



Dual Interface Test Card Set

Version 2.00

November 2020

Powered by



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Revision History

Version	Date	Updated By	Revisions
1.00	27-Oct-2014	B2PS	Document creation (6 Dual Interface (DI) cards descriptions)
1.10	28-Nov-14	B2PS	Document cleanup Added short card description Removed dynamic tags from tag lists`
1.11	30-Jan-15	B2PS	Corrected MasterCard & Visa PANs in Test Card Profiles Corrected Application Expiration Dates for MasterCard. Updated various EMV Tags for Test Card 06 (now v.1.10)
1.12	31-Mar-15	B2PS	Cosmetic changes Corrected Card 06 Contact Version Number
1.20	17-Nov-15	B2PS	All Visa cards converted to new VSDC cardstock. Visa tags updated. CVM list added for all cards.
1.30	26-Aug-16	B2PS	Correct format of CVM Table in Cards 01, 02 Tag 8E provided in CVM table for each card Transaction Values added TOC formatting adjusted for readability with new CVM Title page made consistent with other documents Layout made suitable for duplex printing Added PINBlock warning text
2.00	06-Nov-20	B2PS	All cards – updated cardstock support, where applicable “MasterCard” > ”Mastercard”

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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 *****

Chapter 1 - B2 Dual Interface Test Card Profiles

Cards in the B2 Dual Interface (DI) Test Card Set have EMV Contact, EMV Contactless, MSD Contactless and magnetic stripe interfaces. Cards may be inserted, tapped or swiped.

All cards have the following attributes:

- **Interfaces:** Contact, Contactless, Magstripe
- **Language Preference:** English
- **Service Code:** 201
- **Issuer Country Code:** 840 – USA
- **Currency Code:** 840 – USD

Specific card details are as follows.

	DI Test Card 01	DI Test Card 03	DI Test Card 05
Brand	Visa	Visa	Visa
Card Type	Online Only	Online Preferred	Offline Preferred
AID	A0000000031010	A0000000031010	A0000000031010
PAN	4761 7390 0101 0119	4761 7390 0101 0119	4761 7390 0101 0119
Expiry Date	12/2022	12/2022	12/2022
CVM	See Card Definition	See Card Definition	See Card Definition
Approval Amount	\$10.00	\$10.00	\$10.00
PIN	1234	1234	1234
Card Version	v2.00	v2.00	v2.00

	DI Test Card 02	DI Test Card 04	DI Test Card 06
Brand	Mastercard	Mastercard	Mastercard
Card Type	Online Only	Online Preferred	Offline Preferred
AID	A0000000041010	A0000000041010	A0000000041010
PAN	5413 3300 8960 4111	5413 3300 8960 4111	5413 3300 8960 4111
Expiry Date	12/2025	12/2025	12/2025
CVM	See Card Definition	See Card Definition	See Card Definition
Approval Amount	\$20.00	\$20.00	\$20.00
PIN	4315	4315	4315
Card Version	v2.00	v2.00	v2.00

1.1 DI Test Card 01 - Visa, Online Only, PIN=1234

Visa (Online Only) Dual Interface card.

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

1.1.1 CVM List – AID (A0000000031010)

Cardholder Verification Method List ('0201 4204 1E04 0005 5E00 1F00')			
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 Visa (Online Only) Contact Interface

Tag	Element Name	Data	v2.x
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	xx xx xx	
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 [VSDC]	18 00 BYTE 1: b7 - Offline SDA NOT supported b6 - Offline DDA NOT supported b5 - Cardholder verification supported b4 - Terminal risk mgmt to be performed b3 - Issuer authentication NOT supported via EXTERNAL AUTH command b1 - Combined DDA / GEN AC NOT supported BYTE 2: b8 - Use for Visa NOT supported b7 - Is NOT Mobile handset	
84	Dedicated File (DF) Name	A0 00 00 00 03 10 10	

Tag	Element Name	Data	v2.x
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 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 05 01 B0 01 01 00	
9F 07	Application Usage Control	FF 00	
9F 08	Application Version Number [VIS]	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 0A 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	

Tag	Element Name	Data	v2.x
9F 36	Application Transaction Counter (ATC)	xx xx *	
9F 44	Application Currency Exponent	02	
9F 46	ICC Public Key Certificate	58 62 94 CE DA 66 76 3D 21 2D 63 53 73 E6 BF BC 3B FE E0 91 64 62 47 AD 55 ED 52 F6 22 AF D1 60 5E DF A9 75 6A 46 91 B3 88 A9 A2 86 E0 E9 82 E9 45 7F DE 05 B2 AE 5C 4D C0 AE 95 01 4E 4D 1D 9E 8E 3D 4A EE 95 85 D6 9E 4B F3 B3 89 9B ED BF D1 A1 4D CD 7C 41 D7 91 9D 83 86 C5 A3 3A 5D 79 27 B2 D6 1C 14 FF 95 F5 0E 4E D5 D4 0A 27 6F CB 68 DE 13 35 E5 56 09 66 79 1A C1 A3 C1 B5 3B 0D 83 E5 74 6D CE 43 74 4E 4B C2 71 BD 90 3B 0F 41 F1 82 83 9C 14 0B F6 53 46 4C 6B 3E B5 38 C6 DB 51 7B 33 AC 0E 41 70 51 21 F2 2D F6 50 EA 63 D9 0B	
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	
9F 54	Cumulative Total Transaction Amount Limit [VSDC]	00 00 00 00 00 00	
9F 57	Issuer Country Code [VSDC]	08 40 - USA	
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 72	Consecutive Transaction Limit (International-Country) [VSDC]	00	
BF 55	Contactless Counters Data Template	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 00 DF 21 01 00 DF 31 01 00 DF 51 01 00 DF 61 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	

Tag	Element Name	Data	v2.x
BF 5B	Application Internal Data Template	DF 01 02 00 00	

* Tag value changes with card usage

1.1.3 Visa (Online Only) Contactless Interface

Tag	Element Name	Data	v2.x
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 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 [VSDC]	00 00 BYTE 1: b7 - Offline SDA (online Auth) NOT supported b6 - Offline DDA NOT supported BYTE 2: b8 - MSD NOT supported b7 - Is Mobile handset b6 - Is Contactless transaction	
84	Dedicated File (DF) Name	A0 00 00 00 03 10 10	
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 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 04 07 00	
9F 10	Issuer Application Data [VSDC]	xx xx 0A xx xx xx xx *	
9F 13	Last Online Application Transaction Counter (ATC) Register	xx xx *	

Tag	Element Name	Data	v2.x
9F 17	Personal Identification Number (PIN) Try Counter	03	
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 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 46	ICC Public Key Certificate	87 B3 1E 33 CF EF E3 F6 4B 52 C1 39 3E E9 31 81 51 EF 19 2B 36 2B A7 4D 79 D0 49 75 7C 4F 45 3C EA FF C9 16 16 42 34 F3 82 F2 F4 37 FA 07 21 13 62 DF DB B1 06 47 61 10 CF B8 43 99 D3 D4 BE 1D 0A F3 8F F9 CF 5B 66 ED 98 A1 69 44 CB 06 CD 51 03 90 DC 74 1A 6B 04 26 01 32 16 B9 47 C5 4F D7 77 7B 30 E6 42 6D 54 A2 88 C8 BA A5 5C D6 94 6B 56 84 98 23 E3 7C F7 B7 A4 F9 75 B9 9A 25 4F 12 F4 2C 3C 7C D9 39 86 79 A0 1B 5D 4A 22 BD 19 83 E9 FC 62 1F 70 0D 0A 3F DF 21 28 4A 34 8B 2D E6 F6 B3 49 78 86 B2 6C 9D 06 35 0B A6 90 DF 7D CA	
9F 47	ICC Public Key Exponent	03	
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	
9F 54	Cumulative Total Transaction Amount Limit [VSDC]	00 00 00 00 00 00	
9F 57	Issuer Country Code [VSDC]	08 40 - USA	
9F 58	Consecutive Transaction Counter Limit [VSDC]	00	
9F 59	Consecutive Transaction Counter Upper Limit [VSDC]	00	
9F 5A	Application Program Identifier	31 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 69	Card Authentication Related Data [qVSDC]	01 00 00 00 00 00 00	
9F 6C	Card Transaction Qualifiers [qVSDC VCPS 2.1]	38 00	
9F 6E	Form Factor Indicator [qVSDC]	20 70 00 00	

Tag	Element Name	Data	v2.x
9F 72	Consecutive Transaction Limit (International-Country) [VSDC]	00	
BF 55	Contactless Counters Data Template	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 00 DF 21 01 00 DF 31 01 00 DF 51 01 00 DF 61 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	
BF 5B	Application Internal Data Template	DF 01 02 00 00	

* Tag value changes with card usage

1.2 DI Test Card 02 - Mastercard, Online Only, PIN=4315

Mastercard (Online Only) Dual Interface card.

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

1.2.1 CVM List – AID (A0000000041010)

Cardholder Verification Method List ('4203 1E03 1F03')			
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 Mastercard (Online Only) Contact Interface

	Element Name	Data	v2.x
50	Application Label	4D 61 73 74 65 72 63 61 72 64 (‘Mastercard’)	
57	Track 2 Equivalent Data	54 13 33 00 89 60 41 11 D1 61 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	xx xx xx	
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 BYTE 1: b7 - Offline SDA NOT supported b6 - Offline DDA supported b5 - Cardholder verification supported b4 - Terminal risk mgmt to be performed b3 - Issuer authentication NOT supported via EXTERNAL AUTH command b1 - Combined DDA / GEN AC NOT supported BYTE 2: b8 - EMV Contactless NOT supported
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 9F 21 03 9F 7C 14
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 02 04 01 18 01 01 00 20 01 01 00
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 Advance]	xx 10 xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx *

9F 11	Issuer Code Table Index	01
9F 12	Application Preferred Name	4D 61 73 74 65 72 63 61 72 64 43 72 65 54 69 74 (‘MastercardCredit’)
9F 14	Counter 1 Lower Limit [Mastercard]	00
9F 17	Personal Identification Number (PIN) Try Counter	03
9F 1F	Track 1 Discretionary Data	20 20
9F 23	Counter 1 Upper Limit [Mastercard]	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	0A EC CC 54 3B ED 02 4E AD 5C DC A4 CA 94 42 0A 99 9B E9 7E 64 E1 1D 38 32 60 DE 0D A6 B4 EA 28 9A C2 ED F8 EA 9A D4 8A 94 FD 27 A9 3C 9F 4D D0 98 15 F2 34 EE D1 1E 14 87 E5 D2 E9 CB 53 AA E3 63 0F EE 22 8F E5 7A 28 14 89 F1 11 C9 B5 E3 41 20 4A 44 CD 13 3E CF 59 86 95 D0 6A B1 03 96 0F 8D 18 12 9A EA CF E9 59 D0 8D D1 2B 3A B4 4C 38
9F 47	ICC Public Key Exponent	03
9F 48	ICC Public Key Remainder	C4 1E 92 6B 55 2A 58 24 78 BC B6 EA EC 03 93 32 A3 B7 69 8F C1 5F B3 73 0D 93 74 B7 22 B7 4E 43 83 B2 D1 81 E2 CA 66 B0 F8 1B
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	B0 8D E2 4D 7B BE 6A AA AC 4E 20 B7 2B CF B8 B2 13 9F 10 22 1A D9 42 35 90 74 F5 89 DE 79 38 5E 8F 97 40 17 16 E2 4C EA 24 A2 06 1D 1B 28 2E A4 3E 4B 42 E3 F4 A3 87 3A 33 69 8A D8 89 6D 82 13 B6 C4 F1 2B F5 6E 0B AE 88 6C 9C 10 49 B1 9E 2F 36 A9 A1 38 67 89 DE 2C DE 61 BC 00 4D 4B 4D 04 CF BA 44 BA C0 28 99 FE 1E 09 E9 E9 A4 35 50 3E
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 DF 3E 01 9F 21 03 9F 7C 14
9F 5D	Application Capabilities Information [M/Chip Advance]	01 00 00
9F 6E	Third Party Data [Mastercard]	08 40 00 00 30 30 00
9F 70	Protected Data Envelope 1 [M/Chip Advance]	20 20
9F 71	Protected Data Envelope 2 [M/Chip Advance]	20 20
9F 72	Protected Data Envelope 3 [M/Chip Advance]	20 20
9F 73	Protected Data Envelope 4 [M/Chip Advance]	20 20
9F 74	Protected Data Envelope 5 [M/Chip Advance]	20 20
9F 75	Unprotected Data Envelope 1 [M/Chip Advance]	20 20
9F 76	Unprotected Data Envelope 2 [M/Chip Advance]	20 20
9F 77	Unprotected Data Envelope 3 [M/Chip Advance]	20 20
9F 78	Unprotected Data Envelope 4 [M/Chip Advance]	20 20
9F 79	Unprotected Data Envelope 5 [M/Chip Advance]	20 20
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 (Contact) - Decline [M/Chip Advance]	00 00 00

C4	Card Issuer Action Code (Contact) - Default [M/Chip Advance]	06 58 00
C5	Card Issuer Action Code (Contact) - Online [M/Chip Advance]	06 F8 00
C6	PIN Try Limit [M/Chip Advance]	03
C7	CDOL1 Related Data Length [Mastercard]	42
C8	CRM Country Code [Mastercard]	08 40 - USA
C9	Accumulator 1 Currency Code [Mastercard]	08 40 - USD
CA	Accumulator 1 Lower Limit [Mastercard]	00 00 00 00 00 00
CB	Accumulator 1 Upper Limit [Mastercard]	00 00 00 00 00 00
CD	Card Issuer Action Code (Contactless) - Default [M/Chip Advance]	00 58 00
CE	Card Issuer Action Code (Contactless) - Online [M/Chip Advance]	00 F8 00
CF	Card Issuer Action Code (Contactless) - Decline [M/Chip Advance]	08 00 00
D1	Accumulator 1 Currency Conversion Table [Mastercard]	08 40 00 01 00 08 40 00 01 00 08 40 00 01 00 08 40 00 01 00 08 40 00 01 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 Advance]	8C 00 80 00 86 02
D6	Default ARPC Response Code [M/Chip Advance]	00 12
D7	Application Control [M/Chip Advance]	40 01 40 00 86 02
D9	Application File Locator (Contactless)	08 01 01 00 10 01 01 01 18 01 01 00 20 01 02 00
DE	Log Data Table [M/Chip Advance]	00 00 00 00 00 00 00 00 00
DF 02	Security Limits Status (Contact) [M/Chip Advance]	00
DF 11	Accumulator 1 Control (Contact) [M/Chip Advance]	c1
DF 12	Accumulator 1 Control (Contactless) [M/Chip Advance]	c1
DF 14	Accumulator 2 Control (Contact) [M/Chip Advance]	00
DF 15	Accumulator 2 Control (Contactless) [M/Chip Advance]	00
DF 16	Accumulator 2 Currency Code [Mastercard]	09 99
DF 17	Accumulator 2 Currency Conversion Table [Mastercard]	09 99 00 01 00 09 99 00 01 00 09 99 00 01 00 09 99 00 01 00 09 99 00 01 00
DF 18	Accumulator 2 Lower Limit [Mastercard]	00 00 00 00 00 00

DF 19	Accumulator 2 Upper Limit [Mastercard]	00 00 00 00 00 00
DF 1A	Counter 1 Control (Contact) [M/Chip Advance]	c1
DF 1B	Counter 1 Control (Contactless) [M/Chip Advance]	c1
DF 1D	Counter 2 Control (Contact) [M/Chip Advance]	00
DF 1E	Counter 2 Control (Contactless) [M/Chip Advance]	00
DF 1F	Counter 2 Lower Limit [Mastercard]	00
DF 21	Counter 2 Upper Limit [Mastercard]	00
DF 22	MTA CVM (Contact) [M/Chip Advance]	00 00 00 00 00 00
DF 23	MTA CVM (Contactless) [M/Chip Advance]	00 00 00 00 00 00
DF 24	MTA Currency Code [M/Chip Advance]	09 99
DF 25	MTA NoCVM (Contact) [M/Chip Advance]	00 00 00 00 00 00
DF 26	MTA NoCVM (Contactless) [M/Chip Advance]	00 00 00 00 00 00
DF 27	Number Of Days Offline Limit [M/Chip Advance]	00 00
DF 28	Accumulator 1 CVR Dependency Data (Contact) [M/Chip Advance]	00 00 00
DF 29	Accumulator 1 CVR Dependency Data (Contactless) [M/Chip Advance]	00 00 00
DF 2A	Accumulator 2 CVR Dependency Data (Contact) [M/Chip Advance]	00 00 00
DF 2B	Accumulator 2 CVR Dependency Data (Contactless) [M/Chip Advance]	00 00 00
DF 2C	Counter 1 CVR Dependency Data (Contact) [M/Chip Advance]	00 00 00
DF 2D	Counter 1 CVR Dependency Data (Contactless) [M/Chip Advance]	00 00 00
DF 2E	Counter 2 CVR Dependency Data (Contact) [M/Chip Advance]	00 00 00
DF 2F	Counter 2 CVR Dependency Data (Contactless) [M/Chip Advance]	00 00 00
DF 30	Interface Enabling Switch [M/Chip Advance]	03
DF 35	Security Limits Status (Contactless) [M/Chip Advance]	00
DF 37	Security Limits Status Common [M/Chip Advance]	00
DF 3C	CVR Issuer Discretionary Data (Contact) [M/Chip Advance]	00

DF 3D	CVR Issuer Discretionary Data (Contactless) [M/Chip Advance]	00
DF 3F	Read Record Filter (Contact) [M/Chip Advance]	00 00 00 00
DF 40	Read Record Filter (Contactless) [M/Chip Advance]	08 03 03 00
DF 41	DS Management Control [M/Chip Advance]	20

* Tag value changes with card usage

1.2.3 CVM List – AID (A0000000041010) Contactless

Cardholder Verification Method List ('4203 1E03 1F03')			
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

1.2.4 Mastercard (Online Only) Contactless Interface

Tag	Element Name	Data	v2.x
50	Application Label	4D 61 73 74 65 72 63 61 72 64 (‘Mastercard’)	
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 20 20 20 20 20 30 30 30 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	
5F 25	Application Effective Date	xx xx xx	
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 BYTE 1: b7 - Offline SDA NOT supported b6 - Offline DDA NOT supported b5 - Cardholder verification supported b4 - Terminal risk mgmt to be performed b3 - Issuer authentication NOT supported via EXTERNAL AUTH command b1 - Combined DDA / GEN AC supported BYTE 2: b8 - EMV Contactless supported	
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 9F 21 03 9F 7C 14
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 Advance]	xx 11 xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx *
9F 11	Issuer Code Table Index	01
9F 12	Application Preferred Name	4D 61 73 74 65 72 63 61 72 64 43 72 65 64 69 74 (‘MastercardCredit’)
9F 14	Counter 1 Lower Limit [Mastercard]	00
9F 17	Personal Identification Number (PIN) Try Counter	03
9F 23	Counter 1 Upper Limit [Mastercard]	00
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	78 86 E5 A6 83 C2 28 C2 8A 48 2B 4D C7 9D B1 C1 47 E0 90 DD DB A0 71 06 D7 49 88 65 89 FB BD 08 62 89 80 93 61 63 4F 5F 26 8E B4 87 4F A6 2E 91 7A 73 FE A5 0E D5 48 FA 10 4B 48 EE C0 82 50 E2 88 C0 E5 6B 47 4C 66 93 B5 93 B6 EE 61 72 C0 DD 68 93 86 E9 00 A4 43 9B 77 6F CF D8 86 C1 D3 3F C3 2E 14 BE C3 42 AE 43 39 FE 75 17 FD 68 B0 8C
9F 47	ICC Public Key Exponent	03
9F 48	ICC Public Key Remainder	C4 1E 92 6B 55 2A 58 24 78 BC B6 EA EC 03 93 32 A3 B7 69 8F C1 5F B3 73 0D 93 74 B7 22 B7 4E 43 83 B2 D1 81 E2 CA 66 B0 F8 1B
9F 4A	Static Data Authentication Tag List	82
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 DF 3E 01 9F 21 03 9F 7C 14
9F 5D	Application Capabilities Information [M/Chip Advance]	01 00 00
9F 60	CVC3track1 [Mastercard]	83 8B
9F 61	CVC3track2 [Mastercard]	C8 24
9F 62	Track 1 Bitmap for CVC3 (PCVC3 Track 1) [Mastercard]	00 00 00 38 00 00
9F 63	Track 1 Bitmap for UN and ATC (PUNATC Track 1) [Mastercard]	00 00 00 00 E0 E0
9F 64	Track 1 Number of ATC Digits (NATC Track 1) [Mastercard]	03
9F 65	Track 2 Bitmap for CVC3 (PCVC3 Track 2) [Mastercard]	00 0E
9F 66	Track 2 Bitmap for UN and ATC (PUNATC Track 2) [Mastercard]	0E 70
9F 67	Track 2 Number of ATC Digits (NATC Track 2) [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 [Mastercard]	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 (Contact) - Decline [M/Chip Advance]	00 00 00
C4	Card Issuer Action Code (Contact) - Default [M/Chip Advance]	06 58 00
C5	Card Issuer Action Code (Contact) - Online [M/Chip Advance]	06 F8 00
C6	PIN Try Limit [M/Chip Advance]	03
C7	CDOL1 Related Data Length [Mastercard]	42
C8	CRM Country Code [Mastercard]	08 40 - USA
C9	Accumulator 1 Currency Code [Mastercard]	08 40 - USD
CA	Accumulator 1 Lower Limit [Mastercard]	00 00 00 00 00 00
CB	Accumulator 1 Upper Limit [Mastercard]	00 00 00 00 00 00
CD	Card Issuer Action Code (Contactless) - Default [M/Chip Advance]	00 58 00
CE	Card Issuer Action Code (Contactless) - Online [M/Chip Advance]	00 F8 00
CF	Card Issuer Action Code (Contactless) - Decline [M/Chip Advance]	08 00 00
D1	Accumulator 1 Currency Conversion Table [Mastercard]	08 40 00 01 00 08 40 00 01 00 08 40 00 01 00 08 40 00 01 00 08 40 00 01 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 Advance]	8C 00 80 00 86 02
D6	Default ARPC Response Code [M/Chip Advance]	00 12
D7	Application Control [M/Chip Advance]	40 01 40 00 86 02
DF 02	Security Limits Status (Contact) [M/Chip Advance]	00

* Tag value changes with card usage

1.3 DI Test Card 03 - Visa, Online Preferred, PIN=1234

Visa (Online Preferred) Dual Interface card.

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

1.3.1 CVM List – AID (A0000000031010)

Cardholder Verification Method List ('4201 4403 4103 4203 1E03 1F03')			
CVM	Verification Method	Conditions	If unsuccessful
1	Online PIN	Unattended cash	Next CVM
2	Offline PIN	Terminal supports CVM type	Next CVM
3	Offline Plaintext PIN	Terminal supports CVM type	Next CVM
4	Online PIN	Terminal supports CVM type	Next CVM
5	Signature (paper)	Terminal supports CVM type	Fail
6	No CVM required	Terminal supports CVM type	Fail

1.3.2 Visa (Online Preferred) Contact Interface

Tag	Element Name	Data	v2.x
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 33 20 20 20 20 20 20 20 20 20 20 20 (‘DI Test/Card 03’)	
5F 24	Application Expiration Date	22 12 31	
5F 25	Application Effective Date	xx xx xx	
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 [VSDC]	38 00 BYTE 1: b7 - Offline SDA NOT supported b6 - Offline DDA supported b5 - Cardholder verification supported b4 - Terminal risk mgmt to be performed b3 - Issuer authentication NOT supported via EXTERNAL AUTH command b1 - Combined DDA / GEN AC NOT supported BYTE 2: b8 - Use for Visa NOT supported b7 - Is NOT Mobile handset	

Tag	Element Name	Data	v2.x
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 42 01 44 03 41 03 42 03 1E 03 1F 03	
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 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 05 01 B0 01 01 00	
9F 07	Application Usage Control	FF 00	
9F 08	Application Version Number [VIS]	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 BC 98 00	
9F 10	Issuer Application Data [VSDC]	xx xx 0A 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	

Tag	Element Name	Data	v2.x
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	6B 39 DB 4E 13 DA 13 C5 1B 5D F6 0F 15 D0 B2 F0 6A 1F 06 87 5E C2 3F 45 A8 2A 1E B7 4E A7 D0 97 D1 70 97 3B 4D 03 B3 D9 39 3F FF C2 BF 60 0A D1 DA 9C 8B 86 AC 22 BE 21 FC B8 02 A8 22 2C 70 D0 BB 6E BE 38 4C D0 FF 4E 5F 7E EC 93 BE 5E F1 10 D4 58 61 51 0D B5 56 58 02 FE 8F 59 EF AD 02 69 D6 F2 02 31 71 CC 37 97 C1 84 70 29 F4 93 0E 89 3D DD D3 C7 8C FB 91 B0 D4 63 AC 1E CD 9A 2A 92 9B 44 D1 BD 33 3C 09 99 C1 4B 55 12 15 79 43 45 48 DB E8 43 87 6A 50 50 19 FD A2 DD 68 A2 4B A2 84 07 55 4F 30 D5 E4 2A 4F 68 D0 F7 8C 22 BE 15	
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 4B	Signed Dynamic Application Data	0F 6B A5 B0 61 A3 3E C3 B6 B3 9D 43 1F 09 B5 3C BA 61 15 70 14 F8 EF 58 63 9F 63 E6 7B 61 99 9C 9C 9D 31 8D AE 2B E8 3A F2 36 46 D6 DB FA DE D3 1B 93 70 6C 15 F6 9C 23 47 B9 08 25 33 84 C6 DF A0 C6 B7 05 99 13 53 7D 23 BD 4F C3 0F E2 78 67 FB 9B 43 00 25 B1 7D 4F 49 F9 38 9A 1C F5 DA A5 73 D2 29 3B 65 DB 81 64 D1 53 59 E1 E1 AE 13 42 67 F6 DC D6 DE 26 7C 10 26 A6 0F B3 21 4C 5A 2C	
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	
9F 54	Cumulative Total Transaction Amount Limit [VSDC]	00 00 00 00 00 00	
9F 57	Issuer Country Code [VSDC]	08 40 - USA	
9F 58	Consecutive Transaction Counter Limit [VSDC]	00	
9F 59	Consecutive Transaction Counter Upper Limit [VSDC]	0A	
9F 5C	Cumulative Total Transaction Amount Upper Limit [VSDC]	00 00 00 05 00 00	
9F 5E	Consecutive Transaction International Upper Limit [VSDC]	0A	

Tag	Element Name	Data	v2.x
9F 68	Card Additional Processes [qVSDC VCPS 2.1]	10 00 D0 00	
9F 72	Consecutive Transaction Limit (International-Country) [VSDC]	00	
BF 55	Contactless Counters Data Template	DF 11 01 00 DF 21 01 00 DF 31 01 0A	
BF 56	Counters Data Template	DF 11 01 02 DF 21 01 00 DF 31 01 0A	
BF 57	International Counters Data Template	DF 11 01 00 DF 21 01 00 DF 31 01 0A DF 51 01 00 DF 61 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 05 00 00	
BF 5B	Application Internal Data Template	DF 01 02 00 00	

* Tag value changes with card usage

1.3.3 Visa (Online Preferred) Contactless Interface

Tag	Element Name	Data	v1.20
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 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 [VSDC]	20 00 BYTE 1: b7 - Offline SDA (online Auth) NOT supported b6 - Offline DDA supported BYTE 2: b8 - MSD NOT supported b7 - Is Mobile handset b6 - Is Contactless transaction	
84	Dedicated File (DF) Name	A0 00 00 00 03 10 10	
8F	Certification Authority Public Key Index	92	

Tag	Element Name	Data	v1.20
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 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 04 07 00	
9F 10	Issuer Application Data [VSDC]	xx xx 0A xx xx xx xx *	
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)	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 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 46	ICC Public Key Certificate	6F 84 6D FD BD 87 69 3D A9 97 5E 18 EB 94 0B 16 E9 68 05 3D 23 FA DA 15 2D A0 92 A4 02 C7 03 10 39 B7 A3 08 DF C3 C6 31 37 E9 BC A3 93 6F 0C AD D5 C3 A4 DB 5C 43 61 9F 0C 31 05 91 78 D0 EE 35 BD C5 BC 6B 47 0E CB 42 28 27 B4 BD DD 84 AF C4 24 81 33 F3 E6 D9 8F 9C 42 5F 12 F0 DC 85 C7 D1 0D E4 F4 2F 2A CE BC 6C D2 82 49 5A EF C0 43 43 7E 6E 23 D0 A2 C3 26 B0 16 94 E9 0A FB A9 5B 5A 96 F3 C2 CA 14 03 7A 43 EE 0B 06 95 29 71 E0 D9 14 B8 FD 56 34 CE 4E B1 FC D0 7C 2F 93 53 22 FC B6 48 EF 3E B2 F8 31 0F 89 10 E4 A2 7D 6C 23 3C	
9F 47	ICC Public Key Exponent	03	

Tag	Element Name	Data	v1.20
9F 4B	Signed Dynamic Application Data	5C 2E 25 A2 F1 C8 FF FC 33 7E EB E2 0F 4F BC CC 58 6F 0E FC 1B 4D 91 6E 7B A9 03 55 94 1F 3F 12 C0 15 B5 42 B3 B8 2A 2E C8 2E D2 A9 87 BE DF 63 71 52 28 AF F0 05 69 6B CC E1 C2 CB C8 85 8B 2B 2E 38 52 48 4E F5 20 18 22 C8 FB 29 DB D6 8C A2 2D EF CC DC 93 D3 EB 49 AF 26 84 DD AE F3 8D 18 2C BA C6 05 3F 91 D2 73 C2 1C FA A0 88 C4 DA BF 5A 8F DC DE 76 16 1C 14 C6 29 AC 2B ED F1 6C 22	
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	
9F 54	Cumulative Total Transaction Amount Limit [VSDC]	00 00 00 00 00 00	
9F 57	Issuer Country Code [VSDC]	08 40 - USA	
9F 58	Consecutive Transaction Counter Limit [VSDC]	00	
9F 59	Consecutive Transaction Counter Upper Limit [VSDC]	0A	
9F 5A	Application Program Identifier	31 08 40 08 40	
9F 5C	Cumulative Total Transaction Amount Upper Limit [VSDC]	00 00 00 05 00 00	
9F 5E	Consecutive Transaction International Upper Limit [VSDC]	0A	
9F 68	Card Additional Processes [qVSDC VCPS 2.1]	10 00 D0 00	
9F 69	Card Authentication Related Data [qVSDC]	01 AD 02 43 AF 38 00	
9F 6C	Card Transaction Qualifiers [qVSDC VCPS 2.1]	38 00	
9F 6E	Form Factor Indicator [qVSDC]	20 70 00 00	
9F 72	Consecutive Transaction Limit (International-Country) [VSDC]	00	
BF 55	Contactless Counters Data Template	DF 11 01 00 DF 21 01 00 DF 31 01 0A	
BF 56	Counters Data Template	DF 11 01 01 DF 21 01 00 DF 31 01 0A	
BF 57	International Counters Data Template	DF 11 01 00 DF 21 01 00 DF 31 01 0A DF 51 01 00 DF 61 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 05 00 00	
BF 5B	Application Internal Data Template	DF 01 02 00 00	

* Tag value changes with card usage

1.4 DI Test Card 04 - Mastercard, Online Preferred, PIN=4315

Mastercard (Online Preferred) Dual Interface card.

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

1.4.1 CVM List – AID (A0000000041010)

Cardholder Verification Method List ('4201 4403 4103 4203 1E03 1F03')			
CVM	Verification Method	Conditions	If unsuccessful
1	Online PIN	Unattended cash	Next CVM
2	Offline PIN	Terminal supports CVM type	Next CVM
3	Offline Plaintext PIN	Terminal supports CVM type	Next CVM
4	Online PIN	Terminal supports CVM type	Next CVM
5	Signature (paper)	Terminal supports CVM type	Fail
6	No CVM required	Terminal supports CVM type	Fail

1.4.2 Mastercard (Online Preferred) Contact Interface

Tag	Element Name	Data	v2.x
50	Application Label	4D 61 73 74 65 72 63 61 72 64 (‘Mastercard’)	
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 34 20 20 20 20 20 20 20 20 20 20 20 (‘DI Test/Card 04’)	
5F 24	Application Expiration Date	25 12 31	
5F 25	Application Effective Date	xx xx xx	
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 BYTE 1: b7 - Offline SDA NOT supported b6 - Offline DDA supported b5 - Cardholder verification supported b4 - Terminal risk mgmt to be performed b3 - Issuer authentication NOT supported via EXTERNAL AUTH command b1 - Combined DDA / GEN AC NOT supported BYTE 2: b8 - EMV Contactless NOT supported	
84	Dedicated File (DF) Name	A0 00 00 00 04 10 10	
87	Application Priority Indicator	01	

Tag	Element Name	Data	v2.x
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 9F 21 03 9F 7C 14	
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 01 44 03 41 03 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 02 04 01 18 01 01 00 20 01 01 00	
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 BC 80 00	
9F 0E	Issuer Action Code - Denial	00 00 00 00 00	
9F 0F	Issuer Action Code - Online	B8 70 BC 98 00	
9F 10	Issuer Application Data [M/Chip Advance]	xx 10 xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx *	
9F 11	Issuer Code Table Index	01	
9F 12	Application Preferred Name	4D 61 73 74 65 72 63 61 72 64 43 72 65 64 69 74 (‘MastercardCredit’)	
9F 14	Counter 1 Lower Limit [Mastercard]	00	
9F 17	Personal Identification Number (PIN) Try Counter	03	
9F 1F	Track 1 Discretionary Data	20 20	
9F 23	Counter 1 Upper Limit [Mastercard]	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 *	

Tag	Element Name	Data	v2.x
9F 42	Application Currency Code	08 40 - USD	
9F 44	Application Currency Exponent	02	
9F 46	ICC Public Key Certificate	81 05 D2 F6 62 AA 88 31 A9 9E 90 1F CE 82 F0 EF D4 5F E7 34 EA 0E E8 6C 6D 06 40 DE 11 BC AC 27 3F F1 DF 6D 10 35 B6 01 6C AB 8A 5A CE 1F 9A 45 F3 18 21 59 7D 51 C3 49 A2 C0 91 4F 30 78 C0 9E 6A AD 8F C0 90 FB 63 37 20 00 CB 0E 97 56 62 5B A9 C6 C4 0C B2 FB C9 F6 AA A9 A6 3E DC A0 92 8F 7D 39 73 2D 75 52 6A 20 D3 43 F0 86 07 1E 07 BF	
9F 47	ICC Public Key Exponent	03	
9F 48	ICC Public Key Remainder	06 E8 A7 9A 9D D2 E8 08 88 CB 20 BD 1E 2D 0E 2E 5D 5E B2 49 47 39 34 F4 A2 E9 77 4B C1 A9 4C 69 15 5A 4F 36 67 AB B8 53 DC 6F	
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	27 E8 69 AE 7C 0E 32 C0 85 FB C4 BE 3E 3C C6 96 46 BF A7 15 EC 55 6E 6D 82 DA 53 D8 D8 D8 B3 0B D0 F1 02 8F 14 77 31 89 1E E5 8A 80 C0 2D CB D0 AC F2 F1 0B 98 AD E5 C0 64 74 AB 9F 59 6B 15 36 D6 E8 91 7F C7 E5 CE 1B D6 93 9C C2 84 FA 93 8A A4 9F B0 92 DE 0E E8 FC 25 21 D9 02 9F 62 E9 68 A5 0A 4C FA E4 6A 43 E6 B1 8B 6F 83 12 98 27 16	
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 DF 3E 01 9F 21 03 9F 7C 14	
9F 5D	Application Capabilities Information [M/Chip Advance]	01 00 00	
9F 6E	Third Party Data [Mastercard]	08 40 00 00 30 30 00	
9F 70	Protected Data Envelope 1 [M/Chip Advance]	20 20	
9F 71	Protected Data Envelope 2 [M/Chip Advance]	20 20	

Tag	Element Name	Data	v2.x
9F 72	Protected Data Envelope 3 [M/Chip Advance]	20 20	
9F 73	Protected Data Envelope 4 [M/Chip Advance]	20 20	
9F 74	Protected Data Envelope 5 [M/Chip Advance]	20 20	
9F 75	Unprotected Data Envelope 1 [M/Chip Advance]	20 20	
9F 76	Unprotected Data Envelope 2 [M/Chip Advance]	20 20	
9F 77	Unprotected Data Envelope 3 [M/Chip Advance]	20 20	
9F 78	Unprotected Data Envelope 4 [M/Chip Advance]	20 20	
9F 79	Unprotected Data Envelope 5 [M/Chip Advance]	20 20	
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 (Contact) - Decline [M/Chip Advance]	00 00 00	
C4	Card Issuer Action Code (Contact) - Default [M/Chip Advance]	19 50 00	
C5	Card Issuer Action Code (Contact) - Online [M/Chip Advance]	39 FB 00	
C6	PIN Try Limit [M/Chip Advance]	03	
C7	CDOL1 Related Data Length [Mastercard]	42	
C8	CRM Country Code [Mastercard]	08 40 - USA	
C9	Accumulator 1 Currency Code [Mastercard]	08 40 - USD	
CA	Accumulator 1 Lower Limit [Mastercard]	00 00 00 00 00 00	
CB	Accumulator 1 Upper Limit [Mastercard]	00 00 00 05 00 00	
CD	Card Issuer Action Code (Contactless) - Default [M/Chip Advance]	00 58 00	
CE	Card Issuer Action Code (Contactless) - Online [M/Chip Advance]	00 F8 00	

Tag	Element Name	Data	v2.x
CF	Card Issuer Action Code (Contactless) - Decline [M/Chip Advance]	00 00 00	
D1	Accumulator 1 Currency Conversion Table [Mastercard]	08 40 00 01 00 08 40 00 01 00 08 40 00 01 00 08 40 00 01 00 08 40 00 01 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 Advance]	8C 00 80 00 86 02	
D6	Default ARPC Response Code [M/Chip Advance]	00 12	
D7	Application Control [M/Chip Advance]	40 01 40 00 86 02	
D9	Application File Locator (Contactless)	08 01 01 00 10 01 01 01 18 01 01 00 20 01 02 00	
DE	Log Data Table [M/Chip Advance]	00 00 00 00 00 00 00 00 00	
DF 02	Security Limits Status (Contact) [M/Chip Advance]	00	
DF 11	Accumulator 1 Control (Contact) [M/Chip Advance]	c1	
DF 12	Accumulator 1 Control (Contactless) [M/Chip Advance]	c1	
DF 14	Accumulator 2 Control (Contact) [M/Chip Advance]	00	
DF 15	Accumulator 2 Control (Contactless) [M/Chip Advance]	00	
DF 16	Accumulator 2 Currency Code [Mastercard]	09 99	
DF 17	Accumulator 2 Currency Conversion Table [Mastercard]	09 99 00 01 00 09 99 00 01 00 09 99 00 01 00 09 99 00 01 00 09 99 00 01 00	
DF 18	Accumulator 2 Lower Limit [Mastercard]	00 00 00 00 00 00	
DF 19	Accumulator 2 Upper Limit [Mastercard]	00 00 00 00 00 00	
DF 1A	Counter 1 Control (Contact) [M/Chip Advance]	c1	
DF 1B	Counter 1 Control (Contactless) [M/Chip Advance]	c1	
DF 1D	Counter 2 Control (Contact) [M/Chip Advance]	00	
DF 1E	Counter 2 Control (Contactless) [M/Chip Advance]	00	
DF 1F	Counter 2 Lower Limit [Mastercard]	00	
DF 21	Counter 2 Upper Limit [Mastercard]	00	
DF 22	MTA CVM (Contact) [M/Chip Advance]	00 00 00 00 00 00	
DF 23	MTA CVM (Contactless) [M/Chip Advance]	00 00 00 00 00 00	
DF 24	MTA Currency Code [M/Chip Advance]	09 99	
DF 25	MTA NoCVM (Contact) [M/Chip Advance]	00 00 00 00 00 00	
DF 26	MTA NoCVM (Contactless) [M/Chip Advance]	00 00 00 00 00 00	

Tag	Element Name	Data	v2.x
DF 27	Number Of Days Offline Limit [M/Chip Advance]	00 00	
DF 28	Accumulator 1 CVR Dependency Data (Contact) [M/Chip Advance]	00 00 00	
DF 29	Accumulator 1 CVR Dependency Data (Contactless) [M/Chip Advance]	00 00 00	
DF 2A	Accumulator 2 CVR Dependency Data (Contact) [M/Chip Advance]	00 00 00	
DF 2B	Accumulator 2 CVR Dependency Data (Contactless) [M/Chip Advance]	00 00 00	
DF 2C	Counter 1 CVR Dependency Data (Contact) [M/Chip Advance]	00 00 00	
DF 2D	Counter 1 CVR Dependency Data (Contactless) [M/Chip Advance]	00 00 00	
DF 2E	Counter 2 CVR Dependency Data (Contact) [M/Chip Advance]	00 00 00	
DF 2F	Counter 2 CVR Dependency Data (Contactless) [M/Chip Advance]	00 00 00	
DF 30	Interface Enabling Switch [M/Chip Advance]	03	
DF 35	Security Limits Status (Contactless) [M/Chip Advance]	00	
DF 37	Security Limits Status Common [M/Chip Advance]	00	
DF 3C	CVR Issuer Discretionary Data (Contact) [M/Chip Advance]	00	
DF 3D	CVR Issuer Discretionary Data (Contactless) [M/Chip Advance]	00	
DF 3F	Read Record Filter (Contact) [M/Chip Advance]	00 00 00 00	
DF 40	Read Record Filter (Contactless) [M/Chip Advance]	08 03 03 00	
DF 41	DS Management Control [M/Chip Advance]	20	

* Tag value changes with card usage

1.4.3 CVM List – AID (A0000000041010) Contactless

Cardholder Verification Method List ('4203 1E03 1F03')			
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

1.4.4 Mastercard (Online Preferred) Contactless Interface

Tag	Element Name	Data	v2.x	
50	Application Label	4D 61 73 74 65 72 63 61 72 64 (‘Mastercard’)		
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		
5F 25	Application Effective Date	xx xx xx		
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 BYTE 1: b7 - Offline SDA NOT supported b6 - Offline DDA NOT supported b5 - Cardholder verification supported b4 - Terminal risk mgmt to be performed b3 - Issuer authentication NOT supported via EXTERNAL AUTH command b1 - Combined DDA / GEN AC supported BYTE 2: b8 - EMV Contactless supported		
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 9F 21 03 9F 7C 14		
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 1E 03 42 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 50 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 Advance]	xx 11 xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx *
9F 11	Issuer Code Table Index	01
9F 12	Application Preferred Name	4D 61 73 74 65 72 63 61 72 64 43 72 65 64 69 74 (‘MastercardCredit’)
9F 14	Counter 1 Lower Limit [Mastercard]	00
9F 17	Personal Identification Number (PIN) Try Counter	03
9F 23	Counter 1 Upper Limit [Mastercard]	00
9F 27	Cryptogram Information Data (CID)	80
9F 32	Issuer Public Key Exponent	03
9F 36	Application Transaction Counter (ATC)	00 04
9F 36	Application Transaction Counter (ATC)	00 05
9F 42	Application Currency Code	08 40 - USD
9F 44	Application Currency Exponent	02
9F 46	ICC Public Key Certificate	97 63 8E 96 AD 10 CA EC F6 63 AE AF 1C 55 27 69 12 28 DB 8E 47 71 F6 FE 84 F7 A2 B1 CF E8 DB DD A2 C9 67 5C F2 FB 53 94 38 98 5E 71 40 05 53 C8 7A EF C5 D2 E4 FE D7 E1 12 A7 7A A0 A0 DE DA ED 31 9C 5E 80 CB D1 CE 51 CD F5 70 CE FF CA 45 A1 DC BC 7C 03 AE 96 C9 8E 43 87 CD 6E 03 21 BB 44 AD 70 2A 49 96 99 BC FE 1A C6 C3 76 5E 8A C8 8A
9F 47	ICC Public Key Exponent	03

9F 48	ICC Public Key Remainder	06 E8 A7 9A 9D D2 E8 08 88 CB 20 BD 1E 2D 0E 2E 5D 5E B2 49 47 39 34 F4 A2 E9 77 4B C1 A9 4C 69 15 5A 4F 36 67 AB B8 53 DC 6F
9F 4A	Static Data Authentication Tag List	82
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 DF 3E 01 9F 21 03 9F 7C 14
9F 5D	Application Capabilities Information [M/Chip Advance]	01 00 00
9F 60	CVC3track1 [Mastercard]	83 8B
9F 61	CVC3track2 [Mastercard]	C8 24
9F 62	Track 1 Bitmap for CVC3 (PCVC3 Track 1) [Mastercard]	00 00 00 38 00 00
9F 63	Track 1 Bitmap for UN and ATC (PUNATC Track 1) [Mastercard]	00 00 00 00 E0 E0
9F 64	Track 1 Number of ATC Digits (NATC Track 1) [Mastercard]	03
9F 65	Track 2 Bitmap for CVC3 (PCVC3 Track 2) [Mastercard]	00 0E
9F 66	Track 2 Bitmap for UN and ATC (PUNATC Track 2) [Mastercard]	0E 70
9F 67	Track 2 Number of ATC Digits (NATC Track 2) [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 [Mastercard]	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 (Contact) - Decline [M/Chip Advance]	00 00 00
C4	Card Issuer Action Code (Contact) - Default [M/Chip Advance]	19 50 00
C5	Card Issuer Action Code (Contact) - Online [M/Chip Advance]	39 FB 00
C6	PIN Try Limit [M/Chip Advance]	03
C7	CDOL1 Related Data Length [Mastercard]	42
C8	CRM Country Code [Mastercard]	08 40 - USA
C9	Accumulator 1 Currency Code [Mastercard]	08 40 - USD
CA	Accumulator 1 Lower Limit [Mastercard]	00 00 00 00 00 00
CB	Accumulator 1 Upper Limit [Mastercard]	00 00 00 05 00 00

CD	Card Issuer Action Code (Contactless) - Default [M/Chip Advance]	00 58 00
CE	Card Issuer Action Code (Contactless) - Online [M/Chip Advance]	00 F8 00
CF	Card Issuer Action Code (Contactless) - Decline [M/Chip Advance]	00 00 00
D1	Accumulator 1 Currency Conversion Table [Mastercard]	08 40 00 01 00 08 40 00 01 00 08 40 00 01 00 08 40 00 01 00 08 40 00 01 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 Advance]	8C 00 80 00 86 02
D6	Default ARPC Response Code [M/Chip Advance]	00 12
D7	Application Control [M/Chip Advance]	40 01 40 00 86 02
DF 02	Security Limits Status (Contact) [M/Chip Advance]	00

* Tag value changes with card usage

1.5 DI Test Card 05 - Visa, Offline Preferred, PIN=1234

Visa (Offline Preferred) Dual Interface card.

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

1.5.1 CVM List – AID (A0000000031010)

Cardholder Verification Method List ('4201 4403 4103 4203 1E03 1F03')			
CVM	Verification Method	Conditions	If unsuccessful
1	Online PIN	Unattended cash	Next CVM
2	Offline PIN	Terminal supports CVM type	Next CVM
3	Offline Plaintext PIN	Terminal supports CVM type	Next CVM
4	Online PIN	Terminal supports CVM type	Next CVM
5	Signature (paper)	Terminal supports CVM type	Fail
6	No CVM required	Terminal supports CVM type	Fail

1.5.2 Visa (Offline Preferred) Contact Interface

Tag	Element Name	Data	v2.x
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	

Tag	Element Name	Data	v2.x
5F 20	Cardholder Name	44 49 20 54 65 73 74 2F 43 61 72 64 20 30 35 20 20 20 20 20 20 20 20 20 20 20 (‘DI Test/Card 05’)	
5F 24	Application Expiration Date	22 12 31	
5F 25	Application Effective Date	xx xx xx	
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 [VSDC]	38 00 BYTE 1: b7 - Offline SDA NOT supported b6 - Offline DDA supported b5 - Cardholder verification supported b4 - Terminal risk mgmt to be performed b3 - Issuer authentication NOT supported via EXTERNAL AUTH command b1 - Combined DDA / GEN AC NOT supported BYTE 2: b8 - Use for Visa NOT supported b7 - Is NOT Mobile handset	
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 00 42 01 44 03 41 03 42 03 1E 03 1F 03	
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 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	

Tag	Element Name	Data	v2.x
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 05 01 B0 01 01 00	
9F 07	Application Usage Control	FF 00	
9F 08	Application Version Number [VIS]	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 BC 98 00	
9F 10	Issuer Application Data [VSDC]	xx xx 0A 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	31 5C F5 35 10 B2 9D FF F9 44 41 AC 6A FD 03 D4 EE 01 EF 1C 50 45 91 48 3D 3D 17 BF BC 12 6F 3F B8 CC A1 9C 54 3E E3 C5 26 DF 07 8F 5D 1B AB F6 C8 35 DC 15 E3 4C 53 9F E4 58 B2 ED DF B9 28 1F A1 3F D6 2A B2 48 ED EF 01 44 B7 52 CD 8A F4 E6 B3 75 44 79 5B ED 05 A3 AE 5C 97 22 B2 C2 0C 9B A3 EB 43 BC 55 A5 CF 1C 46 40 1C 00 01 2E 7B 63 30 98 F1 AB 4D 28 F7 92 04 82 E8 49 F1 39 58 C2 9B 40 02 49 99 E4 11 4A 5B E1 84 A3 59 49 9F 0C EF 7F 88 08 1B D6 73 96 8C DA 28 88 36 60 FB 48 A2 5F 65 7A 8C 3E 70 C3 D9 2F F3 D2 6C 2F B4 65	
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	

Tag	Element Name	Data	v2.x
9F 4B	Signed Dynamic Application Data	78 14 DF 0C 24 22 FF 27 52 C5 44 68 6A 66 AB B5 55 5F 0F 0A D6 60 CF B6 F4 49 A6 7A 52 08 1E 9A 53 DC C3 62 3C 40 CC F6 9A BE 6F 34 BC E2 4E D0 36 F1 8A 55 67 9D 44 23 BD 01 B3 4A 15 1F 8F BD 40 0E 89 8A 8F 5A C4 A3 FD 69 DA EB 13 65 6E CE CE 27 06 49 32 42 4C 35 A9 94 65 33 5D DB FB 61 6A 92 80 31 64 1B 2C A7 5A C9 27 84 2A A3 51 38 56 CA 39 69 4D 6B 4F 16 05 8A 9C 1E 73 BE B7 0E	
9F 51	Application Currency Code [VSDC]	08 40 - USD	
9F 52	Application Default Action [VSDC VIS 1.5]	80 30 00 00 00 00	
9F 53	Consecutive Transaction Limit (International) [VSDC]	07	
9F 54	Cumulative Total Transaction Amount Limit [VSDC]	00 00 00 00 20 00	
9F 57	Issuer Country Code [VSDC]	08 40 - USA	
9F 58	Consecutive Transaction Counter Limit [VSDC]	05	
9F 59	Consecutive Transaction Counter Upper Limit [VSDC]	10	
9F 5C	Cumulative Total Transaction Amount Upper Limit [VSDC]	00 00 00 00 50 00	
9F 5E	Consecutive Transaction International Upper Limit [VSDC]	10	
9F 68	Card Additional Processes [qVSDC VCPS 2.1]	4E 00 F0 00	
9F 72	Consecutive Transaction Limit (International-Country) [VSDC]	07	
BF 55	Contactless Counters Data Template	DF 11 01 02 DF 21 01 05 DF 31 01 10	
BF 56	Counters Data Template	DF 11 01 02 DF 21 01 05 DF 31 01 10	
BF 57	International Counters Data Template	DF 11 01 00 DF 21 01 07 DF 31 01 10 DF 51 01 07 DF 61 01 07	
BF 58	Amounts Data Template	DF 11 06 00 00 00 00 10 04 DF 21 06 00 00 00 00 20 00 DF 31 06 00 00 00 00 50 00	
BF 5B	Application Internal Data Template	DF 01 02 00 00	

* Tag value changes with card usage

1.5.3 Visa (Offline Preferred) Contactless Interface

Tag	Element Name	Data	v1.20
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	

Tag	Element Name	Data	v1.20
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 [VSDC]	20 00 BYTE 1: b7 - Offline SDA (online Auth) NOT supported b6 - Offline DDA supported BYTE 2: b8 - MSD NOT supported b7 - Is Mobile handset b6 - Is Contactless transaction	
84	Dedicated File (DF) Name	A0 00 00 00 03 10 10	
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 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 04 07 00	
9F 10	Issuer Application Data [VSDC]	xx xx 0A xx xx xx xx *	
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)	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 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	

Tag	Element Name	Data	v1.20
9F 46	ICC Public Key Certificate	1B 4F 40 97 3D F1 CD 73 5D 26 FD 56 55 CB 6F 35 19 FF 62 7A B6 98 D5 E9 A6 67 3D A6 E8 AC 84 6C 90 C7 DC 87 BC 47 6E 72 17 36 29 4F E8 80 69 37 95 EA 71 E5 C8 A4 5C 86 A5 C1 8F 03 2E A6 05 11 BD 51 84 CF C0 CA 56 F7 47 8C DB 81 B2 64 CF 09 AA 58 67 5C 6A 14 B0 09 BC AD E0 DC C7 2F A1 31 6E EC 77 09 08 8A 6C 1F B7 C1 C9 E8 35 E0 FE D8 B0 E4 7C 99 B9 EC 98 74 EF 27 87 82 05 C1 83 7F 5D 04 F9 E3 4E 3E D8 AC 1E 78 12 10 40 FD 4E FB 99 8B 17 63 5F 2C 1B 3A 84 13 26 ED 6C 0E 82 54 C8 28 5F FE F6 7D 96 57 A5 9C F5 19 A8 DB 2B 9D	
9F 47	ICC Public Key Exponent	03	
9F 4A	Static Data Authentication Tag List	82	
9F 4B	Signed Dynamic Application Data	BF B8 95 6D F6 73 5E 9D F9 A9 5A 0F 42 5E 8D D2 A4 E4 20 07 D8 4E 45 AB 05 B0 1F 5F 22 A5 CC 39 50 19 CC F9 FF C7 D2 5A 8B 15 CE 02 28 99 B9 63 BE BE BA 3B 88 0C 94 6C 2A D8 E5 58 FA AC 8F FD 08 48 F8 1D 2C D2 0C 3E D8 09 E3 53 EF 58 66 BA DC 01 1D A5 67 24 BC 6B 07 E4 5F 5D EF 1B 6F 00 33 A6 A2 B3 3D 01 A4 A6 68 84 84 52 D3 D0 B4 A2 6D 69 B3 82 3B 3E FF 18 65 C8 15 07 97 25 B4 0F	
9F 51	Application Currency Code [VSDC]	08 40 - USD	
9F 52	Application Default Action [VSDC VIS 1.5]	80 30 00 00 00 00	
9F 53	Consecutive Transaction Limit (International) [VSDC]	07	
9F 54	Cumulative Total Transaction Amount Limit [VSDC]	00 00 00 00 20 00	
9F 57	Issuer Country Code [VSDC]	08 40 - USA	
9F 58	Consecutive Transaction Counter Limit [VSDC]	05	
9F 59	Consecutive Transaction Counter Upper Limit [VSDC]	10	
9F 5A	Application Program Identifier	31 08 40 08 40	
9F 5C	Cumulative Total Transaction Amount Upper Limit [VSDC]	00 00 00 00 50 00	
9F 5E	Consecutive Transaction International Upper Limit [VSDC]	10	
9F 68	Card Additional Processes [qVSDC VCPS 2.1]	4E 00 F0 00	
9F 69	Card Authentication Related Data [qVSDC]	01 24 2E 3B 1E 38 00	

Tag	Element Name	Data	v1.20
9F 6C	Card Transaction Qualifiers [qVSDC VCPS 2.1]	38 00	
9F 6E	Form Factor Indicator [qVSDC]	20 70 00 00	
9F 72	Consecutive Transaction Limit (International-Country) [VSDC]	07	
BF 55	Contactless Counters Data Template	DF 11 01 02 DF 21 01 05 DF 31 01 10	
BF 56	Counters Data Template	DF 11 01 01 DF 21 01 05 DF 31 01 10	
BF 57	International Counters Data Template	DF 11 01 00 DF 21 01 07 DF 31 01 10 DF 51 01 07 DF 61 01 07	
BF 58	Amounts Data Template	DF 11 06 00 00 00 00 10 04 DF 21 06 00 00 00 00 20 00 DF 31 06 00 00 00 00 50 00	
BF 5B	Application Internal Data Template	DF 01 02 00 00	

* Tag value changes with card usage

1.6 DI Test Card 06 - Mastercard, Offline Preferred, PIN=4315

Mastercard (Offline Preferred) Dual Interface card.

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

1.6.1 CVM List – AID (A0000000041010)

Cardholder Verification Method List ('4201 4403 4103 4203 1E03 1F03')			
CVM	Verification Method	Conditions	If unsuccessful
1	Online PIN	Unattended cash	Next CVM
2	Offline PIN	Terminal supports CVM type	Next CVM
3	Offline Plaintext PIN	Terminal supports CVM type	Next CVM
4	Online PIN	Terminal supports CVM type	Next CVM
5	Signature (paper)	Terminal supports CVM type	Fail
6	No CVM required	Terminal supports CVM type	Fail

1.6.2 Mastercard (Offline Preferred) Contact Interface

Tag	Element Name	Data	v1.10
50	Application Label	4D 61 73 74 65 72 63 61 72 64 (‘Mastercard’)	
57	Track 2 Equivalent Data	54 13 33 00 89 60 41 11 D1 61 22 01 01 23 40 91 72 02 9F	
5A	Application Primary Account Number (PAN)	54 13 33 00 89 60 41 11	

Tag	Element Name	Data	v1.10
5F 20	Cardholder Name	44 49 20 54 65 73 74 2F 43 61 72 64 20 30 36 20 20 20 20 20 20 20 20 20 20 20 (‘DI Test/Card 06’)	
5F 24	Application Expiration Date	25 12 31	
5F 25	Application Effective Date	xx xx xx	
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 BYTE 1: b7 - Offline SDA NOT supported b6 - Offline DDA supported b5 - Cardholder verification supported b4 - Terminal risk mgmt to be performed b3 - Issuer authentication NOT supported via EXTERNAL AUTH command b1 - Combined DDA / GEN AC NOT supported BYTE 2: b8 - EMV Contactless NOT supported	
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 01 44 03 41 03 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 02 04 01 18 01 01 00 20 01 01 00	
9F 07	Application Usage Control	FF 00	

Tag	Element Name	Data	v1.10
9F 08	Application Version Number	00 02	
9F 0D	Issuer Action Code - Default	B8 50 BC 80 00	
9F 0E	Issuer Action Code - Denial	00 00 00 00 00	
9F 0F	Issuer Action Code - Online	B8 70 BC 98 00	
9F 10	Issuer Application Data [M/Chip 4]	xx 10 xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx *	
9F 11	Issuer Code Table Index	01	
9F 12	Application Preferred Name	4D 61 73 74 65 72 63 61 72 64 43 72 65 64 69 74 (‘MastercardCredit’)	
9F 14	Lower Consecutive Offline Limit	03	
9F 17	Personal Identification Number (PIN) Try Counter	03	
9F 1F	Track 1 Discretionary Data	20 20	
9F 23	Upper Consecutive Offline Limit	05	
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	6A 68 7F 38 5C 83 4A 60 CB F5 04 CA 80 5C 95 AD 49 4A 9E 52 C2 DA B5 50 11 C8 CD 6C 44 02 57 EA 07 4D 2B 57 AD 76 E2 EF 1F 2E 59 82 53 1B 4D ED A9 5C 6B 7C 5D 3B 2B 79 30 D1 98 2F 6D 64 B9 01 A3 D3 8C 47 DD 2C 6F 24 FF 60 59 60 11 CB A2 A7 4E BB E7 7A A3 F1 62 09 28 EA EC A8 1E D2 DC FA A6 AA 5C 8B BB 07 66 0A C9 8A CF 63 CF 52 FC 06	
9F 47	ICC Public Key Exponent	03	
9F 48	ICC Public Key Remainder	F2 89 B4 3A AE E2 D4 6F 53 8A DD FD 3A A5 54 50 BB 64 A5 15 F3 6B 28 29 B2 09 3B E5 96 59 0F B1 FF B1 41 E0 AC 04 EE B2 7E BB	
9F 49	Dynamic Data Authentication Data Object List (DDOL)	9F 37 04	
9F 4A	Static Data Authentication Tag List	82	

Tag	Element Name	Data	v1.10
9F 4B	Signed Dynamic Application Data	75 88 53 C1 D9 CF 7A D1 3B 26 A3 4B 01 14 41 A9 34 45 B1 B7 86 6D 8F 0E 62 72 14 47 ED 45 7E DD 53 02 4E D0 18 D2 2C D8 A3 2B 17 C7 D3 47 99 BF CA 51 4D 3A 32 61 CC 51 01 4C 8C 4A 98 19 B9 F0 F3 31 DB E1 7D 9C DB 5A 31 93 28 DB 87 B0 C6 6F 02 F2 38 DA 38 2C 24 2D 78 4D A5 FC E1 58 B4 44 DF 74 13 7F D7 A1 3C 1B FA 17 E1 E0 78 9F 1A 6C	
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 [Mastercard]	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]	19 50 00	
C5	Card Issuer Action Code - Online [Mastercard]	39 FB 00	
C6	Counters [Mastercard]	00 06 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	
CA	Lower Cumulative Offline Transaction Amount [M/Chip]	00 00 00 02 00 00	
CB	Upper Cumulative Offline Transaction Amount [M/Chip]	00 00 00 05 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]	00 00 00	
D1	Currency Conversion Table [M/Chip]	08 40 00 01 00 08 40 00 01 00 08 40 00 01 00 08 40 00 01 00 08 40 00 01 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]	CC 00	
D6	Default ARPC Response Code [M/Chip4]	00 12	

Tag	Element Name	Data	v1.10
D7	Application Control [PayPass M/Chip]	40 01 40	
DF 02	Security Limits Status [Mastercard]	00	

* Tag value changes with card usage

1.6.3 CVM List – AID (A0000000041010) Contactless

Cardholder Verification Method List ('4203 1E03 1F03')			
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

1.6.4 Mastercard (Offline Preferred) Contactless Interface

Tag	Element Name	Data	v1.10
50	Application Label	4D 61 73 74 65 72 63 61 72 64 (‘Mastercard’)	
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 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	
5F 25	Application Effective Date	xx xx xx	
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 BYTE 1: b7 - Offline SDA NOT supported b6 - Offline DDA NOT supported b5 - Cardholder verification supported b4 - Terminal risk mgmt to be performed b3 - Issuer authentication NOT supported via EXTERNAL AUTH command b1 - Combined DDA / GEN AC supported BYTE 2: b8 - EMV Contactless supported	
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	

Tag	Element Name	Data	v1.10
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 1E 03 42 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 50 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 4]	xx 11 xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx *	
9F 11	Issuer Code Table Index	01	
9F 12	Application Preferred Name	4D 61 73 74 65 72 63 61 72 64 43 72 65 64 69 74 (‘MastercardCredit’)	
9F 14	Lower Consecutive Offline Limit	03	
9F 17	Personal Identification Number (PIN) Try Counter	03	
9F 23	Upper Consecutive Offline Limit	05	
9F 27	Cryptogram Information Data (CID)	80	
9F 32	Issuer Public Key Exponent	03	
9F 36	Application Transaction Counter (ATC)	00 04	
9F 46	ICC Public Key Certificate	1F E2 2F 8D E8 3B 06 15 53 40 CB 70 63 A0 B3 87 68 4E CB 95 21 14 A7 8F 26 78 82 2D EB D3 8B F8 46 7F 91 00 1C ED 62 C0 0B A8 72 2B 8F 73 9B D7 B8 C8 63 82 A6 C8 86 F2 2D 31 8A FD C4 0D 66 5D 1A 6E 73 E2 DE 96 0E B6 2F 77 B0 EF 2D DD D2 F4 1A 6E B0 88 99 6A 91 48 9E 84 CD BD EA C7 84 BE 60 53 93 12 3B E9 AC 6C C1 9A 43 98 51 9C 10 3A	

Tag	Element Name	Data	v1.10
9F 47	ICC Public Key Exponent	03	
9F 48	ICC Public Key Remainder	F2 89 B4 3A AE E2 D4 6F 53 8A DD FD 3A A5 54 50 BB 64 A5 15 F3 6B 28 29 B2 09 3B E5 96 59 0F B1 FF B1 41 E0 AC 04 EE B2 7E BB	
9F 4A	Static Data Authentication Tag List	82	
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	CVC3track1 [Mastercard]	83 8B	
9F 61	CVC3track2 [Mastercard]	C8 24	
9F 62	Track 1 Bitmap for CVC3 (PCVC3 Track 1) [Mastercard]	00 00 00 38 00 00	
9F 63	Track 1 Bitmap for UN and ATC (PUNATC Track 1) [Mastercard]	00 00 00 00 E0 E0	
9F 64	Track 1 Number of ATC Digits (NATC Track 1) [Mastercard]	03	
9F 65	Track 2 Bitmap for CVC3 (PCVC3 Track 2) [Mastercard]	00 0E	
9F 66	Track 2 Bitmap for UN and ATC (PUNATC Track 2) [Mastercard]	0E 70	
9F 67	Track 2 Number of ATC Digits (NATC Track 2) [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 [Mastercard]	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]	19 50 00	
C5	Card Issuer Action Code - Online [Mastercard]	39 FB 00	
C6	Counters [Mastercard]	00 04 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 02 00 00	

Tag	Element Name	Data	v1.10
CB	Upper Cumulative Offline Transaction Amount [M/Chip]	00 00 00 05 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]	00 00 00	
D1	Currency Conversion Table [M/Chip]	08 40 00 01 00 08 40 00 01 00 08 40 00 01 00 08 40 00 01 00 08 40 00 01 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]	CC 00	
D6	Default ARPC Response Code [M/Chip4]	00 12	
D7	Application Control [PayPass M/Chip]	40 01 40	
DF 02	Security Limits Status [Mastercard]	00	

* Tag value changes with card usage

Chapter 2 - ASCII Character Conversion Chart

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