



Dual Interface Test Card Set

Version 3.00

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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”
3.00	26-Mar-21	B2PS	Mastercards have longer Issuer Public Key Certificate

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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.x	v2.x	v2.x

	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	v3.x	v3.x	v3.x

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 (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 BYTE 1: b8 - Domestic cash trans. valid b7 - Int'l cash transactions valid b6 - Domestic goods valid b5 - International goods valid b4 - Domestic services valid b3 - International services valid b2 - ATMs valid b1 - non-ATM terminals valid BYTE 2: b8 - Domestic cashback NOT allowed b7 - International cashback NOT allowed	
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	

Tag	Element Name	Data	v2.x
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	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	

Tag	Element Name	Data	v2.x
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	
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	

Tag	Element Name	Data	v2.x
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	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	

Tag	Element Name	Data	v2.x
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 BYTE 1: b8 - Online PIN NOT required b7 - Signature NOT required b6 - Do go online if Offline Data Authentication fails and Reader is online capable b5 - Do switch interface if Offline Data Authentication fails and Reader supports contact chip b4 - Do go Online if Application Expired b3 - Do NOT switch interface for Cash Transactions b2 - Do NOT switch interface for Cashback Transactions b1 - Is valid for contactless ATM transactions BYTE 2: b8 - Consumer Device CVM NOT performed b7 - Card does NOT Support Issuer Update Processing at POS	
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 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	

Tag	Element Name	Data	v2.x
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	

* 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	v3.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 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	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	EF
90	Issuer Public Key Certificate	5B 2E 1F EF 4D 7D 2C 16 16 12 21 F7 97 2F E6 99 B7 82 44 E0 73 C8 AC 75 86 CE D1 76 EF 7B 93 AC 19 0B 05 70 40 E1 18 4F 2F 55 AC 70 D2 AA C3 94 BE 22 6A 26 50 D3 CA ED 90 60 88 C5 3A 88 B8 3C 46 1F 37 6D 89 10 B8 51 81 54 F3 08 EE ED 23 BC 15 7C FA BA 6E 51 26 9F 01 6D 59 FE 21 A6 F9 10 F2 85 13 0D EA F6 A4 78 BE 77 9D 2B AD 08 E1 2E D6 A5 93 71 5A 18 72 15 C5 63 28 1C B2 B7 2E 5B 14 05 5D 2D D8 30 4A C2 20 2E 53 96 D0 4C 5C 79 55 0B 4D E9 FA DA CB 35 F3 19 06 C5 A4 42 27 29 D6 A5 A8 F5 E1 4C B9 0D B7 05 49 4B 3D B1 0D E6 19 F3 B0 3E 64 96 FE 79 F4 6E 64 97 2A 46 34 A0 35 EF 7E 50 20 49 40 36 03 E0 BC FC 33 C3 87 BB 6D 72 CF F8 33 89 7E 81 F5 02 3F F4 D6 A9 CC 0C 89 E8 78 3F 07 B7 F0 55 3E 9D D3 59 B6 5B 62 3A F1 CE 27 8D 65 3C 37 07
92	Issuer Public Key Remainder	14 3E 90 B8 B5 E6 2B E5 A9 0D 5A 4E F1 5C 77 40 4D 29 94 48 98 77 85 D7 E8 80 C2 CD
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 BYTE 1: b8 - Domestic cash trans. valid b7 - Int'l cash transactions valid b6 - Domestic goods valid b5 - International goods valid b4 - Domestic services valid b3 - International services valid b2 - ATMs valid b1 - non-ATM terminals valid BYTE 2: b8 - Domestic cashback NOT allowed b7 - International cashback NOT allowed
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 *
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 *
9F 42	Application Currency Code	08 40 (USD)
9F 44	Application Currency Exponent	02

9F 46	ICC Public Key Certificate	F3 1E 4A 4F 12 C9 5B 7F BF 40 5D 7B B3 65 C5 5C 39 47 BD CD CD 4C 12 5A DC D0 CA A3 55 ED F6 18 B1 CA CF 82 CF 72 66 25 55 C7 CF 7C 5D 92 62 CE 3A 4F 33 AD 25 4E BF CD 9F B9 A2 52 F9 7A C2 D7 27 2F 62 29 F1 67 EC 3A 42 97 C7 81 F9 46 EF 77 A2 78 E5 0A 9C C5 0D 71 48 FE 9A CA 2E F5 4C 24 C0 95 9E 44 46 23 A7 7C EC 37 14 8A 8A A5 9E E8 76 A4 A9 A7 B8 BA 1A 51 68 47 4E 84 9A E5 08 E4 C8 3D C4 9A 38 F0 AD D2 36 57 62 64 E6 76 6A 24 AB 6F 46 1F 2E E3 1F 9D 9C 9A E7 33 8C A4 6C 2A 9B ED DA EA 62 88 C9 55 55 5A F8 CE 45 68 80 E2 B2 36 6E 3E F8 47 21 D9 5F D0 5F EC D3 03 44 3E D9 D3 B7 BF FA CB 41 EB C3 58 1C 9B FC F5 D9 F1 EE FF 9B 7E C4 DE E7 A6 8F 41 F4 3F DB 81 32 65 4E CB 94 7A B3 0F 3D C5 C7 B3 47 09 63 67 84 02
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	7B 15 75 D1 C6 96 9A 43 57 DD 18 52 10 B5 A0 6B F7 87 EF 6F 39 42 F7 10 68 A8 EF E2 C1 A9 B9 C6 81 03 60 16 34 A6 D1 6D C7 53 DC 97 ED 6A ED 9A 5F 0E 94 10 15 50 A4 C6 27 08 B2 77 3A 96 04 3B 22 9C E9 00 AB AE 4B C0 48 1E A6 A1 91 6C 0B 55 EE 09 6A 00 2B 2E 1C AB D2 EF 28 8D DE 07 3C 29 EE 11 65 2E AF D6 F9 B7 25 B1 21 47 A9 58 A2 FF 0F DD F8 5E 53 48 B9 1A 31 1A 99 CB 0C 1B BF DC 30 15 A5 87 7B 6D DA BC A7 D1 0C ED 11 45 2B 7C 06 12 66 2E EE 0E A1 F5 05 30 69 4E 6D B6 8D 17 5F 60 BB 1B 17 B3 65 04 7B E0 0B 36 6E 5C 2A FC
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	v3.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 b2 - On device Cardholder verification NOT supported b1 - Combined DDA / GEN AC supported BYTE 2: b8 - Mag Stripe profile [PayPass] supported	
	xxxxxxxxxxxxxxxxxxxx		
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	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 b2 - On device Cardholder verification NOT supported b1 - Combined DDA / GEN AC supported BYTE 2: b8 - Mag Stripe profile [PayPass] 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	EF

90	Issuer Public Key Certificate	5B 2E 1F EF 4D 7D 2C 16 16 12 21 F7 97 2F E6 99 B7 82 44 E0 73 C8 AC 75 86 CE D1 76 EF 7B 93 AC 19 0B 05 70 40 E1 18 4F 2F 55 AC 70 D2 AA C3 94 BE 22 6A 26 50 D3 CA ED 90 60 88 C5 3A 88 B8 3C 46 1F 37 6D 89 10 B8 51 81 54 F3 08 EE ED 23 BC 15 7C FA BA 6E 51 26 9F 01 6D 59 FE 21 A6 F9 10 F2 85 13 0D EA F6 A4 78 BE 77 9D 2B AD 08 E1 2E D6 A5 93 71 5A 18 72 15 C5 63 28 1C B2 B7 2E 5B 14 05 5D 2D D8 30 4A C2 20 2E 53 96 D0 4C 5C 79 55 0B 4D E9 FA DA CB 35 F3 19 06 C5 A4 42 27 29 D6 A5 A8 F5 E1 4C B9 0D B7 05 49 4B 3D B1 0D E6 19 F3 B0 3E 64 96 FE 79 F4 6E 64 97 2A 46 34 A0 35 EF 7E 50 20 49 40 36 03 E0 BC FC 33 C3 87 BB 6D 72 CF F8 33 89 7E 81 F5 02 3F F4 D6 A9 CC 0C 89 E8 78 3F 07 B7 F0 55 3E 9D D3 59 B6 5B 62 3A F1 CE 27 8D 65 3C 37 07
92	Issuer Public Key Remainder	14 3E 90 B8 B5 E6 2B E5 A9 0D 5A 4E F1 5C 77 40 4D 29 94 48 98 77 85 D7 E8 80 C2 CD
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 BYTE 1: b8 - Domestic cash trans. valid b7 - Int'l cash transactions valid b6 - Domestic goods valid b5 - International goods valid b4 - Domestic services valid b3 - International services valid b2 - ATMs valid b1 - non-ATM terminals valid BYTE 2: b8 - Domestic cashback NOT allowed b7 - International cashback NOT allowed
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)	00 01
9F 36	Application Transaction Counter (ATC)	00 02
9F 42	Application Currency Code	08 40 (USD)
9F 44	Application Currency Exponent	02
9F 46	ICC Public Key Certificate	58 27 DE FC CF 7A 5A A7 1A 32 30 32 7F A4 82 B9 1E 38 A4 70 BB 93 FD 14 54 5B 66 6E EF 95 40 96 12 D7 EC BB 42 AF DC 3D 9A B8 07 22 FB 43 93 1F 11 8D DB F9 45 99 C9 CF 90 2E 92 E2 8F 77 C5 7E 70 FF 63 D7 CC 09 D3 DC DA 67 28 A7 4D 5F 40 F0 D7 33 D6 F5 58 CD D9 C1 23 B4 54 8E 8E F3 AF C0 F7 37 B8 17 FB ED 36 E8 D0 EF ED 9A 19 87 C4 9D FA 0E A2 5C 50 42 B9 56 F7 20 FB E0 99 CB 3B 69 BF 9E 00 73 57 06 FC F7 E4 36 7B 23 20 F7 E1 B7 66 64 ED AA 54 65 B9 0E F2 25 71 AA 54 D3 A4 28 13 38 15 8A C8 AC 50 F2 C3 AA B3 8E F9 D0 45 C1 2A B6 76 42 F7 39 74 44 26 DB 3C 6A 00 B5 D2 0D E7 BD 4C 90 D4 60 4E 5E A7 3E EC 9F AB 6E 0F 09 B3 97 02 A6 D4 2C A0 59 1A 77 2D 47 0E 15 A7 DA A9 2A 78 33 23 8B B1 22 47 4F 96 60 0C B0 54 7C
9F 47	ICC Public Key Exponent	03
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]	43 FC
9F 61	CVC3track2 [Mastercard]	C7 6E
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 Enciphered 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	

Tag	Element Name	Data	v2.x
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 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	

Tag	Element Name	Data	v2.x
9F 07	Application Usage Control	FF 00 BYTE 1: b8 - Domestic cash trans. valid b7 - Int'l cash transactions valid b6 - Domestic goods valid b5 - International goods valid b4 - Domestic services valid b3 - International services valid b2 - ATMs valid b1 - non-ATM terminals valid BYTE 2: b8 - Domestic cashback NOT allowed b7 - International cashback NOT allowed	
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	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	

Tag	Element Name	Data	v2.x
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	
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 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	
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	

Tag	Element Name	Data	v1.20
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	
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	

Tag	Element Name	Data	v1.20
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 BYTE 1: b8 - Online PIN NOT required b7 - Signature NOT required b6 - Do go online if Offline Data Authentication fails and Reader is online capable b5 - Do switch interface if Offline Data Authentication fails and Reader supports contact chip b4 - Do go Online if Application Expired b3 - Do NOT switch interface for Cash Transactions b2 - Do NOT switch interface for Cashback Transactions b1 - Is valid for contactless ATM transactions BYTE 2: b8 - Consumer Device CVM NOT performed b7 - Card does NOT Support Issuer Update Processing at POS	
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 Enciphered 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	v3.x
50	Application Label	4D 61 73 74 65 72 43 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	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	v3.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	EF	
90	Issuer Public Key Certificate	5B 2E 1F EF 4D 7D 2C 16 16 12 21 F7 97 2F E6 99 B7 82 44 E0 73 C8 AC 75 86 CE D1 76 EF 7B 93 AC 19 0B 05 70 40 E1 18 4F 2F 55 AC 70 D2 AA C3 94 BE 22 6A 26 50 D3 CA ED 90 60 88 C5 3A 88 B8 3C 46 1F 37 6D 89 10 B8 51 81 54 F3 08 EE ED 23 BC 15 7C FA BA 6E 51 26 9F 01 6D 59 FE 21 A6 F9 10 F2 85 13 0D EA F6 A4 78 BE 77 9D 2B AD 08 E1 2E D6 A5 93 71 5A 18 72 15 C5 63 28 1C B2 B7 2E 5B 14 05 5D 2D D8 30 4A C2 20 2E 53 96 D0 4C 5C 79 55 0B 4D E9 FA DA CB 35 F3 19 06 C5 A4 42 27 29 D6 A5 A8 F5 E1 4C B9 0D B7 05 49 4B 3D B1 0D E6 19 F3 B0 3E 64 96 FE 79 F4 6E 64 97 2A 46 34 A0 35 EF 7E 50 20 49 40 36 03 E0 BC FC 33 C3 87 BB 6D 72 CF F8 33 89 7E 81 F5 02 3F F4 D6 A9 CC 0C 89 E8 78 3F 07 B7 F0 55 3E 9D D3 59 B6 5B 62 3A F1 CE 27 8D 65 3C 37 07	
92	Issuer Public Key Remainder	14 3E 90 B8 B5 E6 2B E5 A9 0D 5A 4E F1 5C 77 40 4D 29 94 48 98 77 85 D7 E8 80 C2 CD	
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 BYTE 1: b8 - Domestic cash trans. valid b7 - Int'l cash transactions valid b6 - Domestic goods valid b5 - International goods valid b4 - Domestic services valid b3 - International services valid b2 - ATMs valid b1 - non-ATM terminals valid BYTE 2: b8 - Domestic cashback NOT allowed b7 - International cashback NOT allowed	
9F 08	Application Version Number	00 02	

Tag	Element Name	Data	v3.x
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 *	
9F 42	Application Currency Code	08 40 (USD)	
9F 44	Application Currency Exponent	02	
9F 46	ICC Public Key Certificate	E6 8B 23 BD A7 70 44 88 FA 59 D6 F4 B3 4D 80 78 CA E1 02 92 72 90 7B C7 BE CE 21 0C E8 99 69 D8 1F EF 1E 29 3F 3F 83 7E 7E 66 B4 FC 25 E4 B1 AD C2 EF BB 21 9C BD 5A 1E 55 F1 76 A7 AE 70 CD B9 93 62 CE 26 23 FD A6 CA A7 1A EA 53 83 1F D7 1D 19 A6 D2 3B F3 1F A4 70 7E 75 0A 60 2D 64 BA 5F 8B 59 57 5D 56 52 16 BB 1B 5B 9C 7E 3D 8B DF 24 16 69 79 A2 24 D9 B7 C7 5A 08 3B 3E 42 B2 5E 1B AF A0 57 A3 39 D4 AC 9B 65 1E E9 A2 7D 24 EE 35 FA 89 1C 11 8D 39 FE 28 18 A4 04 13 F4 21 DF 87 6D 70 E4 EE B2 64 B9 56 39 B0 65 A2 E4 C2 FF A2 EC 98 85 51 05 AD B8 3F E1 2B 73 5A 08 F7 4B 3F 15 B5 FC 6E 83 0C 70 2E 40 B6 F1 14 6A D3 95 32 8A C7 AF 4C 4F F3 8E 35 6F 95 37 E9 87 3A 56 0D 5B 00 A3 3E E7 24 95 FD 57 FD 32 66 6D FE A9 40	
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	v3.x
9F 4B	Signed Dynamic Application Data	3E D4 92 4B FA 38 24 FD 5C 81 35 01 EB FC F0 E0 17 4B 35 8A 78 50 61 8C A4 01 D5 FE 0F C2 01 E7 5C 67 77 55 14 26 18 3A 47 E4 7F 3A 8A 96 9A 84 59 E2 7F 19 03 D0 41 FC 2D 0C 86 A9 62 44 49 DD 28 B4 DB 8C 72 4A 3E DE 04 9E 4B D2 D0 58 73 0D BF DE 15 B4 0B 9B 42 21 F7 77 7A 46 9B 49 81 0C DD 26 72 66 4F 9D 2D 78 DA 33 3F C3 5A F9 4D 41 53 2B 82 8E 3A DF 82 72 49 15 C5 78 54 A4 51 07 B5 3E 82 19 9A C4 EC F5 93 35 AD 6A 76 4E DF F9 3F 1C 11 0B 18 4A E6 9E FB 3B 92 BB F8 88 8F FC 41 6A AB 65 EE EF AD 2A 14 B5 06 8D 55 BF 83 3C	
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	

Tag	Element Name	Data	v3.x
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	
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 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	

Tag	Element Name	Data	v3.x
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	

Tag	Element Name	Data	v3.x
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 (A000000041010) 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	v3.x
50	Application Label	4D 61 73 74 65 72 43 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	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 b2 - On device Cardholder verification NOT supported b1 - Combined DDA / GEN AC supported BYTE 2: b8 - Mag Stripe profile [PayPass] 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	EF
90	Issuer Public Key Certificate	5B 2E 1F EF 4D 7D 2C 16 16 12 21 F7 97 2F E6 99 B7 82 44 E0 73 C8 AC 75 86 CE D1 76 EF 7B 93 AC 19 0B 05 70 40 E1 18 4F 2F 55 AC 70 D2 AA C3 94 BE 22 6A 26 50 D3 CA ED 90 60 88 C5 3A 88 B8 3C 46 1F 37 6D 89 10 B8 51 81 54 F3 08 EE ED 23 BC 15 7C FA BA 6E 51 26 9F 01 6D 59 FE 21 A6 F9 10 F2 85 13 0D EA F6 A4 78 BE 77 9D 2B AD 08 E1 2E D6 A5 93 71 5A 18 72 15 C5 63 28 1C B2 B7 2E 5B 14 05 5D 2D D8 30 4A C2 20 2E 53 96 D0 4C 5C 79 55 0B 4D E9 FA DA CB 35 F3 19 06 C5 A4 42 27 29 D6 A5 A8 F5 E1 4C B9 0D B7 05 49 4B 3D B1 0D E6 19 F3 B0 3E 64 96 FE 79 F4 6E 64 97 2A 46 34 A0 35 EF 7E 50 20 49 40 36 03 E0 BC FC 33 C3 87 BB 6D 72 CF F8 33 89 7E 81 F5 02 3F F4 D6 A9 CC 0C 89 E8 78 3F 07 B7 F0 55 3E 9D D3 59 B6 5B 62 3A F1 CE 27 8D 65 3C 37 07
92	Issuer Public Key Remainder	14 3E 90 B8 B5 E6 2B E5 A9 0D 5A 4E F1 5C 77 40 4D 29 94 48 98 77 85 D7 E8 80 C2 CD
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 BYTE 1: b8 - Domestic cash trans. valid b7 - Int'l cash transactions valid b6 - Domestic goods valid b5 - International goods valid b4 - Domestic services valid b3 - International services valid b2 - ATMs valid b1 - non-ATM terminals valid BYTE 2: b8 - Domestic cashback NOT allowed b7 - International cashback NOT allowed
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 01
9F 36	Application Transaction Counter (ATC)	00 02
9F 42	Application Currency Code	08 40 (USD)
9F 44	Application Currency Exponent	02

9F 46	ICC Public Key Certificate	BC F6 53 3F C0 3F E8 28 F2 22 23 7E B9 F8 BF 97 8A AA 62 0C 5F 83 18 78 21 F7 45 15 BD F2 41 3E 63 13 79 1F 14 19 35 93 27 F9 C8 8F D8 11 81 FD 99 DC 02 2A 29 0F 52 7B 7A 6C 5E A7 87 23 9C 0D 51 62 6F 4F BB D6 7D C9 39 B1 0A 4B 9E 2B 38 F4 CD 40 08 B6 07 61 5D 5F 9B 46 7B A5 7E 65 3A 86 F9 7F 91 26 6B D9 95 BD DD 49 CF B5 1F 39 C3 5F 22 BC DF 2C B0 58 74 97 F7 22 76 CC A0 BB 93 CF 83 91 1B BE EF C7 17 D0 B9 0A 40 6D BD 65 A3 CD F7 42 EB 62 BB 6C ED 37 A4 73 2E 1D 62 AF 73 FF F4 A7 A9 D4 4F 9F EB 93 3F 8C 21 1C D3 E8 E4 24 3E 21 35 14 D4 B7 F6 F8 62 28 3C 6E 9E 94 E9 BD 79 2C F2 16 48 9D 98 96 E6 2D FD C9 9C 8B F6 67 C8 86 5D 3C E6 9E C3 16 FE 8A B3 55 68 AB BE 8E 11 7F 3B 00 18 A9 B2 71 1A 9A 8F E7 F2 B4 18 63
9F 47	ICC Public Key Exponent	03
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]	43 FC
9F 61	CVC3track2 [Mastercard]	C7 6E
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 Enciphered 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	
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	

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 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 BYTE 1: b8 - Domestic cash trans. valid b7 - Int'l cash transactions valid b6 - Domestic goods valid b5 - International goods valid b4 - Domestic services valid b3 - International services valid b2 - ATMs valid b1 - non-ATM terminals valid BYTE 2: b8 - Domestic cashback NOT allowed b7 - International cashback NOT allowed	
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	

Tag	Element Name	Data	v2.x
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	
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	

Tag	Element Name	Data	v2.x
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 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	
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	

Tag	Element Name	Data	v1.20	
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		
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		

Tag	Element Name	Data	v1.20
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 BYTE 1: b8 - Online PIN NOT required b7 - Signature NOT required b6 - Do go online if Offline Data Authentication fails and Reader is online capable b5 - Do switch interface if Offline Data Authentication fails and Reader supports contact chip b4 - Do go Online if Application Expired b3 - Do NOT switch interface for Cash Transactions b2 - Do NOT switch interface for Cashback Transactions b1 - Is valid for contactless ATM transactions BYTE 2: b8 - Consumer Device CVM NOT performed b7 - Card does NOT Support Issuer Update Processing at POS	
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 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 Enciphered 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	v3.x0
50	Application Label	4D 61 73 74 65 72 43 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 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	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	v3.x0
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	EF	
90	Issuer Public Key Certificate	5B 2E 1F EF 4D 7D 2C 16 16 12 21 F7 97 2F E6 99 B7 82 44 E0 73 C8 AC 75 86 CE D1 76 EF 7B 93 AC 19 0B 05 70 40 E1 18 4F 2F 55 AC 70 D2 AA C3 94 BE 22 6A 26 50 D3 CA ED 90 60 88 C5 3A 88 B8 3C 46 1F 37 6D 89 10 B8 51 81 54 F3 08 EE ED 23 BC 15 7C FA BA 6E 51 26 9F 01 6D 59 FE 21 A6 F9 10 F2 85 13 0D EA F6 A4 78 BE 77 9D 2B AD 08 E1 2E D6 A5 93 71 5A 18 72 15 C5 63 28 1C B2 B7 2E 5B 14 05 5D 2D D8 30 4A C2 20 2E 53 96 D0 4C 5C 79 55 0B 4D E9 FA DA CB 35 F3 19 06 C5 A4 42 27 29 D6 A5 A8 F5 E1 4C B9 0D B7 05 49 4B 3D B1 0D E6 19 F3 B0 3E 64 96 FE 79 F4 6E 64 97 2A 46 34 A0 35 EF 7E 50 20 49 40 36 03 E0 BC FC 33 C3 87 BB 6D 72 CF F8 33 89 7E 81 F5 02 3F F4 D6 A9 CC 0C 89 E8 78 3F 07 B7 F0 55 3E 9D D3 59 B6 5B 62 3A F1 CE 27 8D 65 3C 37 07	
92	Issuer Public Key Remainder	14 3E 90 B8 B5 E6 2B E5 A9 0D 5A 4E F1 5C 77 40 4D 29 94 48 98 77 85 D7 E8 80 C2 CD	
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 BYTE 1: b8 - Domestic cash trans. valid b7 - Int'l cash transactions valid b6 - Domestic goods valid b5 - International goods valid b4 - Domestic services valid b3 - International services valid b2 - ATMs valid b1 - non-ATM terminals valid BYTE 2: b8 - Domestic cashback NOT allowed b7 - International cashback NOT allowed	
9F 08	Application Version Number	00 02	

Tag	Element Name	Data	v3.x0
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]	03	
9F 17	Personal Identification Number (PIN) Try Counter	03	
9F 1F	Track 1 Discretionary Data	20 20	
9F 23	Counter 1 Upper Limit [Mastercard]	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	93 BC 05 8B 2B 9E 4F 37 C6 59 EF CE F3 62 57 D7 23 55 BC 0A 38 DF 9E BE 08 5D DE CD AC DE BE FD E6 BC E7 0A C1 A4 DB 79 A3 EA 9C 32 F9 1D B4 1C 64 D0 B6 A1 2B 19 E4 A9 76 8C 3F 57 DE EC BB C5 BD 62 2E 4F 9E 42 B2 6F 97 88 63 2E 3D 78 0D FE 0F CF E5 AC 4E 30 F1 03 53 AF C6 A0 22 7A 2B 05 EB 3A 0C E9 F0 69 5B 95 A8 D5 0C 32 C5 D1 28 B1 BD C5 0C 3E 33 06 E2 29 F1 42 D2 B2 B4 71 CA 9D 29 70 1B A3 52 74 9D 78 CD 64 D4 2D 63 9D D2 D4 DE 33 C7 9C C4 8C 6E 0F 4B 36 C0 BE F7 AB 12 01 97 79 10 D6 23 48 50 E9 D2 86 1A 9E 78 27 8B BE 83 34 3B E8 EE 94 85 0E 18 6B 37 7F B1 67 DA E5 88 F2 13 5B FC 9A 07 38 03 55 F0 87 06 E2 2D 40 B6 C5 F8 D3 29 50 6E CF 63 94 EE A6 7F DA 5B 08 62 D5 57 A2 C3 34 0A 9D 91 BD FA E4 64 AC E2 F8	
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	v3.x0
9F 4B	Signed Dynamic Application Data	D0 00 1A 63 29 9C 17 76 34 8C 37 9D 84 22 EA 91 54 91 D0 7F F6 D8 48 B4 EB 8D AB DB DC 49 04 F1 B7 94 CE 4C 84 8C EA CF 3C 6A FF C6 E1 11 57 7D 14 B1 4F 06 77 04 B3 AA C7 3A 96 BC E8 00 17 25 D5 CA 8A 9A F5 FE 5E 75 E4 E2 A7 DD 98 4E A3 D4 35 2F BC 87 A5 45 5F 65 DF C4 A1 F6 9E 64 2E FB 30 DB F8 67 ED 40 32 81 E0 B6 66 0C 5D 3B C4 92 09 33 E5 42 8B 52 76 B7 AE 85 B5 CE 0C 73 D1 76 21 7E CE BC 5D B3 31 55 88 76 62 D7 8C B2 DC 84 31 0E 06 12 13 7D 3C 1C 8D C8 B3 AF FC 9E 72 48 41 03 ED AB BA 87 FE 7A F6 EC E2 1D D4 98 47 61	
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	

Tag	Element Name	Data	v3.x0
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 02 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 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 00	
DF 02	Security Limits Status (Contact) [M/Chip Advance]	00	
DF 11	Accumulator 1 Control (Contact) [M/Chip Advance]	c1	

Tag	Element Name	Data	v3.x0
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	

Tag	Element Name	Data	v3.x0
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

1.6.3 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	v3.x
50	Application Label	4D 61 73 74 65 72 43 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	

Tag	Element Name	Data	v3.x
82	Application Interchange Profile	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 b2 - On device Cardholder verification NOT supported b1 - Combined DDA / GEN AC supported BYTE 2: b8 - Mag Stripe profile [PayPass] 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	EF	
90	Issuer Public Key Certificate	5B 2E 1F EF 4D 7D 2C 16 16 12 21 F7 97 2F E6 99 B7 82 44 E0 73 C8 AC 75 86 CE D1 76 EF 7B 93 AC 19 0B 05 70 40 E1 18 4F 2F 55 AC 70 D2 AA C3 94 BE 22 6A 26 50 D3 CA ED 90 60 88 C5 3A 88 B8 3C 46 1F 37 6D 89 10 B8 51 81 54 F3 08 EE ED 23 BC 15 7C FA BA 6E 51 26 9F 01 6D 59 FE 21 A6 F9 10 F2 85 13 0D EA F6 A4 78 BE 77 9D 2B AD 08 E1 2E D6 A5 93 71 5A 18 72 15 C5 63 28 1C B2 B7 2E 5B 14 05 5D 2D D8 30 4A C2 20 2E 53 96 D0 4C 5C 79 55 0B 4D E9 FA DA CB 35 F3 19 06 C5 A4 42 27 29 D6 A5 A8 F5 E1 4C B9 0D B7 05 49 4B 3D B1 0D E6 19 F3 B0 3E 64 96 FE 79 F4 6E 64 97 2A 46 34 A0 35 EF 7E 50 20 49 40 36 03 E0 BC FC 33 C3 87 BB 6D 72 CF F8 33 89 7E 81 F5 02 3F F4 D6 A9 CC 0C 89 E8 78 3F 07 B7 F0 55 3E 9D D3 59 B6 5B 62 3A F1 CE 27 8D 65 3C 37 07	
92	Issuer Public Key Remainder	14 3E 90 B8 B5 E6 2B E5 A9 0D 5A 4E F1 5C 77 40 4D 29 94 48 98 77 85 D7 E8 80 C2 CD	
94	Application File Locator (AFL)	08 01 01 00 10 01 01 01 18 01 01 00 20 01 02 00	

Tag	Element Name	Data	v3.x
9F 07	Application Usage Control	FF 00 BYTE 1: b8 - Domestic cash trans. valid b7 - Int'l cash transactions valid b6 - Domestic goods valid b5 - International goods valid b4 - Domestic services valid b3 - International services valid b2 - ATMs valid b1 - non-ATM terminals valid BYTE 2: b8 - Domestic cashback NOT allowed b7 - International cashback NOT allowed	
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]	03	
9F 17	Personal Identification Number (PIN) Try Counter	03	
9F 23	Counter 1 Upper Limit [Mastercard]	05	
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	

Tag	Element Name	Data	v3.x
9F 46	ICC Public Key Certificate	A4 A2 DC 13 89 93 C8 02 1C ED 0E 0A 4F A1 F4 0C E2 85 12 42 CD 1B D8 78 D8 D2 FF 9A 7E E3 3C 9D 07 1D D4 BA D2 7E 29 84 06 AC AD B9 E0 6A 0E 14 E4 6D E7 81 06 2C C0 56 2E 68 FA 3C 8E 4A 4C 91 BA 50 72 00 54 99 A6 1B 89 BA 6D 4D 5F 37 01 5D 5B 56 16 FF EB 74 C5 0E 17 52 C0 5E FD E9 A1 54 6E F1 8A 85 05 FB 68 18 BE AF 9F 16 B0 86 D2 AA C7 96 BE 6B 04 E7 EB EE DA E7 B4 5B 77 A0 34 2F BE D3 1F 1B 95 61 BE 6B 32 98 FA 8D 8B 37 7A DA F1 0F F2 83 59 D4 54 8D EB 72 A4 18 0D 68 D6 6D 39 C0 32 EE 74 95 3D A9 11 BE 5B 02 4D 0E CB 2F 42 F9 80 A7 E2 8C 44 F3 66 C8 17 9D E5 29 7B 60 BA ED 88 B6 78 D6 20 13 B4 AC 9D 55 1D 68 11 7C 8B 8C 00 34 51 FA E7 50 E3 BD B7 A9 CB 88 14 DD 4D DB 08 00 03 03 10 92 2C 86 4E 66 9C 14 A1 1F	
9F 47	ICC Public Key Exponent	03	
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]	C5 9B	
9F 61	CVC3track2 [Mastercard]	39 9C	
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	

Tag	Element Name	Data	v3.x
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 02 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	
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

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				