



# **First Data Dual Interface EMV™ Test Card Set**

**Version 1.20**

**August, 2016**

## **Disclaimer**

Information provided in this document describes capabilities available at the time of developing and delivering this document and the associated test cards and information available from industry sources. This document is intended to be used as a guideline only and B2 Payment Solutions, Inc. and/or its affiliates accept no liability for any errors or omissions in this document and/or for any results of client's reliance thereon.

## **Copyright**

© 2016 by B2 Payment Solutions, Inc. All rights reserved. All information and data contained herein and within the associated test cards is confidential and proprietary to B2 Payment Solutions. Such information shall not be disclosed, duplicated, reverse-engineered or used in part or in whole, for any purpose without prior written consent from B2 Payment Solutions, Inc. other than specific internal, non-commercial, non-assignable use in conjunction with the First Data Dual Interface EMV™ Test Card Set (2 cards) only.

## **Attribution**

EMV™ is a trademark owned by EMVCo LLC.

All trademarked symbols seen below are registered trademarks of their respective organizations: Interac Association, Mastercard International Incorporated and Visa Inc.



## **B2 Contact Information**

251 Consumers Road, Suite 1200 Toronto, ON M2J 4R3  
555 Northpoint Center, Suite 400, Alpharetta, GA 30022  
Tel: 855.730.9827 [www.b2ps.com](http://www.b2ps.com)

## Revision History

Version	Date	Updated By	Revisions
1.20	August 30, 2016	B2PS	Initial document creation

## Table of Contents

<b>First Data Dual Interface Test Card Profiles.....</b>	<b>2</b>
<b>1.1 Test Card 01 – Visa, Credit, English, USA, USD .....</b>	<b>3</b>
1.1.1 Cardholder Verification Method List .....	3
1.1.2 Application Tag data (Contact Interface, online) .....	3
1.1.3 Application Tag data (Contactless Interface, online).....	5
<b>1.2 Test Card 02 – MasterCard, Credit, English, USA, USD .....</b>	<b>7</b>
1.2.1 Cardholder Verification Method List .....	7
1.2.2 Application Tag data (Contact Interface, online) .....	7
1.2.3 Application Tag data (Contactless Interface, online).....	9
<b>Chapter 2 - ASCII Character Conversion Chart.....</b>	<b>13</b>

**CAUTION**

Multiple consecutive incorrect PIN entry attempts may result in the card being blocked. This is known as being 'PIN Blocked'.

If this occurs, it will no longer be possible to enter an Offline PIN which will cause all future transactions to be declined.

**\*\*\* It is not possible to unblock a 'PIN Blocked' card \*\*\***

## First Data Dual Interface Test Card Profiles

This Test Card Set contains two cards, defined as follows:

	Test Card 01	Test Card 02
<b>Brand</b>	Visa	MasterCard
<b>Type</b>	Credit	Credit
<b>AID</b>	A0000000031010	A0000000041010
<b>PAN</b>	4761 7390 0101 0119	5413 3300 8960 4111
<b>Expiry Date</b>	01/2022	01/2025
<b>Service Code</b>	201	201
<b>Interface</b>	Contact, Contactless, MSR	Contact, Contactless, MSR
<b>CVM</b>	<a href="#">See card definition</a>	<a href="#">See card definition</a>
<b>Approval Amount</b>	\$10.00	\$20.00
<b>Online / Offline</b>	Online Only	Online Only
<b>Issuer Country Code</b>	840 (USA)	840 (USA)
<b>Application Currency Code</b>	840 (USD)	840 (USD)
<b>Language</b>	'en' – English	'en' – English
<b>Application Confirmation</b>	No	No
<b>Card Purpose</b>	Contactless Visa	Contactless MasterCard
<b>Card Version</b>	v1.2	v1.0

## 1.1 Test Card 01 – Visa, Credit, English, USA, USD

A Visa credit card with Issuer Country Code of 'USA' and Currency Code of 'USD'.

The recommended transaction amount to generate a host approval is \$10.00

### 1.1.1 Cardholder Verification Method List

Cardholder Verification Method List ('020142041E0400055E001F00')			
CVM	Verification Method	Conditions	If unsuccessful
1	Online PIN	Unattended Cash	Fail
2	Online PIN	Manual Cash	Next CVM
3	Signature (paper)	Manual Cash	Fail
4	Fail CVM Processing	Purchase with Cashback	Fail
5	Signature (paper)	Always	Next CVM
6	No CVM required	Always	Fail

### 1.1.2 Application Tag data (Contact Interface, online)

\* Tag value changes with card usage

Tag	Element name	Data	v1.2
50	Application Label	56 69 73 61 20 43 72 65 64 69 74 - 'Visa Credit'	
57	Track 2 Equivalent Data	47 61 73 90 01 01 01 19 D2 21 22 01 11 75 89 89 38 90 0F	
5A	Application Primary Account Number (PAN)	47 61 73 90 01 01 01 19	
5F 20	Cardholder Name	44 49 20 54 65 73 74 2F 43 61 72 64 20 30 31 20 20 20 20 20 20 20 20 20 20 20 - 'DI Test/Card 01'	
5F 24	Application Expiration Date	22 12 31	
5F 25	Application Effective Date	15 10 01	
5F 28	Issuer Country Code	08 40 - USA	
5F 2D	Language Preference	65 6E - 'en' (English)	
5F 30	Service Code	02 01	
5F 34	Application PAN Sequence Number	01	
82	Application Interchange Profile	18 00	
84	Dedicated File (DF) Name	A0 00 00 00 03 10 10	
8C	Card Risk Management Data Object List 1 (CDOL1)	9F 02 06 9F 03 06 9F 1A 02 95 05 5F 2A 02 9A 03 9C 01 9F 37 04	
8D	Card Risk Management Data Object List 2 (CDOL2)	8A 02 9F 02 06 9F 03 06 9F 1A 02 95 05 5F 2A 02 9A 03 9C 01 9F 37 04	
8E	Cardholder Verification Method (CVM) List	00 00 00 00 00 00 00 00 02 01 42 04 1E 04 00 05 5E 00 1F 00	
8F	Certification Authority Public Key Index	92	
90	Issuer Public Key Certificate	3C 96 F7 65 8F BC 29 A2 02 F1 91 46 BD E9 21 66 B0 F6 22 1B BC CB 02 E3 26 71 0B 9E 22 9D 16 FA E9 AD 0C 87 4C 06 85 91 6E 19 F0 E3 26 93 EE 20 1B CE 23 59 50 9A 6D 65 72 F8 EC 3F C3 73 12 6B 34 3F 9C B8 15 3D 61 B7 EA B2 D4 2D E1 9D 56 08 31 85 A0 3D D1 4C 26 8D 40 DF 08 35 C5 5E AB FA 38 ED 28 BC E4 2C D0 01 3D A9 4F 80 05 18	

Tag	Element name	Data	v1.2
		B7 53 C2 46 EF FB A0 8F D2 02 9B AD 5D FC F0 DA F0 7B 7D 80 1C 46 5F FD 25 2C 70 B9 21 53 B3 30 D9 5D CA 2F A1 FA AE 2D 01 68 A4 EA 8B 47 5C D8 05 DC 32 AA 96 4C 17 BF CD 2C D5 D0 30 9A B0 EA 76 1B	
92	Issuer Public Key Remainder	50 DA 20 DD A8 95 3B 69 3F ED 84 36 68 31 BA 1E EA 97 F7 8F 79 2A CF 8C B9 8F DF 01 49 A7 B7 8F DA 1C 49 67	
94	Application File Locator (AFL)	10 01 01 00 10 02 04 01 B0 01 01 00	
9F 07	Application Usage Control	FF 00	
9F 08	Application Version Number	00 96	
9F 0D	Issuer Action Code - Default	B8 50 AC 88 00	
9F 0E	Issuer Action Code - Denial	00 00 00 00 00	
9F 0F	Issuer Action Code - Online	B8 70 9C 98 00	
9F 10	Issuer Application Data [VSDC]	xx xx xx xx xx xx xx *	
9F 11	Issuer Code Table Index	01	
9F 12	Application Preferred Name	56 69 73 61 20 43 72 65 64 69 74 - 'Visa Credit'	
9F 13	Last Online Application Transaction Counter (ATC) Register	xx xx *	
9F 17	Personal Identification Number (PIN) Try Counter	03	
9F 1F	Track 1 Discretionary Data	31 37 35 38 39 30 30 38 39 33 30 30 30 30 30 30 30 30 30 30 30 30 30 30	
9F 26	Application Cryptogram (AC)	xx xx xx xx xx xx xx xx	
9F 27	Cryptogram Information Data (CID)	80	
9F 32	Issuer Public Key Exponent	03	
9F 36	Application Transaction Counter (ATC)	xx xx *	
9F 44	Application Currency Exponent	02	
9F 46	ICC Public Key Certificate	14 5E 10 46 02 F9 DD 8E AB CA 78 5C DA 61 23 57 38 03 93 0E A8 3B 69 E8 09 15 C3 DC C2 1F BB 8D 5D 8F 1F 7C AE C2 CD EC 71 48 F6 B6 F5 D5 A1 0B 9C 7E 96 EF A1 EC 0D B5 EC CE 6F FC A4 99 4D 45 A7 DA 78 5A A0 0B 9F E2 BA FA 41 4E 82 6D 5E 95 F8 EC 40 2C 5A 0B 3D 28 65 39 E4 69 8F 61 01 15 44 9B A3 DF C1 2A 81 05 4F 97 F3 A0 D9 39 3C B8 B7 FB DB FB 89 BE B6 1F E7 00 81 6D C4 A0 F0 32 D9 E3 A1 BC 06 02 37 5E 3B CC C0 09 F3 05 C7 3D 9C 39 06 1E 4B 80 71 B2 E2 FF 20 B8 70 D4 27 94 A4 BD 7B 8A 84 C1 7E D0 59 D0 78 04 14 86 5E CB	
9F 47	ICC Public Key Exponent	03	
9F 49	Dynamic Data Authentication Data Object List (DDOL)	9F 37 04	
9F 4A	Static Data Authentication Tag List	82	
9F 51	Application Currency Code [VSDC]	08 40 - USD	
9F 52	Application Default Action [VSDC VIS 1.5]	00 00 00 00 00 00	
9F 53	Consecutive Transaction Limit (International) [VSDC]	00	

Tag	Element name	Data	v1.2
9F 54	Cumulative Total Transaction Amount Limit [VSDC]	00 00 00 00 00 00	
9F 58	Consecutive Transaction Counter Limit [VSDC]	00	
9F 59	Consecutive Transaction Counter Upper Limit [VSDC]	00	
9F 5C	Cumulative Total Transaction Amount Upper Limit [VSDC]	00 00 00 00 00 00	
9F 5E	Consecutive Transaction International Upper Limit [VSDC]	00	
9F 68	Card Additional Processes [qVSDC VCPS 2.1]	10 00 10 00	
9F 6D	VLP Reset Threshold [VSDC]	00 00 00 00 00 00	
9F 77	VLP Funds Limit [VSDC]	00 00 00 00 00 00	
9F 78	VLP Single Transaction Limit [VSDC]	00 00 00 00 00 00	
9F 79	VLP Available Funds [VSDC]	00 00 00 00 00 00	
BF 55	Contactless Counters Data Template	DF 61 06 00 00 00 00 00 00 DF 71 06 00 00 00 00 00 00 DF 41 06 00 00 00 00 00 00 DF 51 06 00 00 00 00 00 00 DF 11 01 00 DF 21 01 00 DF 31 01 00	
BF 56	Counters Data Template	DF 11 01 02 DF 21 01 00 DF 31 01 00	
BF 57	International Counters Data Template	DF 11 01 02 DF 21 01 00 DF 31 01 00 DF 51 01 00	
BF 58	Amounts Data Template	DF 11 06 00 00 00 00 00 00 DF 21 06 00 00 00 00 00 00 DF 31 06 00 00 00 00 00 00	
BF 5B	Application Internal Data Template	DF 01 02 00 00	

### 1.1.3 Application Tag data (Contactless Interface, online)

\* Tag value changes with card usage

Tag	Element name	Data	v1.0
50	Application Label	56 69 73 61 20 43 72 65 64 69 74	
57	Track 2 Equivalent Data	47 61 73 90 01 01 01 19 D2 21 22 01 11 75 89 89 38 90 0F	
5A	Application Primary Account Number (PAN)	47 61 73 90 01 01 01 19	
5F 24	Application Expiration Date	22 12 31	
5F 2D	Language Preference	65 6E - 'en' (English)	
5F 34	Application PAN Sequence Number	01	
82	Application Interchange Profile	00 00	
84	Dedicated File (DF) Name	A0 00 00 00 03 10 10	
9F 10	Issuer Application Data [VSDC]	06 01 0A 03 A0 00 00	
9F 13	Last Online Application Transaction Counter (ATC) Register	xx xx *	
9F 17	Personal Identification Number (PIN) Try Counter	03	
9F 26	Application Cryptogram (AC)	79 A5 42 58 BB 17 81 FA	
9F 27	Cryptogram Information Data (CID)	80	
9F 36	Application Transaction Counter (ATC)	xx xx *	
9F 38	Processing Options Data Object List (PDOL)	9F 66 04 9F 02 06 9F 03 06 9F 1A 02 95 05 5F 2A 02 9A 03 9C 01 9F 37 04	
9F 51	Application Currency Code [VSDC]	08 40 - USD	
9F 52	Application Default Action [VSDC VIS 1.5]	00 00 00 00 00 00	



Tag	Element name	Data	v1.0
9F 53	Consecutive Transaction Limit (International) [VSDC]	00	
9F 54	Cumulative Total Transaction Amount Limit [VSDC]	00 00 00 00 00 00	
9F 58	Consecutive Transaction Counter Limit [VSDC]	00	
9F 59	Consecutive Transaction Counter Upper Limit [VSDC]	00	
9F 5A	Application Program Identifier	11 08 40 08 40	
9F 5C	Cumulative Total Transaction Amount Upper Limit [VSDC]	00 00 00 00 00 00	
9F 5E	Consecutive Transaction International Upper Limit [VSDC]	00	
9F 68	Card Additional Processes [qVSDC VCPS 2.1]	10 00 10 00	
9F 6C	Card Transaction Qualifiers [qVSDC VCPS 2.1]	38 00	
9F 6D	VLP Reset Threshold [VSDC]	00 00 00 00 00 00	
9F 6E	Form Factor Indicator [qVSDC]	20 70 00 00	
9F 77	VLP Funds Limit [VSDC]	00 00 00 00 00 00	
9F 78	VLP Single Transaction Limit [VSDC]	00 00 00 00 00 00	
9F 79	VLP Available Funds [VSDC]	00 00 00 00 00 00	
BF 55	Contactless Counters Data Template	DF 61 06 00 00 00 00 00 00 DF 71 06 00 00 00 00 00 00 DF 41 06 00 00 00 00 00 00 DF 51 06 00 00 00 00 00 00 DF 11 01 00 DF 21 01 00 DF 31 01 00	
BF 56	Counters Data Template	DF 11 01 01 DF 21 01 00 DF 31 01 00	
BF 57	International Counters Data Template	DF 11 01 01 DF 21 01 00 DF 31 01 00 DF 51 01 00	
BF 58	Amounts Data Template	DF 11 06 00 00 00 00 00 00 DF 21 06 00 00 00 00 00 00 DF 31 06 00 00 00 00 00 00	
BF 5B	Application Internal Data Template	DF 01 02 00 00	

## 1.2 Test Card 02 – MasterCard, Credit, English, USA, USD

A MasterCard credit card with Issuer Country Code of 'USA' and Application Currency Code of 'USD'.

The recommended transaction amount to generate a host approval is \$20.00.

### 1.2.1 Cardholder Verification Method List

Cardholder Verification Method List ('42031E031F03')			
CVM	Verification Method	Conditions	If unsuccessful
1	Online PIN	Terminal supports CVM type	Next CVM
2	Signature (paper)	Terminal supports CVM type	Fail
3	No CVM required	Terminal supports CVM type	Fail

### 1.2.2 Application Tag data (Contact Interface, online)

\* Tag value changes with card usage

Tag	Element name	Data	v1.0
50	Application Label	4D 61 73 74 65 72 43 61 72 64	
57	Track 2 Equivalent Data	54 13 33 00 89 60 41 11 D2 51 22 01 01 23 40 91 72 02 9F	
5A	Application Primary Account Number (PAN)	54 13 33 00 89 60 41 11	
5F 20	Cardholder Name	44 49 20 54 65 73 74 2F 43 61 72 64 20 30 32 20 20 20 20 20 20 20 20 20 20 20 - 'DI Test/Card 02	
5F 24	Application Expiration Date	25 12 31	
5F 25	Application Effective Date	14 10 01	
5F 28	Issuer Country Code	08 40 - USA	
5F 2D	Language Preference	65 6E - 'en' (English)	
5F 30	Service Code	02 01	
5F 34	Application PAN Sequence Number	01	
82	Application Interchange Profile [M/Chip, PayPass]	38 00	
84	Dedicated File (DF) Name	A0 00 00 00 04 10 10	
87	Application Priority Indicator	01	
8C	Card Risk Management Data Object List 1 (CDOL1)	9F 02 06 9F 03 06 9F 1A 02 95 05 5F 2A 02 9A 03 9C 01 9F 37 04 9F 35 01 9F 45 02 9F 4C 08 9F 34 03	
8D	Card Risk Management Data Object List 2 (CDOL2)	91 0A 8A 02 95 05 9F 37 04 9F 4C 08	
8E	Cardholder Verification Method (CVM) List	00 00 00 00 00 00 00 00 42 03 1E 03 1F 03	
8F	Certification Authority Public Key Index	FA	
90	Issuer Public Key Certificate	18 89 B9 97 E6 FC E8 4B 4A E7 AB 87 43 1C BD B3 DF 8C 1D 5A 55 A7 F6 0D 29 59 AF 3A 51 04 E7 58 83 17 ED 74 08 66 68 CF 1A 05 47 84 F7 49 3C 6D 74 7F A7 96 EC 14 D3 33 A6 8E C7 E0 08 62 95 9A 0B D0 F0 48 20 80 B7 1A C1 B7 62 5B 1B 8B 1F 35 A6 69 19 99 BA 78 F5 92 E2 3F 95 E9 96 09 D1 08 CF 1C 0E 30 8A 8B F6 4F BD E8 37 D3 CE 13 8A 50 DC 50 AF 4B 41 EE 53 D9 8A 11 B6 A8 1D DD 44 CC 43 0C	

Tag	Element name	Data	v1.0
		1E F3 BB 9D 1D 75 A0 2F AA 9C 81 4A FC 58	
92	Issuer Public Key Remainder	D3 52 41 07	
94	Application File Locator (AFL)	08 02 04 01 18 01 01 00 20 01 01 00	
9F 07	Application Usage Control	FF 00	
9F 08	Application Version Number	00 02	
9F 0D	Issuer Action Code - Default	B8 50 9C 80 00	
9F 0E	Issuer Action Code - Denial	00 00 00 00 00	
9F 0F	Issuer Action Code - Online	B8 70 9C 98 00	
9F 10	Issuer Application Data [M/Chip]	01 10 A0 80 03 24 00 00 01 02 00 00 00 00 00 00 00 FF	
9F 11	Issuer Code Table Index	01	
9F 12	Application Preferred Name	4D 61 73 74 65 72 43 61 72 64 43 72 65 64 69 74 - 'MasterCardCredit'	
9F 14	Lower Consecutive Offline Limit	00	
9F 17	Personal Identification Number (PIN) Try Counter	03	
9F 1F	Track 1 Discretionary Data	20 20	
9F 23	Upper Consecutive Offline Limit	00	
9F 26	Application Cryptogram (AC)	xx xx xx xx xx xx xx xx *	
9F 27	Cryptogram Information Data (CID)	80	
9F 32	Issuer Public Key Exponent	03	
9F 36	Application Transaction Counter (ATC)	xx xx *	
9F 42	Application Currency Code	08 40 - USD	
9F 44	Application Currency Exponent	02	
9F 46	ICC Public Key Certificate	57 61 E2 4C 37 AB DD 3A B8 78 26 BA 72 68 63 7E 35 49 7B B3 27 99 29 93 75 65 D3 06 B8 9D 21 64 EB 20 35 AC 63 BA BA 89 CF 34 7D A2 EA 3B FD D0 F0 19 46 69 C8 CD AE BB BC 55 EE D0 72 54 58 08 E0 E2 10 6B EC FB 5C CF C7 71 5F C8 AE 69 D7 0E F8 4E 33 6D 59 03 B7 1C 53 4F 96 48 D4 AD 2E 6D D9 39 6E 64 58 86 5B D9 EA 21 A2 F9 63 CF 20 D2	
9F 47	ICC Public Key Exponent	03	
9F 48	ICC Public Key Remainder	6E 70 AC 81 5B 12 D4 C5 6D 56 7A 78 4B EB 9E BD 5E BC 52 E0 4B 1D 45 08 B9 4B 13 27 80 A8 09 72 CC 25 73 27 CD 6F A5 F0 8D B5	
9F 49	Dynamic Data Authentication Data Object List (DDOL)	9F 37 04	
9F 4A	Static Data Authentication Tag List	82	
9F 4B	Signed Dynamic Application Data	84 BB D4 58 3E A5 84 A5 CE 55 57 80 42 B7 8F F1 1A 2E 56 46 D8 1D 17 C2 B8 11 D4 E2 77 82 AD B4 E4 90 62 67 B1 7B A1 B2 36 A6 A5 71 49 1F D3 FE 7E 80 1E 57 20 B0 76 E9 24 7B 2B 8A FE 72 61 58 FD 56 5C 8C 0A 37 32 8A 40 EC 86 83 B2 84 C1 80 24 BE EC 72 6A 55 41 E0 76 54 6D 4D 5C 2E 91 85 13 E9 65 58	

Tag	Element name	Data	v1.0
		D2 44 1A D7 74 BE C3 81 B6 C0 83 7B	
9F 4D	Transaction Log Entry	0B 0A	
9F 4F	Transaction Log Format	9F 27 01 9F 02 06 5F 2A 02 9A 03 9F 36 02 9F 52 06	
9F 6E	Third Party Data [PayPass M/Chip]	08 40 00 00 30 30 00	
9F 7E	Application Life Cycle Data [MasterCard]	03 10 0C 12 00 09 00 00 FF 00 04 00 00 02 60 00 00 38 4A 02 11 50 35 43 44 30 37 32 20	
C3	Card Issuer Action Code - Decline [MasterCard]	00 00 00	
C4	Card Issuer Action Code - Default [MasterCard]	06 58 00	
C5	Card Issuer Action Code - Online [MasterCard]	06 F8 00	
C6	Counters [MasterCard]	00 25 00 00 00 00 00 00 00 00	
C7	CDOL1 Related Data Length [MasterCard]	2B	
C8	CRM Country Code [MasterCard]	08 40 - USA	
C9	CRM Currency Code [M/Chip4]	08 40 - USD	
CA	Lower Cumulative Offline Transaction Amount [M/Chip]	00 00 00 00 00 00	
CB	Upper Cumulative Offline Transaction Amount [M/Chip]	00 00 00 00 00 00	
CD	Card Issuer Action Code - Default [PayPass M/Chip]	00 58 00	
CE	Card Issuer Action Code - Online [PayPass M/Chip]	00 F8 00	
CF	Card Issuer Action Code - Denial [PayPass M/Chip]	08 00 00	
D1	Currency Conversion Table [M/Chip]	08 40 00 00 00 08 40 00 00 00 08 40 00 00 00 08 40 00 00 00 08 40 00 00 00	
D3	Additional Check Table [MasterCard]	00 00 00 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF	
D5	Application Control [M/Chip]	C4 00	
D6	Default ARPC Response Code [M/Chip4]	00 12	
D7	Application Control [PayPass M/Chip]	40 00 40	
DF 02	Security Limits Status [MasterCard]	00	

### 1.2.3 Application Tag data (Contactless Interface, online)

\* Tag value changes with card usage

Tag	Element name	Data	v1.0
50	Application Label	4D 61 73 74 65 72 43 61 72 64	
56	Track 1 Equivalent Data [MasterCard]	42 35 34 31 33 33 33 30 30 38 39 36 30 34 31 31 31 5E 20 2F 5E 32 35 31 32 32 30 31 30 30 30 30 30 30 30 30 30 30 30 20 20 20 20 20 30 30 30 20 20 20 20 30	
57	Track 2 Equivalent Data	54 13 33 00 89 60 41 11 D2 51 22 01 01 23 40 91 72 02 9F	
5A	Application Primary Account Number (PAN)	54 13 33 00 89 60 41 11	
5F 24	Application Expiration Date	25 12 31	

Tag	Element name	Data	v1.0
5F 25	Application Effective Date	14 10 01	
5F 28	Issuer Country Code	08 40 - USA	
5F 2D	Language Preference	65 6E - 'en' (English)	
5F 34	Application PAN Sequence Number	01	
82	Application Interchange Profile [M/Chip, PayPass]	19 80	
84	Dedicated File (DF) Name	A0 00 00 00 04 10 10	
87	Application Priority Indicator	01	
8C	Card Risk Management Data Object List 1 (CDOL1)	9F 02 06 9F 03 06 9F 1A 02 95 05 5F 2A 02 9A 03 9C 01 9F 37 04 9F 35 01 9F 45 02 9F 4C 08 9F 34 03	
8D	Card Risk Management Data Object List 2 (CDOL2)	91 0A 8A 02 95 05 9F 37 04 9F 4C 08	
8E	Cardholder Verification Method (CVM) List	00 00 00 00 00 00 00 00 42 03 1E 03 1F 03	
8F	Certification Authority Public Key Index	FA	
90	Issuer Public Key Certificate	18 89 B9 97 E6 FC E8 4B 4A E7 AB 87 43 1C BD B3 DF 8C 1D 5A 55 A7 F6 0D 29 59 AF 3A 51 04 E7 58 83 17 ED 74 08 66 68 CF 1A 05 47 84 F7 49 3C 6D 74 7F A7 96 EC 14 D3 33 A6 8E C7 E0 08 62 95 9A 0B D0 F0 48 20 80 B7 1A C1 B7 62 5B 1B 8B 1F 35 A6 69 19 99 BA 78 F5 92 E2 3F 95 E9 96 09 D1 08 CF 1C 0E 30 8A 8B F6 4F BD E8 37 D3 CE 13 8A 50 DC 50 AF 4B 41 EE 53 D9 8A 11 B6 A8 1D DD 44 CC 43 0C 1E F3 BB 9D 1D 75 A0 2F AA 9C 81 4A FC 58	
92	Issuer Public Key Remainder	D3 52 41 07	
94	Application File Locator (AFL)	08 01 01 00 10 01 01 01 18 01 01 00 20 01 02 00	
9F 07	Application Usage Control	FF 00	
9F 08	Application Version Number	00 02	
9F 0D	Issuer Action Code - Default	B4 70 84 00 00	
9F 0E	Issuer Action Code - Denial	00 00 00 00 00	
9F 0F	Issuer Action Code - Online	B4 70 84 80 00	
9F 10	Issuer Application Data [M/Chip]	01 10 A0 40 03 24 00 00 01 02 00 00 00 00 00 00 00 FF	
9F 11	Issuer Code Table Index	01	
9F 12	Application Preferred Name	4D 61 73 74 65 72 43 61 72 64 43 72 65 64 69 74 - 'MasterCardCredit'	
9F 14	Lower Consecutive Offline Limit	00	
9F 17	Personal Identification Number (PIN) Try Counter	03	
9F 23	Upper Consecutive Offline Limit	00	
9F 27	Cryptogram Information Data (CID)	80	
9F 32	Issuer Public Key Exponent	03	
9F 36	Application Transaction Counter (ATC)	xx xx *	

Tag	Element name	Data	v1.0
9F 46	ICC Public Key Certificate	29 CF 85 57 97 D8 D8 12 4A A0 19 B2 C5 C4 E9 E2 E4 06 83 3B EE AC 63 BE 13 01 82 6D F7 8E 11 00 E5 1B 91 EB 0C D7 CE D5 E1 5B BC 01 06 44 10 43 CC 32 8C D4 F1 08 99 D2 C3 FE A1 90 7F 2F C1 1F 7B E3 FF 93 97 2D E9 62 AC A3 B1 77 54 69 82 07 77 F8 6F DA 45 85 A2 38 9B D1 49 5A 2C E9 B2 17 14 EF 3D 20 F2 0E 0E 73 80 AB 3B 58 82 68 82 99	
9F 47	ICC Public Key Exponent	03	
9F 48	ICC Public Key Remainder	6E 70 AC 81 5B 12 D4 C5 6D 56 7A 78 4B EB 9E BD 5E BC 52 E0 4B 1D 45 08 B9 4B 13 27 80 A8 09 72 CC 25 73 27 CD 6F A5 F0 8D B5	
9F 4A	Static Data Authentication Tag List	82	
9F 4B	Signed Dynamic Application Data	48 47 9A 2D 7E D7 51 41 26 E3 56 72 20 7C A4 EC 54 C4 39 E6 AC 15 A6 FD F0 62 FC DD 1A 40 89 C8 C9 B4 7E 51 A1 C1 1E 83 85 56 B1 07 9C A5 33 AC B7 43 48 CF 2D 28 A6 4D E5 2E B8 D4 7B A8 2B 52 8D A0 F8 FA 1B 3C F5 CB 50 4A E6 02 EC 32 AC 56 55 8B 8D 64 1A 8F AB 1A 09 98 F9 DF 3A 83 B6 2E FB 7D 5C 7A 1E EE 5A A3 E6 76 05 CB 1F EE 8B F8	
9F 4D	Transaction Log Entry	0B 0A	
9F 4F	Transaction Log Format	9F 27 01 9F 02 06 5F 2A 02 9A 03 9F 36 02 9F 52 06	
9F 60	Offline Balance [M/Chip4]	8D B4	
9F 61	CVC3track2 [MasterCard]	FB FD	
9F 62	PCVC3track1 [MasterCard]	00 00 00 38 00 00	
9F 63	PUNATCtrack1 [MasterCard]	00 00 00 00 E0 E0	
9F 64	NATCtrack1 [MasterCard]	03	
9F 65	PCVC3track2 [MasterCard]	00 0E	
9F 66	PUNATCtrack2 [MasterCard]	0E 70	
9F 67	NATCtrack2 [MasterCard]	03	
9F 6B	Track 2 Equivalent Data [MasterCard]	54 13 33 00 89 60 41 11 D2 51 22 01 00 00 40 00 00 00 0F	
9F 6C	Application Version [MasterCard]	00 01	
9F 6E	Third Party Data [PayPass M/Chip]	08 40 00 00 30 30 00	
9F 7E	Application Life Cycle Data [MasterCard]	03 10 0C 12 00 09 00 00 FF 00 04 00 00 02 60 00 00 38 4A 02 11 50 35 43 44 30 37 32 20	
C3	Card Issuer Action Code - Decline [MasterCard]	00 00 00	
C4	Card Issuer Action Code - Default [MasterCard]	06 58 00	
C5	Card Issuer Action Code - Online [MasterCard]	06 F8 00	
C6	Counters [MasterCard]	00 26 00 00 00 00 00 00 00 00	

Tag	Element name	Data	v1.0
C7	CDOL1 Related Data Length [MasterCard]	2B	
C8	CRM Country Code [MasterCard]	08 40 - USA	
C9	CRM Currency Code [M/Chip4]	08 40 - USD	
CA	Lower Cumulative Offline Transaction Amount [M/Chip]	00 00 00 00 00 00	
CB	Upper Cumulative Offline Transaction Amount [M/Chip]	00 00 00 00 00 00	
CD	Card Issuer Action Code - Default [PayPass M/Chip]	00 58 00	
CE	Card Issuer Action Code - Online [PayPass M/Chip]	00 F8 00	
CF	Card Issuer Action Code - Denial [PayPass M/Chip]	08 00 00	
D1	Currency Conversion Table [M/Chip]	08 40 00 00 00 00 08 40 00 00 00 08 40 00 00 00 00 08 40 00 00 00 08 40 00 00 00	
D3	Additional Check Table [MasterCard]	00 00 00 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF	
D5	Application Control [M/Chip]	C4 00	
D6	Default ARPC Response Code [M/Chip4]	00 12	
D7	Application Control [PayPass M/Chip]	40 00 40	
DF 02	Security Limits Status [MasterCard]	00	

## Chapter 2 - ASCII Character Conversion Chart

Dec	Bin	Hex	Char	Dec	Bin	Hex	Char	Dec	Bin	Hex	Char
00	00000000	00	<b>NUL</b>	44	00101100	2C	,	88	01011000	58	<b>X</b>
01	00000001	01	<b>SOH</b>	45	00101101	2D	-	89	01011001	59	<b>Y</b>
02	00000010	02	<b>STX</b>	46	00101110	2E	.	90	01011010	5A	<b>Z</b>
03	00000011	03	<b>ETX</b>	47	00101111	2F	/	91	01011011	5B	[
04	00000100	04	<b>EOT</b>	48	00110000	30	<b>0</b>	92	01011100	5C	\
05	00000101	05	<b>ENQ</b>	49	00110001	31	<b>1</b>	93	01011101	5D	]
06	00000110	06	<b>ACK</b>	50	00110010	32	<b>2</b>	94	01011110	5E	^
07	00000111	07	<b>BEL</b>	51	00110011	33	<b>3</b>	95	01011111	5F	_
08	00001000	08	<b>BS</b>	52	00110100	34	<b>4</b>	96	01100000	60	`
09	00001001	09	<b>HT</b>	53	00110101	35	<b>5</b>	97	01100001	61	<b>a</b>
10	00001010	0A	<b>LF</b>	54	00110110	36	<b>6</b>	98	01100010	62	<b>b</b>
11	00001011	0B	<b>VT</b>	55	00110111	37	<b>7</b>	99	01100011	63	<b>c</b>
12	00001100	0C	<b>FF</b>	56	00111000	38	<b>8</b>	100	01100100	64	<b>d</b>
13	00001101	0D	<b>CR</b>	57	00111001	39	<b>9</b>	101	01100101	65	<b>e</b>
14	00001110	0E	<b>SO</b>	58	00111010	3A	:	102	01100110	66	<b>f</b>
15	00001111	0F	<b>SI</b>	59	00111011	3B	;	103	01100111	67	<b>g</b>
16	00010000	10	<b>DLE</b>	60	00111100	3C	<	104	01101000	68	<b>h</b>
17	00010001	11	<b>DC1</b>	61	00111101	3D	=	105	01101001	69	<b>i</b>
18	00010010	12	<b>DC2</b>	62	00111110	3E	>	106	01101010	6A	<b>j</b>
19	00010011	13	<b>DC3</b>	63	00111111	3F	?	107	01101011	6B	<b>k</b>
20	00010100	14	<b>DC4</b>	64	01000000	40	@	108	01101100	6C	<b>l</b>
21	00010101	15	<b>NAK</b>	65	01000001	41	<b>A</b>	109	01101101	6D	<b>m</b>
22	00010110	16	<b>SYM</b>	66	01000010	42	<b>B</b>	110	01101110	6E	<b>n</b>
23	00010111	17	<b>ETB</b>	67	01000011	43	<b>C</b>	111	01101111	6F	<b>o</b>
24	00011000	18	<b>CAN</b>	68	01000100	44	<b>D</b>	112	01110000	70	<b>p</b>
25	00011001	19	<b>EM</b>	69	01000101	45	<b>E</b>	113	01110001	71	<b>q</b>
26	00011010	1A	<b>SUB</b>	70	01000110	46	<b>F</b>	114	01110010	72	<b>r</b>
27	00011011	1B	<b>ESC</b>	71	01000111	47	<b>G</b>	115	01110011	73	<b>s</b>
28	00011100	1C	<b>FS</b>	72	01001000	48	<b>H</b>	116	01110100	74	<b>t</b>
29	00011101	1D	<b>GS</b>	73	01001001	49	<b>I</b>	117	01110101	75	<b>u</b>
30	00011110	1E	<b>RS</b>	74	01001010	4A	<b>J</b>	118	01110110	76	<b>v</b>
31	00011111	1F	<b>US</b>	75	01001011	4B	<b>K</b>	119	01110111	77	<b>w</b>
32	00100000	20	<b>SP</b>	76	01001100	4C	<b>L</b>	120	01111000	78	<b>x</b>
33	00100001	21	<b>!</b>	77	01001101	4D	<b>M</b>	121	01111001	79	<b>y</b>
34	00100010	22	<b>"</b>	78	01001110	4E	<b>N</b>	122	01111010	7A	<b>z</b>
35	00100011	23	<b>#</b>	79	01001111	4F	<b>O</b>	123	01111011	7B	{
36	00100100	24	<b>\$</b>	80	01010000	50	<b>P</b>	124	01111100	7C	
37	00100101	25	<b>%</b>	81	01010001	51	<b>Q</b>	125	01111101	7D	}
38	00100110	26	<b>&amp;</b>	82	01010010	52	<b>R</b>	126	01111110	7E	~
39	00100111	27	<b>'</b>	83	01010011	53	<b>S</b>	127	01111111	7F	<b>DEL</b>
40	00101000	28	<b>(</b>	84	01010100	54	<b>T</b>				
41	00101001	29	<b>)</b>	85	01010101	55	<b>U</b>				
42	00101010	2A	<b>*</b>	86	01010110	56	<b>V</b>				
43	00101011	2B	<b>+</b>	87	01010111	57	<b>W</b>				