validation, will receive the corresponding CPV Report.
 6. Issuers should have a personalization bureau create or personalize a Sample of their Technical Product to the parameters specified in the CPV Sample Submission Form.
 7. Generate a complete Card Image from the Technical Product produced in Step six. The Card Image is created using either a Qualified CPV Test Tool in the Validation Tools List in *M/Chip Qualified Test Tools* or the MasterCard Card Image Extraction Tool. For more information on how to make a Card Image, refer to the documentation that accompanies the tool. The Card Image must include:
 - The image of **all** Applications present on the Sample
 - The data on the physical magnetic stripe¹ if present
 8. Send an e-mail message including the Card Image, along with an electronic copy of the CPV Sample Submission Form and the related CPV Reference Number to the CPV Service Provider.
 9. Send the Sample to the physical address of the CPV Service Provider.
-
1. In contrast with magnetic stripe, equivalent data present in the chip and read via a contact or contactless interface (as applicable)

NOTE

To minimize the CPV elapsed time, issuers should send the card image and the Sample at the same time. This allows the CPV Service Provider to preview the Card Image while the Sample is en route to their premises. Issuers will receive a CPV Report if the test of the Card Image was not successful.

10. When the CPV Service Provider has received either the Card Image, Sample, or both, issuers will receive an e-mail confirming the receipt.
11. The CPV Service Provider will test the Card Image and the Sample. As a result of that testing, issuers will receive by e-mail a CPV Report in PDF format, which documents the outcome of that testing. For a successful CPV, the CPV Report will be digitally signed by MasterCard.
12. If the CPV testing is not successful, a new CPV iteration will start. Issuers should complete corrections indicated in the CPV report and continue with steps six and seven, creating a new Card Image and Sample, etc.

Chapter 5 Change Notification Submission

This chapter details the Change Notification Submission subprocess.

Overview	5-1
Process.....	5-1

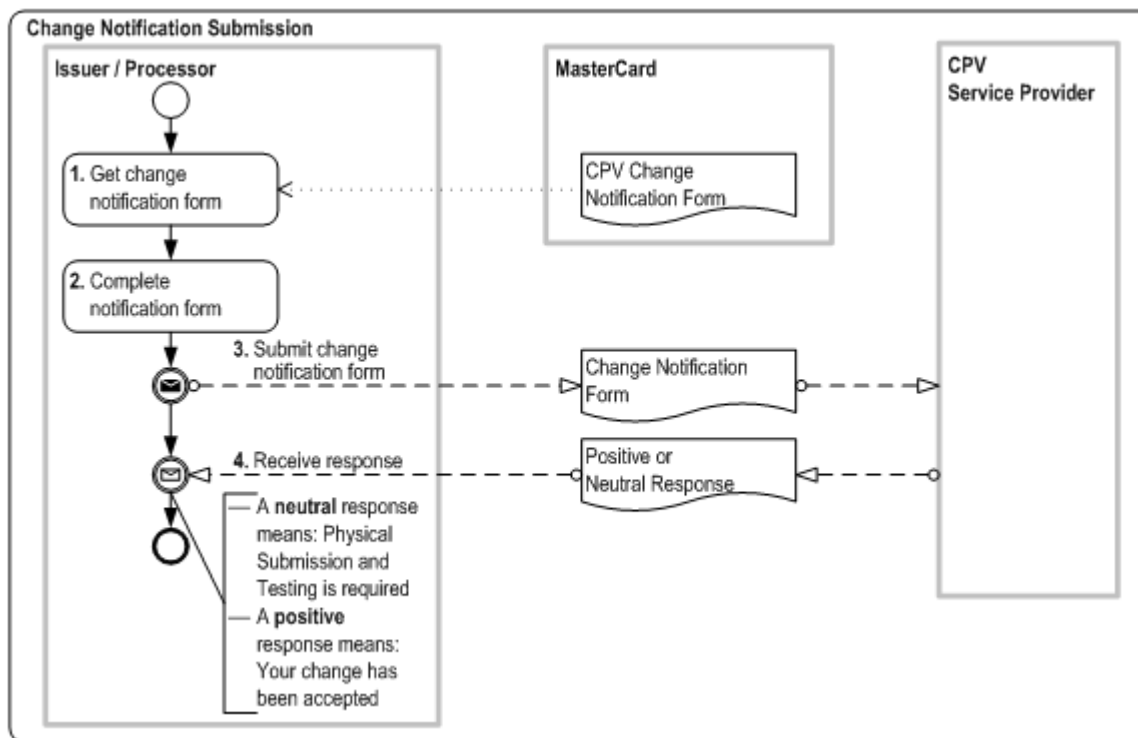
Overview

The Change Notification subprocess enables issuers to provide a CPV Service provider with a list of changes they intend to apply to an existing Technical Product and when they request an assessment of these changes in order to allow issuing.

A prerequisite for being able to do Change Notification Submission is that issuers properly manage the Technical Products they personalize and any variant resulting from changes, using appropriate industry best practices.

The following figure shows the Change Notification Submission:

Figure 5.1—Change Notification Submission Subprocess



Process

Follow the steps below to complete the Change Notification Submission subprocess:

1. Obtain the *CPV Change Notification Form*.
2. Complete the information requested in the form.

Change Notification Submission

Process

3. Send the completed form by e-mail to the CPV Service Provider.

Issuers sending the completed CNS form to another CPV Service Provider, other than the one involved in the CPV testing of the existing Technical Product on which this request is based,

AND

If the change is a Chip Card change or a Personalization Parameter Setting change, the issuer will need to provide the Card Image, CPV Report, and all variance letters related to the existing Technical Product to the CPV Service Provider that is selected.

NOTE

The originating e-mail address of this request is used for all future correspondence regarding this change notification submission.

4. The CPV Service Provider will assess the submission and send an e-mail including a report that will be one of the following:
 - A positive assessment to notify issuers that the submitted change can be performed without further CPV testing
 - A neutral assessment indicating that the nature of the submitted changes requires issuers to perform Sample Submission to obtain CPV approval for the Technical Product

Appendix A Data Packages

This appendix describes the data packages that group together data elements that are functionally related and have similar CPV validation requirements.

Introduction	A-1
Data Presence—Notation	A-1
Data Packages—Contents	A-2
Data Package 1—Card Risk Management	A-2
Data Package 2—EMV Data	A-4
Data Package 3—Cardholder Data	A-5
Data Package 4—Certificate and Key Data	A-5
Data Package 5—Internal Variables	A-6
Data Package 6—Other Data, Minor Impact	A-7
Data Package 7—Other Data, Major Impact	A-8
Data Package 8—Thresholds	A-9

Introduction

A data package groups together data elements or tags that are functionally related and have similar CPV validation requirements.

There are eight Data Packages that each have an attribute telling whether changes to its data elements are considered Major or Minor. Major changes always require Sample Submission.

Table A.1—Data Packages

Data Package	Name	Major	Minor
1	Card Risk Management	X ¹	
2	EMV Data	X ¹	
3	Cardholder Data		X
4	Certificate Key Data		X
5	Variables		X
6	Other Data, Minor Impact		X
7	Other Data, Major Cross Impact on Data Package 1/Data Package 2	X	
8	Thresholds	X ²	

Data Presence—Notation

The notations shown below are used to describe the requirements for the personalization parameters in each Data Package.

Table A.2—Format Notations

Usage Code	Description
M1	Mandatory: This data element is mandatory.
M2	Mandatory: This data element is mandatory for Technical Products that implement SDA.

- Changes to parameters in this Data Package that do not conform to reference documentation settings are considered as major.
- Only when a limit is altered from zero to non-zero or when the change results in the deactivation of a velocity check.

Usage Code	Description
M3	Mandatory: This data element is mandatory for Technical Products that implement DDA.
C	Conditional: This data element is not present, unless specific conditions are met, in which case this data element becomes mandatory.
O	Optional: This data element is optional.
NA	Not applicable

Data Packages—Contents

In the following data package tables, the Card Application column indicates the relationship between a specific data element and the card applications to which it is applicable. For the purpose of this guide, dual interface Technical Products are considered to support two card applications, that is, M/Chip on the EMV contact interface and *PayPass* M/Chip on the contactless interface.

Data Package 1—Card Risk Management

The data elements shown in [Table A.3](#) govern card risk management.

They are linked to the specification on which the Technical Product is based.

Changes to data elements from this Data Package that do not conform to reference documentation settings are considered Major and initiate Sample Submission. Changes that conform to reference document settings are considered Minor and initiate Change Notification Submission.

NOTE

Unless information specific to *Maestro PayPass* or *PayPass – M/Chip Flex* is indicated, Technical Products based on *Maestro PayPass* and *PayPass – M/Chip Flex* should follow the same process as *PayPass – M/Chip*.

Table A.3—Data Package 1—Card Risk Management

Name	Application	Template	Tag	Data Presence
Accumulator Profile Controls template	CPA	BF31	DF0x	C
Accumulator x Controls	CPA	BF32	DF0x	C
Additional check table	M/Chip		D3	M1
	CPA	BF33	DF0x	C

Name	Application	Template	Tag	Data Presence
Application Control	M/Chip		D5	M1
	<i>PayPass</i> – M/Chip		D7	M1
	CPA		C1	M1
Card Issuer Action Code Template (CIAC entries)	CPA	BF34	DF0x	M1
Card Issuer Action Code-decline	M/Chip		C3	M1
	<i>PayPass</i> – M/Chip		CF	M1
Card Issuer Action Code-default	M/Chip		C4	M1
	<i>PayPass</i> – M/Chip		CD	M1
Card Issuer Action Code-online	M/Chip		C5	M1
	<i>PayPass</i> – M/Chip		CE	M1
CDOL1 related data length	M/Chip		C7	M1
CRM Country Code	M/Chip		C8	M1
CRM Currency Code	M/Chip		C9	M1
Cryptogram Version Number	ALL			M1
Currency Conversion Table template	CPA	BF38	DF0x	C
Currency Conversion Table	M/Chip		D1	M1
Counter Profile Controls template	CPA	BF36	DF0x	C
Counter x Controls template	CPA	BF37	DF0x	C
Cyclic Accumulator Profile Control x	CPA	BF39	DF0x	C
Cyclic Accumulator x Controls template	CPA	BF3A	DF0x	C
Derivation key index (included in Issuer Option Control)	M/Chip			M1
	CPA			M1
Default ARPC Response Code	M/Chip		D6	M1
GPO Parameters	CPA	BF3E	DF0x	M1
Issuer Options Profile Controls template	CPA	BF3B	DF0x	M1
MTA Profile Controls template	CPA	BF3D	DF0x	C
Profile Controls template	CPA	BF3F	DF0x	M1

Data Package 2—EMV Data

The data elements shown in [Table A.4](#) are key EMV parameters.

The chip provides them to the terminal to support various types of processing, such as Terminal Risk Management (TRM) processing.

They specify application usage and how the transaction is to be processed under certain conditions.

Changes to parameters in this Data Package that do not conform to reference documentation settings are considered Major and initiate Sample Submission ([Chapter 4, Sample Submission](#)). Changes that conform to reference document settings are considered Minor and initiate Change Notification Submission ([Chapter 5, Change Notification Submission](#)).

Table A.4—Data Package 2—EMV Data

Name	Application	Tag	Data Presence
Application Currency Code	ALL	9F42	O
Application Currency Exponent	ALL	9F44	O
Application Discretionary Data	ALL	9F05	O
Application Identifier (AID)	ALL	4F	M1
Application Interchange Profile	ALL	82	M1
	<i>PayPass – M/Chip</i>	D8	M1
Application Label	ALL	50	C
Application Preferred Name	ALL	9F12	O
Application Usage Control (AUC)	ALL	9F07	M1
Application Version Number	ALL	9F08	M1
Cardholder Verification Method (CVM) List	ALL	8E	M1
Certification Authority Public Key Index	ALL	8F	M2/M3
Directory Definition File (DDF) Name	ALL	9D	M1
Dedicated File (DF) Name	ALL	84	M1
Issuer Action Code – Default	ALL	9F0D	M1
Issuer Action Code – Denial	ALL	9F0E	M1
Issuer Action Code – Online	ALL	9F0F	M1
Static Data Authentication Tag List	ALL	9F4A	M3

Data Package 3—Cardholder Data

The data elements shown in [Table A.5](#) contain cardholder related data.

They are provided to the terminal to allow correct identification of the cardholder and of the application being used to perform the transaction.

Changes to parameters in this Data Package require no further assessment with regard to card personalization validation. These values are provided for information only.

Table A.5—Data Package 3—Cardholder Data

Name	Application	Tag	Data Presence
Application Effective Date	ALL	5F25	O
Application Expiration Date	ALL	5F24	M1
Application Primary Account Number (PAN)	ALL	5A	M1
Application Primary Account Number (PAN) Sequence Number	ALL	5F34	M1
Cardholder Name	ALL	5F20	C
Cardholder Name Extended	ALL	9F0B	O
Offline PIN	ALL		O
Track 1 Discretionary Data	ALL	9F1F	O
Track 2 Discretionary Data	ALL	9F20	O
Track 2 Equivalent Data	ALL	57	M1

Data Package 4—Certificate and Key Data

The data elements shown in [Table A.6](#) are related to certificates and keys.

They are provided to the terminal to allow the Card Authentication Method, such as SDA or DDA, to be performed.

Changes to data elements from Data Package 4 that result in addition or deletion of remainders or relocation of data within the file structure, are considered Major and must initiate Sample Submission. All other changes are considered Minor and should initiate Change Notification Submission.

Data Packages

Data Package 5—Internal Variables

Table A.6—Data Package 4—Certificate and Key Data

Name	Application	Tag	Data Presence
Certification Authority Public Key Index	ALL	8F	M2
Data Authentication Code	ALL	9F45	M2
ICC PIN Encipherment Public Key Certificate	ALL	9F2D	O
ICC PIN Encipherment Public Key Exponent	ALL	9F2E	O
ICC PIN Encipherment Public Key Remainder	ALL	9F2F	O
Integrated Circuit Card (ICC) Public Key Certificate	ALL	9F46	M3
Integrated Circuit Card (ICC) Public Key Exponent	ALL	9F47	M3
Integrated Circuit Card (ICC) Public Key Remainder	ALL	9F48	M3
Issuer Public Key Certificate	ALL	90	M2
Issuer Public Key Exponent	ALL	9F32	M2
Issuer Public Key Remainder	ALL	92	M2
Signed Dynamic Application Data	ALL	9F4B	M3
Signed Static Application Data	ALL	93	M2/M3

Data Package 5—Internal Variables

The data elements shown in [Table A.7](#) contain various internal data.

Changes to data elements from Data Package 5 are considered Minor and should initiate Change Notification Submission.

Table A.7—Data Package 5—Variables

Name	Application	Tag	Data Presence
Application Transaction Counter (ATC)	ALL	9F36	M1
Bad cryptogram counter	M/Chip		M1
Consecutive offline transaction number	M/Chip		M1
Cumulative offline transaction amount	M/Chip		M1
Diversified key for ICC Dynamic number	M/Chip		M1
Global MAC in Script counter	M/Chip		M1
Key for ICC Dynamic number	M/Chip		M1

Name	Application	Tag	Data Presence
Last Online Application Transaction Counter (ATC) Register	ALL	9F13	O
Master Key for the AC generation	M/Chip		M1
	CPA		M1
Master Key for the SMC generation (confidentiality)	M/Chip		M1
	CPA		M1
Master Key for the SMI generation (integrity)	M/Chip		M1
	CPA		M1
Personal Identification Number (PIN) Try Counter	ALL	9F17	C
Previous transaction history	M/Chip		M1
	CPA	C7	M1
Script Counter	M/Chip	9F5F	M1

Data Package 6—Other Data, Minor Impact

The fields shown in [Table A.8](#) contain various other elements of information.

Changes to parameters in this Data Package are considered Minor and initiate Change Notification Submission.

Table A.8—Data Package 6—Other Data, Minor Impact

Name	Application	Tag	Data Presence
Application Priority Indicator	ALL	87	C
Application Reference Currency	ALL	9F3B	O
Application Reference Currency Exponent	ALL	9F43	O
Application Template	ALL	61	C
Directory Discretionary Template	ALL	73	O
Dynamic Data Authentication Data Object List (DDOL)	ALL	9F49	M3
File Control Information (FCI) Issuer Discretionary Data	ALL	BF0C	O
File Control Information (FCI) Proprietary Template	ALL	A5	M1
File Control Information (FCI) Template	ALL	6F	M1

Data Packages

Data Package 7—Other Data, Major Impact

Name	Application	Tag	Data Presence
Issuer Code Table Index	ALL	9F11	O
Issuer Country Code	ALL	5F28	M1
Language Preference	ALL	5F2D	O
PSE	ALL		O
Service Code	ALL	5F30	O
Security Limits ³	M/Chip	NA	M1
Short File Identifier (SFI)	ALL	88	M1
Transaction Certificate Data Object List (TDOL)	ALL	97	O
Log Data Table	CPA	BF40	O
Log Format	ALL	9F4E	C
Log Entry	ALL	9F4D	C
Issuer Application Data	CPA	9F10	M

Data Package 7—Other Data, Major Impact

These fields shown in [Table A.9](#) contain various other elements of information.

Any amendment to data elements from Data Package 7 may cause significant changes in card behavior because of interactions with some elements from Data Package 1, Card Risk Management, or Data Package 2, EMV Data. Such amendments are therefore considered to have a Major impact and must initiate Sample Submission.

Table A.9—Data Package 7—Other Data, Major Impact

Name	Application	Tag	Data Presence
Application File Locator (AFL)	ALL	94	M1
	<i>PayPass</i> – M/Chip	D9	M1
AIP/AFL Entries	CPA	BF41	M1
Application Life Cycle Data	M/Chip	9F7E	M1
	CPA	9F7E	M1
Card Risk Management Data Object List 1 (CDOL1)	ALL	8C	M1

3. M/Chip 4 Version 1.1 only.

Name	Application	Tag	Data Presence
Card Risk Management Data Object List 2 (CDOL2)	ALL	8D	M1
Processing Options Data Object List (PDOL)	ALL	9F38	O
Profile Selection File	CPA	NA	O
Profile Selection File Entry	CPA	C2	C

Data Package 8—Thresholds

The data elements shown in [Table A.10](#) contain thresholds and limits.

Changes to parameters in Data Package 8 which would result in a different Technical Product behavior are considered Major and require Sample Submission. The changes are:

- Altering parameter values from zero to non-zero in such a way that it would result in an original online only product to behave as an offline capable product. This may require other settings such as a different CVM list, which must be verified through Sample Submission.
- Altering parameters in such a way that it results in the deactivation of a velocity check. For example, a consecutive limit or a cumulative amount online limit is set in such a way that it will never be reached during the life cycle of this card and resulting in the card behaving as an offline-only product.

Table A.10—Data Package 8—Thresholds

Name	Application	Template or Tag	Presence
ATC limit	M/Chip		M1
Bad cryptogram counter limit	M/Chip		C
Counter Data template	CPA	BF35	C
Accumulator Data template	CPA	BF30	C
Cyclic Accumulator x Data template	CPA	BF42	C
Number of Days Offline Limit	CPA	C3	C
Limits Entries template	CPA	BF3C	C
CFDC limit for AC session key	M/Chip		C
CFDC limit for confidentiality session key	M/Chip		C
CFDC limit for integrity session key	M/Chip		C
Global MAC in Script counter limit	M/Chip		C

Data Packages

Data Package 8—Thresholds

Name	Application	Template or Tag	Presence
Lower Consecutive Offline Limit	ALL	9F14	O
	M/Chip	9F14	M1
Lower Cumulative Off line Transaction Amount	M/Chip	CA	M1
MAC in script counter limit	M/Chip		C
Personal Identification Number (PIN) Try Limit	ALL	-	C
Upper Consecutive Offline Limit ³	ALL	9F23	O
	M/Chip	9F23	M1
Upper Cumulative Off line Transaction Amount	M/Chip	CB	M1

Appendix B How To Complete the CPV Sample Submission Form

This appendix details how to complete the CPV Sample Submission Form.

Prerequisites	B-1
Completing the CPV Sample Submission Form	B-1

Prerequisites

The *CPV Sample Submission Form* is made available as a Microsoft® Excel workbook.

To open and work with the *CPV Sample Submission Form* issuers need to have Microsoft Excel 2002 or greater.

The procedure to enable macros differs depending on the version of Microsoft Excel being used. Please refer to the Microsoft help function where the related procedure steps are described.

Completing the CPV Sample Submission Form

Open the *CPV Sample Submission Form* and complete the following steps:

1. Fill in the Issuer Project Information sheet
2. Fill in the Technology/Platform Identification section from the Profile definition sheet
3. Fill in the Profile Identification section from the Profile definition sheet
4. Click Profile Generation
5. Fill in the sheet automatically generated for each Profile

In this step, the General Information for each Profile sheet must always be completed. However, the level of completion for the remaining steps depends on the following:

Case 1 — Review of the CPV Sample Submission is not required

In this case, the Personalization Setting Review parameter which was specified at step one is set to **No**.

Then depending on the Application supported by the Technical Product, the following parameters need to be provided in each of the Profile sheets.

Table B.1—Parameter Settings

Parameter	M/Chip 2.05	M/Chip 2.1	Other Card Applications
LCOL	X	X	X
Magnetic Stripe CVC1 Track 2 offset	X	X	X
PIN Try Counter	X	X	X
UCOL	X	X	X
Application Control	X	X	
Card Issuer Action Code - Decline	X	X	
Card Issuer Action Code - Default	X	X	
Card Issuer Action Code - Online	X	X	

How To Complete the CPV Sample Submission Form

Completing the CPV Sample Submission Form

Parameter	M/Chip 2.05	M/Chip 2.1	Other Card Applications
Lower Cumulative Offline Transaction Amount	X	X	
Upper Cumulative Offline Transaction Amount	X	X	
Decline if Data Authentication fails	X		
Card Terminal Verification Results Action Code	X	X	
Non-Domestic Control Factor	X	X	

Case 2 — Review of the CPV Sample Submission is required

In this case, the Personalization Setting Review parameter that was specified at step one is set to **Yes**.

Then issuers are required to provide all parameters in each of the Profile sheets.

NOTE

When opting for review of the CPV Sample Submission Form, MasterCard recommends it be done as early as possible, preferably during the time personalization settings are determined and not when sample cards are being personalized and prepared for Sample Submission.

6. Save and send the SSF form to the CPV Service Provider

Glossary

This chapter defines various terms, concepts, acronyms, and abbreviations used in this document. These definitions appear for convenience only and are not to be used or otherwise relied on for any legal or technical purpose. MasterCard specifically reserves the right to amend any definition appearing herein and to interpret and apply all such definitions in its sole discretion as MasterCard deems fit.

The following terms are specific for this document. Other terms are explained in the *MasterCard Dictionary*.

Application

In this guide, an Application is a payment system application.

Card Image

An extract of the data from a Technical Product made using a Qualified CPV Test Tool or the MasterCard Card Image Extractor Tool.

Card Image Extractor Tool

A MasterCard tool that can be used to make a Card Image.

Card Personalization Validation (CPV)

The MasterCard process to ensure that every Technical Product bearing a MasterCard brand mark is compliant with the MasterCard chip-related payment product requirements and best practices and offers the correct level of service, acceptance, interoperability, performance, and security to cardholders and acceptance locations.

Chip Card

A specific ID-1 chip card or PayPass non ID-1 form factor cardholder device loaded with an Application.

CPV Reference Number

A unique value allocated by the CPV Service Provider at the start of the CPV Process. The CPV Reference Number is subsequently used to uniquely identify the Technical Product that has successfully completed the CPV process.

CPV Report

A report issued by the CPV Service Provider and stating the results of the CPV testing.

CPV Service Provider

An entity authorized by MasterCard to deliver and invoice for the supply of the CPV Service.

Personalization Profile

A set of MasterCard predefined values for chip data elements that ensure a Technical Product functions in conformance with issuer requirements, e.g. Full Chip MasterCard—Signature, Online PIN and No CVM.

Qualified CPV Test Tool

A test tool that a customer may use in the CPV process to generate a Card Image. MasterCard Qualified Test Tools are listed in the M/Chip Qualified Test Tools document available on the Chip Information Center

Sample Card

A Chip Card that is personalized with an assigned Personalization profile, and personalization bureau. The given combination will be used for the personalization of the Technical Product in production mode.

Technical Product

A Chip Card bearing a MasterCard brand mark, personalized with a given Personalization Profile by an assigned personalization bureau and with a specific personalized process. An issuer may use the same Technical Product to support more than one type of cardholder offering, for example, an issuer's commercial offerings, such as Gold and Standard cards may both use the same Technical Product, subject to the guidelines published in this document.