



Elavon DCC Test Card Set

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Revision History

Version	Date	Updated By	Revisions
1.00	July 14, 2016	B2PS	<ul style="list-style-type: none">• Initial document release
1.01	June 26, 2019	B2PS	<ul style="list-style-type: none">• “UL” branding removed from page header. No change to cards themselves.
2.00	April 2, 2021	B2PS	<ul style="list-style-type: none">• TC01 – updated cardstock support.• TC03, TC04 – change Expiry Date to 25/12
3.00	Dec 7, 2022	B2PS	<ul style="list-style-type: none">• TC01, TC02 – change Expiry Date to 25/12• TC02, TC04 – new support for contactless

Table of Contents

Chapter 1 - Elavon Dynamic Currency Conversion (DCC) Test Card Set Profiles	.2
1.1 Test Card 01 - Visa, DI, English/French, Canada, CAD	4
1.1.1 Contact: CVM List - Visa, AID A0000000031010 (EMV)	4
1.1.2 Contact: Application Tag Data - AID A0000000031010 (EMV)	4
1.1.3 CTLS: Application Tag Data - AID A0000000031010 (qVSDC, online)	7
1.1.4 CTLS: Application Tag Data - AID A0000000031010 (qVSDC, offline)	10
1.2 Test Card 02 - Visa, DI, French/English, France, EUR	11
1.2.1 Contact: CVM List - Visa, AID A0000000031010 (EMV)	11
1.2.2 Contact: Application Tag Data - AID A0000000031010 (EMV)	11
1.2.3 CTLS: Application Tag Data - AID A0000000031010 (qVSDC, online)	14
1.2.4 CTLS: Application Tag Data - AID A0000000031010 (qVSDC, offline)	17
1.3 Test Card 03 - Mastercard, DI, English, Great Britain, GBP	18
1.3.1 Contact: CVM List - Mastercard, AID A0000000041010 (EMV)	18
1.3.2 Contact: Application Tag Data - AID A0000000041010 (EMV)	18
1.3.3 CTLS: CVM List - Mastercard, AID A0000000041010 (PayPass MChip)	23
1.3.4 CTLS: Application Tag Data - AID A0000000041010 (PayPass MChip)	23
1.4 Test Card 04 - Mastercard, DI, Japanese/English, Japan, JPY	28
1.4.1 Contact: CVM List - Mastercard, AID A0000000041010 (EMV)	28
1.4.2 Contact: Application Tag Data - AID A0000000041010 (EMV)	28
1.4.3 CTLS: CVM List - Mastercard, AID A0000000041010 (PayPass MChip)	33
1.4.4 CTLS: Application Tag Data - AID A0000000041010 (PayPass MChip)	33
Chapter 2 - ASCII Character Conversion Chart	39

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 - Elavon Dynamic Currency Conversion (DCC) Test Card Set Profiles

The Elavon DCC (Dynamic Currency Conversion) Test Card Set contains 4 cards featuring multiple Issuer Country and Currency codes.



	Test Card 01	Test Card 02	Test Card 03
Brand	Visa	Visa	Mastercard
Description (Card - Types)	Credit	Credit	Credit
AID list	A0000000031010	A0000000031010	A0000000041010
PAN list	4032 7600 0999 9999	4160 2944 4444 4449	5101 0800 0000 0009
Expiry Date	12/2025	12/2025	12/2025
Service Code	201	201	201
Interface	Contactless, Contact, MSR	Contact, Contactless, MSR	Contactless, Contact, MSR
CVM (Contact) Default Condition: Terminal Supports CVM	Online PIN (ATM) Offline Plaintext PIN Signature NO CVM required See card definition	Online PIN (ATM) Online PIN (MCash) Signature NO CVM required See card definition	Online PIN (ATM) Offline Plaintext PIN Signature NO CVM required See card definition
Approval Amount	\$10.00	\$10.00	\$20.00
Issuer Country Code	124 - CAN	250 - FRA	826 - GBR
Application Currency Code	124 -CAD	978 - EUR	826 - GBP
Language	'enfr' - English, French	'fren' - French, English	'en' - English
Card Version	v3.x	v2.x	v3.x

Test Card 04	
Brand	Mastercard
Description (Card - Types)	Credit
AID list	A0000000041010
PAN list	5120 7900 0000 0000
Expiry Date	12/2025
Service Code	201
Interface	Contact, Contactless, MSR
CVM (Contact) Default Condition: <i>Terminal Supports CVM</i>	Online PIN (ATM) Offline Plaintext PIN Signature NO CVM required See card definition
Approval Amount	\$20.00
Issuer Country Code	392 - JPN
Application Currency Code	392 - JPY
Language	'jpen' - Japanese, English
Card Version	v3.x

1.1 Test Card 01 - Visa, DI, English/French, Canada, CAD

A Dual Interface (Contact / Contactless) Visa card with an Issuer Country Code of Canada and Currency Code of Canadian Dollar. Languages supported are English and French.

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

1.1.1 Contact: CVM List - Visa, AID A000000031010 (EMV)

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

1.1.2 Contact: Application Tag Data - AID A000000031010 (EMV)

Tag	Element name	Data	v3.x
50	Application Label	56 49 53 41 20 43 52 45 44 49 54 - 'VISA CREDIT'	
57	Track 2 Equivalent Data	40 32 76 00 09 99 99 99 D2 51 22 01 11 43 80 44 00 00 0F	
5A	Application Primary Account Number (PAN)	40 32 76 00 09 99 99 99	
5F 20	Cardholder Name	45 4C 41 56 4F 4E 20 44 43 43 2F 54 45 53 54 20 43 41 52 44 20 30 31 20 20 20 - 'ELAVON DCC/TEST CARD 01'	
5F 24	Application Expiration Date	25 12 31	
5F 25	Application Effective Date	xx xx xx *	
5F 28	Issuer Country Code	01 24 - CAN	
5F 2D	Language Preference	65 6E 66 72 - 'enfr' (English, French)	
5F 30	Service Code	02 01	
5F 34	Application PAN Sequence Number	01	
82	Application Interchange Profile [VIS]	1C 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 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 41 03 5E 03 1F 03	
8F	Certification Authority Public Key Index	B9	

Tag	Element name	Data	v3.x
90	Issuer Public Key Certificate	7C D6 EE 22 E1 A8 63 1A 3B F3 E7 E6 24 8E F8 4F A4 D4 BE 2E AA 66 0F B2 FC AE 72 C6 0E CD B7 44 BD D0 13 F8 EC AC 8E D0 5B 90 69 85 81 61 40 DF 89 7E 61 0C 0C D2 A7 08 5B 57 6E 28 7A 5A 7E 9B 07 A3 61 53 CB E8 DD 47 C9 53 00 95 69 2D 66 98 58 0C 67 11 48 26 00 6D 8D 7E DB 35 02 F2 BD 90 2F 57 00 01 C5 05 D1 5D B0 FB F8 A8 13 D3 34 7A 39 BF 8F 7D 0F C4 32 9B A4 18 EF 35 F7 42 56 57 AD A4 95 0E FD 0F 9E 27 51 DD DA 5A 5B E0 58 78 96 D4 D6 E1 57 A5 7F 55 E4 0B 94 27 4F 87 F9 E4 77 2B 91 E2 32 D2 C0 4B 9E 10 21 D9 6D 2B 8E B5 20 07 B2 4E AB 48 17 BF D8 1A FB E4 46 B9 CA BE DA F3 C7 0F 86 19 EF 3E B0 68 49 95 7F B8 8E CE A5 C4 31 A4 7A 95 7C A7 1E 45 A0 B0 E4 70 D5 69 1C C0 6C 01 86 10 91 4C 56 F0 D8 E4 F0 16 00 0E AF 2D 2C 73 35 93 02 98	
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	
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	09	
9F 1F	Track 1 Discretionary Data	31 31 34 33 38 30 34 34 30 30 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 42	Application Currency Code	01 24 - CAD	
9F 44	Application Currency Exponent	02	

Tag	Element name	Data	v3.x
9F 46	ICC Public Key Certificate	3B 3E 40 AC 8B 49 55 6D D4 72 0B D8 40 18 C3 7E 4A A1 61 89 A7 C5 B3 A7 B7 DA E5 D2 6A DD FA 00 EE CF F2 81 7B B8 E1 4A 2F 0C DB 70 A2 BA AC 29 F9 8B 93 5C 14 A9 B4 B4 F7 17 45 AD CA 99 6E 49 39 2C 57 9B EA F1 CD AD D1 FB 8C 8C 83 55 89 66 E5 60 24 21 62 96 25 61 D7 D5 74 45 22 F9 46 35 9A B5 9C FA BB 72 C3 66 34 5E FA 86 6D B4 0B CC 49 21 85 5D EE E4 49 5B 9E BA CE E8 E1 BD 6B 6B E7 62 33 BB D1 BA 39 4A 99 86 25 F2 10 E1 73 F1 01 9D 95 CA B4 83 CE 1B 2B F8 F4 66 15 96 3D 4F E4 48 04 4B 4C 17 B6 8B 56 0B A9 CD 05 52 88 38	
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]	01 24 - CAD	
9F 52	Application Default Action [VSDC VIS 1.5]	C0 30 00 00 00 00	
9F 53	Consecutive Transaction Limit (International) [VSDC]	03	
9F 54	Cumulative Total Transaction Amount Limit [VSDC]	00 00 00 02 00 00	
9F 56	Issuer Authentication Indicator [VSDC]	80	
9F 57	Issuer Country Code [VSDC]	01 24 - CAN	
9F 58	Consecutive Transaction Counter Limit [VSDC]	03	
9F 59	Consecutive Transaction Counter Upper Limit [VSDC]	07	
9F 5C	Cumulative Total Transaction Amount Upper Limit [VSDC]	00 00 00 04 00 00	
9F 5E	Consecutive Transaction International Upper Limit [VSDC]	07	
9F 68	Card Additional Processes [qVSDC VCPS 2.1]	0A 00 F0 00	
9F 72	Consecutive Transaction Limit (International-Country) [VSDC]	03	
BF 55	Contactless Counters Data Template	DF 11 01 00 DF 21 01 03 DF 31 01 07	
BF 56	Counters Data Template	DF 11 01 01 DF 21 01 03 DF 31 01 07	
BF 57	International Counters Data Template	DF 11 01 01 DF 21 01 03 DF 31 01 07 DF 51 01 04 DF 61 01 03	
BF 58	Amounts Data Template	DF 11 06 00 00 00 01 00 00 DF 21 06 00 00 00 02 00 00 DF 31 06 00 00 00 04 00 00	
BF 5B	Application Internal Data Template	DF 01 02 00 00	

* Tag value changes with card usage

1.1.3 CTLS: Application Tag Data - AID A000000031010 (qVSDC, online)

Tag	Element name	Data	v3.x
50	Application Label	56 49 53 41 20 43 52 45 44 49 54 - 'VISA CREDIT'	
57	Track 2 Equivalent Data	40 32 76 00 09 99 99 99 D2 51 22 01 11 43 80 44 00 00 0F	
5A	Application Primary Account Number (PAN)	40 32 76 00 09 99 99 99	
5F 24	Application Expiration Date	25 12 31	
5F 2D	Language Preference	65 6E 66 72 - 'enfr' (English, French)	
5F 34	Application PAN Sequence Number	01	
82	Application Interchange Profile [VCPS]	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	B9	
90	Issuer Public Key Certificate	7C D6 EE 22 E1 A8 63 1A 3B F3 E7 E6 24 8E F8 4F A4 D4 BE 2E AA 66 0F B2 FC AE 72 C6 0E CD B7 44 BD D0 13 F8 EC AC 8E D0 5B 90 69 85 81 61 40 DF 89 7E 61 0C 0C D2 A7 08 5B 57 6E 28 7A 5A 7E 9B 07 A3 61 53 CB E8 DD 47 C9 53 00 95 69 2D 66 98 58 0C 67 11 48 26 00 6D 8D 7E DB 35 02 F2 BD 90 2F 57 00 01 C5 05 D1 5D B0 FB F8 A8 13 D3 34 7A 39 BF 8F 7D 0F C4 32 9B A4 18 EF 35 F7 42 56 57 AD A4 95 0E FD 0F 9E 27 51 DD DA 5A 5B E0 58 78 96 D4 D6 E1 57 A5 7F 55 E4 0B 94 27 4F 87 F9 E4 77 2B 91 E2 32 D2 C0 4B 9E 10 21 D9 6D 2B 8E B5 20 07 B2 4E AB 48 17 BF D8 1A FB E4 46 B9 CA BE DA F3 C7 0F 86 19 EF 3E B0 68 49 95 7F B8 8E CE A5 C4 31 A4 7A 95 7C A7 1E 45 A0 B0 E4 70 D5 69 1C C0 6C 01 86 10 91 4C 56 F0 D8 E4 F0 16 00 0E AF 2D 2C 73 35 93 02 98	
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	09	
9F 26	Application Cryptogram (AC)	xx xx xx xx xx xx xx xx *	
9F 27	Cryptogram Information Data (CID)	80	
9F 32	Issuer Public Key Exponent	03	
9F 36	Application Transaction Counter (ATC)	xx xx *	
9F 38	Processing Options Data Object List (PDOL)	9F 66 04 9F 02 06 9F 03 06 9F 1A 02 95 05 5F 2A 02 9A 03 9C 01 9F 37 04	

Tag	Element name	Data	v3.x
9F 46	ICC Public Key Certificate	9C 7F 55 2B E3 EE 78 42 11 19 D7 BF 76 E5 9C 16 31 83 2E 5A 87 D6 22 87 82 64 72 F7 E6 9A 26 2C 60 48 42 33 E2 52 E9 9C 33 B8 4E 1B F4 F5 57 8E D3 C0 6C 21 8A C4 FA 35 08 94 1D FA EE EC E8 49 B1 A1 D9 B8 F3 36 87 5F 38 78 85 C1 26 ED 98 B5 6B 2F EC 17 4C 24 F4 2D A1 B6 CA 85 09 A7 7B DB CD 34 AD 25 84 37 D3 2F 31 39 62 97 BF E5 E1 BB 5C A1 65 8F 64 1A 5F C6 07 2E 14 FA 9B E6 BB DC A5 9F 91 89 AD F7 BC 61 F4 F9 7A 0D 62 D5 6A 51 F6 6C 8A 3C 5F 4D 0C 26 B9 3E D2 39 53 49 9C A4 CC 1D F5 30 2A 96 75 04 28 B7 02 DE 49 B6 D3 6B	
9F 47	ICC Public Key Exponent	03	
9F 4A	Static Data Authentication Tag List	82	
9F 51	Application Currency Code [VSDC]	01 24 - CAD	
9F 52	Application Default Action [VSDC VIS 1.5]	C0 30 00 00 00 00	
9F 53	Consecutive Transaction Limit (International) [VSDC]	03	
9F 54	Cumulative Total Transaction Amount Limit [VSDC]	00 00 00 02 00 00	
9F 56	Issuer Authentication Indicator [VSDC]	80	
9F 57	Issuer Country Code [VSDC]	01 24 - CAN	
9F 58	Consecutive Transaction Counter Limit [VSDC]	03	
9F 59	Consecutive Transaction Counter Upper Limit [VSDC]	07	
9F 5A	Application Program Identifier	31 08 40 08 40	
9F 5C	Cumulative Total Transaction Amount Upper Limit [VSDC]	00 00 00 04 00 00	
9F 5E	Consecutive Transaction International Upper Limit [VSDC]	07	
9F 68	Card Additional Processes [qVSDC VCPS 2.1]	0A 00 F0 00	

Tag	Element name	Data	v3.x
9F 69	Card Authentication Related Data [qVSDC]	01 00 00 00 00 00 00 LAST TWO BYTES BYTE 1: b8 - Online PIN NOT required b7 - Signature NOT required b6 - Do NOT go online if Offline Data Authentication fails and Reader is online capable b5 - Do NOT switch interface if Offline Data Authentication fails and Reader supports contact chip b4 - Do NOT 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 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]	03	
BF 55	Contactless Counters Data Template	DF 11 01 00 DF 21 01 03 DF 31 01 07	
BF 56	Counters Data Template	DF 11 01 00 DF 21 01 03 DF 31 01 07	
BF 57	International Counters Data Template	DF 11 01 00 DF 21 01 03 DF 31 01 07 DF 51 01 03 DF 61 01 03	
BF 58	Amounts Data Template	DF 11 06 00 00 00 01 00 00 DF 21 06 00 00 00 02 00 00 DF 31 06 00 00 00 04 00 00	

* Tag value changes with card usage

1.1.4 CTLS: Application Tag Data - AID A000000031010 (qVSDC, offline)

Tag	Element name	Data	v3.x
50	Application Label	56 49 53 41 20 43 52 45 44 49 54 - 'VISA CREDIT'	
57	Track 2 Equivalent Data	40 32 76 00 09 99 99 D2 51 22 01 11 43 80 44 00 00 0F	
5F 2D	Language Preference	65 6E 66 72 - 'enfr' (English, French)	
5F 34	Application PAN Sequence Number	01	
82	Application Interchange Profile [VCPS]	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	
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	09	
9F 26	Application Cryptogram (AC)	xx xx xx xx xx xx xx xx *	
9F 27	Cryptogram Information Data (CID)	00	
9F 36	Application Transaction Counter (ATC)	xx xx *	
9F 38	Processing Options Data Object List (PDOL)	9F 66 04 9F 02 06 9F 03 06 9F 1A 02 95 05 5F 2A 02 9A 03 9C 01 9F 37 04	
9F 51	Application Currency Code [VSDC]	01 24 - CAD	
9F 52	Application Default Action [VSDC VIS 1.5]	C0 30 00 00 00 00	
9F 53	Consecutive Transaction Limit (International) [VSDC]	03	
9F 54	Cumulative Total Transaction Amount Limit [VSDC]	00 00 00 02 00 00	
9F 56	Issuer Authentication Indicator [VSDC]	80	
9F 57	Issuer Country Code [VSDC]	01 24 - CAN	
9F 58	Consecutive Transaction Counter Limit [VSDC]	03	
9F 59	Consecutive Transaction Counter Upper Limit [VSDC]	07	
9F 5A	Application Program Identifier	31 08 40 08 40	
9F 5C	Cumulative Total Transaction Amount Upper Limit [VSDC]	00 00 00 04 00 00	
9F 5E	Consecutive Transaction International Upper Limit [VSDC]	07	
9F 68	Card Additional Processes [qVSDC VCPS 2.1]	0A 00 F0 00	
9F 6C	Card Transaction Qualifiers [qVSDC VCPS 2.1]	38 00	
9F 6E	Form Factor Indicator [qVSDC]	20 70 00 00	
9F 72	Consecutive Transaction Limit (International-Country) [VSDC]	03	
BF 55	Contactless Counters Data Template	DF 11 01 00 DF 21 01 03 DF 31 01 07	
BF 56	Counters Data Template	DF 11 01 00 DF 21 01 03 DF 31 01 07	
BF 57	International Counters Data Template	DF 11 01 00 DF 21 01 03 DF 31 01 07 DF 51 01 03 DF 61 01 03	

Tag	Element name	Data	v3.x
BF 58	Amounts Data Template	DF 11 06 00 00 00 01 00 00 DF 21 06 00 00 00 02 00 00 DF 31 06 00 00 00 04 00 00	
BF 5B	Application Internal Data Template	DF 01 02 00 00	

* Tag value changes with card usage

1.2 Test Card 02 - Visa, DI, French/English, France, EUR

A Dual Interface (Contact / Contactless) Visa card with an Issuer Country Code of France and Currency Code of Euro. Languages supported are French and English.

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

1.2.1 Contact: CVM List - Visa, AID A000000031010 (EMV)

Cardholder Verification Method List ('4201 4204 5E03 1F00')			
CVM	Verification Method	Conditions	If unsuccessful
1	Online PIN	Unattended Cash	Next CVM
2	Online PIN	Manual Cash	Next CVM
3	Signature (paper)	Terminal supports CVM type	Next CVM
4	NO CVM required	Terminal supports CVM type	Fail

1.2.2 Contact: Application Tag Data - AID A000000031010 (EMV)

Tag	Element name	Data	v2.x
50	Application Label	56 49 53 41 20 43 52 45 44 49 54 - 'VISA CREDIT'	
57	Track 2 Equivalent Data	41 60 29 44 44 44 44 49 D2 51 22 01 11 43 80 44 00 00 0F	
5A	Application Primary Account Number (PAN)	41 60 29 44 44 44 44 49	
5F 20	Cardholder Name	45 4C 41 56 4F 4E 20 44 43 43 2F 54 45 53 54 20 43 41 52 44 20 30 32 20 20 20 - 'ELAVON DCC/TEST CARD 02'	
5F 24	Application Expiration Date	25 12 31	
5F 25	Application Effective Date	xx xx xx *	
5F 28	Issuer Country Code	02 50 - FRA	
5F 2D	Language Preference	66 72 65 6E - 'fren' French, English)	
5F 30	Service Code	02 01	
5F 34	Application PAN Sequence Number	01	
82	Application Interchange Profile [VIS]	1C 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 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 42 04 5E 03 1F 00	
8F	Certification Authority Public Key Index	B9	
90	Issuer Public Key Certificate	7C D6 EE 22 E1 A8 63 1A 3B F3 E7 E6 24 8E F8 4F A4 D4 BE 2E AA 66 0F B2 FC AE 72 C6 0E CD B7 44 BD D0 13 F8 EC AC 8E D0 5B 90 69 85 81 61 40 DF 89 7E 61 0C 0C D2 A7 08 5B 57 6E 28 7A 5A 7E 9B 07 A3 61 53 CB E8 DD 47 C9 53 00 95 69 2D 66 98 58 0C 67 11 48 26 00 6D 8D 7E DB 35 02 F2 BD 90 2F 57 00 01 C5 05 D1 5D B0 FB F8 A8 13 D3 34 7A 39 BF 8F 7D 0F C4 32 9B A4 18 EF 35 F7 42 56 57 AD A4 95 0E FD 0F 9E 27 51 DD DA 5A 5B E0 58 78 96 D4 D6 E1 57 A5 7F 55 E4 0B 94 27 4F 87 F9 E4 77 2B 91 E2 32 D2 C0 4B 9E 10 21 D9 6D 2B 8E B5 20 07 B2 4E AB 48 17 BF D8 1A FB E4 46 B9 CA BE DA F3 C7 0F 86 19 EF 3E B0 68 49 95 7F B8 8E CE A5 C4 31 A4 7A 95 7C A7 1E 45 A0 B0 E4 70 D5 69 1C C0 6C 01 86 10 91 4C 56 F0 D8 E4 F0 16 00 0E AF 2D 2C 73 35 93 02 98	
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	
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	09	

Tag	Element name	Data	v2.x
9F 1F	Track 1 Discretionary Data	31 31 34 33 38 30 34 34 30 30 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 42	Application Currency Code	09 78 - EUR	
9F 44	Application Currency Exponent	02	
9F 46	ICC Public Key Certificate	45 99 E2 FD 9E 46 03 63 FC FE B1 A3 87 FE 9C 44 5B 11 87 FB 83 A3 59 F4 2D F1 6B E6 90 76 32 3F 31 59 B0 FB 50 F0 53 C9 C3 95 94 25 4F E0 C8 71 82 F2 CC 94 19 16 70 EF 69 61 76 55 45 3D 5B 7D 4F A6 B1 1F C9 4A 08 BA A0 37 01 50 87 58 BF 9E 43 69 E3 F0 0E FB 9F EB 10 A8 7B 87 16 C8 0A 76 D5 F6 C0 35 31 35 B9 86 2C CE D8 B9 26 7C 35 27 E9 4B DC 16 98 88 27 66 C4 EF 1B 8D 98 64 76 C3 3B 8D 73 61 77 1D BD 35 46 4A A1 33 DD 8C 15 5F 99 33 53 E9 CF 22 B0 F4 90 7C 73 24 B9 0D 40 C9 1F 22 21 39 DF 08 F4 E1 9D 12 C6 DB 0B 83 9F 41	
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]	09 78 - EUR	
9F 52	Application Default Action [VSDC VIS 1.5]	C0 30 00 00 00 00	
9F 53	Consecutive Transaction Limit (International) [VSDC]	03	
9F 54	Cumulative Total Transaction Amount Limit [VSDC]	00 00 00 02 00 00	
9F 56	Issuer Authentication Indicator [VSDC]	80	
9F 57	Issuer Country Code [VSDC]	02 50 - FRA	
9F 58	Consecutive Transaction Counter Limit [VSDC]	03	
9F 59	Consecutive Transaction Counter Upper Limit [VSDC]	07	
9F 5C	Cumulative Total Transaction Amount Upper Limit [VSDC]	00 00 00 04 00 00	
9F 5E	Consecutive Transaction International Upper Limit [VSDC]	07	
9F 68	Card Additional Processes [qVSDC VCPS 2.1]	0A 00 F0 00	
9F 72	Consecutive Transaction Limit (International-Country) [VSDC]	03	
BF 55	Contactless Counters Data Template	DF 11 01 00 DF 21 01 03 DF 31 01 07	
BF 56	Counters Data Template	DF 11 01 01 DF 21 01 03 DF 31 01 07	
BF 57	International Counters Data Template	DF 11 01 01 DF 21 01 03 DF 31 01 07 DF 51 01 04 DF 61 01 03	
BF 58	Amounts Data Template	DF 11 06 00 00 00 01 00 00 DF 21 06 00 00 00 02 00 00 DF 31 06 00 00 00 04 00 00	

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

* Tag value changes with card usage

1.2.3 CTLS: Application Tag Data - AID A000000031010 (qVSDC, online)

Tag	Element name	Data	v3.x
50	Application Label	56 49 53 41 20 43 52 45 44 49 54 - 'VISA CREDIT'	
57	Track 2 Equivalent Data	41 60 29 44 44 44 44 49 D2 51 22 01 11 43 80 44 00 00 0F	
5A	Application Primary Account Number (PAN)	41 60 29 44 44 44 44 49	
5F 24	Application Expiration Date	25 12 31	
5F 2D	Language Preference	66 72 65 6E - 'fren' French, English)	
5F 34	Application PAN Sequence Number	01	
82	Application Interchange Profile [VCPS]	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	B9	
90	Issuer Public Key Certificate	7C D6 EE 22 E1 A8 63 1A 3B F3 E7 E6 24 8E F8 4F A4 D4 BE 2E AA 66 0F B2 FC AE 72 C6 0E CD B7 44 BD D0 13 F8 EC AC 8E D0 5B 90 69 85 81 61 40 DF 89 7E 61 0C 0C D2 A7 08 5B 57 6E 28 7A 5A 7E 9B 07 A3 61 53 CB E8 DD 47 C9 53 00 95 69 2D 66 98 58 0C 67 11 48 26 00 6D 8D 7E DB 35 02 F2 BD 90 2F 57 00 01 C5 05 D1 5D B0 FB F8 A8 13 D3 34 7A 39 BF 8F 7D 0F C4 32 9B A4 18 EF 35 F7 42 56 57 AD A4 95 0E FD 0F 9E 27 51 DD DA 5A 5B E0 58 78 96 D4 D6 E1 57 A5 7F 55 E4 0B 94 27 4F 87 F9 E4 77 2B 91 E2 32 D2 C0 4B 9E 10 21 D9 6D 2B 8E B5 20 07 B2 4E AB 48 17 BF D8 1A FB E4 46 B9 CA BE DA F3 C7 0F 86 19 EF 3E B0 68 49 95 7F B8 8E CE A5 C4 31 A4 7A 95 7C A7 1E 45 A0 B0 E4 70 D5 69 1C C0 6C 01 86 10 91 4C 56 F0 D8 E4 F0 16 00 0E AF 2D 2C 73 35 93 02 98	
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	09	
9F 26	Application Cryptogram (AC)	xx xx xx xx xx xx xx xx *	
9F 27	Cryptogram Information Data (CID)	80	
9F 32	Issuer Public Key Exponent	03	
9F 36	Application Transaction Counter (ATC)	xx xx *	

Tag	Element name	Data	v3.x
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	46 DE 43 F6 0F 85 76 44 74 76 10 E4 DC 74 7A F7 4B 88 CE 81 DE C8 DE 77 1F F9 75 D1 AD B0 A1 70 61 51 2D A7 C7 F9 ED 50 E7 30 21 E5 45 1C D3 00 13 21 70 06 27 4F 56 D8 28 46 0F 83 5F 77 39 90 D4 39 41 2F 4D E4 81 73 16 95 34 32 0C CF E9 53 F1 EF CF FF 4C 5C AA 17 9B 3C 23 09 C2 6D C9 B8 06 47 1E 2D FC 50 EA 11 59 B5 F5 D6 3E 2A 18 38 7F 0D 65 24 58 27 C1 AB BA 21 A1 9B BB 71 D1 E7 B8 5D 95 BA 59 8B BD 1B F4 9C 4F 55 4A 7C EE 77 87 42 52 6E 89 93 8F 0D AB 21 BF BD 24 15 E4 BB 32 40 32 29 57 F2 91 83 38 EA 6F 3B D0 8C 36 BA	
9F 47	ICC Public Key Exponent	03	
9F 4A	Static Data Authentication Tag List	82	
9F 51	Application Currency Code [VSDC]	09 78 - EUR	
9F 52	Application Default Action [VSDC VIS 1.5]	C0 30 00 00 00 00	
9F 53	Consecutive Transaction Limit (International) [VSDC]	03	
9F 54	Cumulative Total Transaction Amount Limit [VSDC]	00 00 00 02 00 00	
9F 56	Issuer Authentication Indicator [VSDC]	80	
9F 57	Issuer Country Code [VSDC]	02 50 - FRA	
9F 58	Consecutive Transaction Counter Limit [VSDC]	03	
9F 59	Consecutive Transaction Counter Upper Limit [VSDC]	07	
9F 5A	Application Program Identifier	31 02 50 02 50	
9F 5C	Cumulative Total Transaction Amount Upper Limit [VSDC]	00 00 00 04 00 00	
9F 5E	Consecutive Transaction International Upper Limit [VSDC]	07	
9F 68	Card Additional Processes [qVSDC VCPS 2.1]	0A 00 F0 00	

Tag	Element name	Data	v3.x
9F 69	Card Authentication Related Data [qVSDC]	01 00 00 00 00 00 00 LAST TWO BYTES BYTE 1: b8 - Online PIN NOT required b7 - Signature NOT required b6 - Do NOT go online if Offline Data Authentication fails and Reader is online capable b5 - Do NOT switch interface if Offline Data Authentication fails and Reader supports contact chip b4 - Do NOT 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 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]	03	
BF 55	Contactless Counters Data Template	DF 11 01 00 DF 21 01 03 DF 31 01 07	
BF 56	Counters Data Template	DF 11 01 00 DF 21 01 03 DF 31 01 07	
BF 57	International Counters Data Template	DF 11 01 00 DF 21 01 03 DF 31 01 07 DF 51 01 03 DF 61 01 03	
BF 58	Amounts Data Template	DF 11 06 00 00 00 01 00 00 DF 21 06 00 00 00 02 00 00 DF 31 06 00 00 00 04 00 00	
BF 5B	Application Internal Data Template	DF 01 02 00 00	

* Tag value changes with card usage

1.2.4 CTLs: Application Tag Data - AID A000000031010 (qVSDC, offline)

Tag	Element name	Data	v3.x
50	Application Label	56 49 53 41 20 43 52 45 44 49 54 - 'VISA CREDIT'	
57	Track 2 Equivalent Data	41 60 29 44 44 44 44 49 D2 51 22 01 11 43 80 44 00 00 0F	
5F 2D	Language Preference	66 72 65 6E - 'fren' French, English)	
5F 34	Application PAN Sequence Number	01	
82	Application Interchange Profile [VCPS]	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	
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	09	
9F 26	Application Cryptogram (AC)	xx xx xx xx xx xx xx xx *	
9F 27	Cryptogram Information Data (CID)	00	
9F 36	Application Transaction Counter (ATC)	xx xx *	
9F 38	Processing Options Data Object List (PDOL)	9F 66 04 9F 02 06 9F 03 06 9F 1A 02 95 05 5F 2A 02 9A 03 9C 01 9F 37 04	
9F 51	Application Currency Code [VSDC]	09 78 - EUR	
9F 52	Application Default Action [VSDC VIS 1.5]	C0 30 00 00 00 00	
9F 53	Consecutive Transaction Limit (International) [VSDC]	03	
9F 54	Cumulative Total Transaction Amount Limit [VSDC]	00 00 00 02 00 00	
9F 56	Issuer Authentication Indicator [VSDC]	80	
9F 57	Issuer Country Code [VSDC]	02 50 - FRA	
9F 58	Consecutive Transaction Counter Limit [VSDC]	03	
9F 59	Consecutive Transaction Counter Upper Limit [VSDC]	07	
9F 5A	Application Program Identifier	31 02 50 02 50	
9F 5C	Cumulative Total Transaction Amount Upper Limit [VSDC]	00 00 00 04 00 00	
9F 5E	Consecutive Transaction International Upper Limit [VSDC]	07	
9F 68	Card Additional Processes [qVSDC VCPS 2.1]	0A 00 F0 00	
9F 6C	Card Transaction Qualifiers [qVSDC VCPS 2.1]	38 00	
9F 6E	Form Factor Indicator [qVSDC]	20 70 00 00	
9F 72	Consecutive Transaction Limit (International-Country) [VSDC]	03	
BF 55	Contactless Counters Data Template	DF 11 01 00 DF 21 01 03 DF 31 01 07	
BF 56	Counters Data Template	DF 11 01 00 DF 21 01 03 DF 31 01 07	
BF 57	International Counters Data Template	DF 11 01 00 DF 21 01 03 DF 31 01 07 DF 51 01 03 DF 61 01 03	

Tag	Element name	Data	v3.x
BF 58	Amounts Data Template	DF 11 06 00 00 00 01 00 00 DF 21 06 00 00 00 02 00 00 DF 31 06 00 00 00 04 00 00	
BF 5B	Application Internal Data Template	DF 01 02 00 00	

* Tag value changes with card usage

1.3 Test Card 03 - Mastercard, DI, English, Great Britain, GBP

A Dual Interface (Contact / Contactless) Mastercard card with an Issuer Country Code of Great Britain and Currency Code of British Pound. Language supported is English.

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

1.3.1 Contact: CVM List - Mastercard, AID A000000041010 (EMV)

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

1.3.2 Contact: Application Tag Data - AID A000000041010 (EMV)

Tag	Element name	Data	v3.x
50	Application Label	4D 41 53 54 45 52 43 41 52 44 - 'MASTERCARD'	
57	Track 2 Equivalent Data	51 01 08 00 00 00 00 09 D2 51 22 01 01 23 40 91 72 02 9F	
5A	Application Primary Account Number (PAN)	51 01 08 00 00 00 00 09	
5F 20	Cardholder Name	45 4C 41 56 4F 4E 20 44 43 43 2F 54 45 53 54 20 43 41 52 44 20 30 33 20 20 20 - 'ELAVON DCC/TEST CARD 03'	
5F 24	Application Expiration Date	25 12 31	
5F 25	Application Effective Date	xx xx xx *	
5F 28	Issuer Country Code	08 26 - GBR	
5F 2D	Language Preference	65 6E - 'en' (English)	
5F 30	Service Code	02 01	
5F 34	Application PAN Sequence Number	01	
82	Application Interchange Profile	18 00 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 - 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 41 03 5E 03 1F 03	
8F	Certification Authority Public Key Index	FA	
90	Issuer Public Key Certificate	18 89 B9 97 E6 FC E8 4B 4A E7 AB 87 43 1C BD B3 DF 8C 1D 5A 55 A7 F6 0D 29 59 AF 3A 51 04 E7 58 83 17 ED 74 08 66 68 CF 1A 05 47 84 F7 49 3C 6D 74 7F A7 96 EC 14 D3 33 A6 8E C7 E0 08 62 95 9A 0B D0 F0 48 20 80 B7 1A C1 B7 62 5B 1B 8B 1F 35 A6 69 19 99 BA 78 F5 92 E2 3F 95 E9 96 09 D1 08 CF 1C 0E 30 8A 8B F6 4F BD E8 37 D3 CE 13 8A 50 DC 50 AF 4B 41 EE 53 D9 8A 11 B6 A8 1D DD 44 CC 43 0C 1E F3 BB 9D 1D 75 A0 2F AA 9C 81 4A FC 58	
92	Issuer Public Key Remainder	D3 52 41 07	
94	Application File Locator (AFL)	08 02 04 01 18 01 01 00 20 01 01 00	
94	Application File Locator (AFL)	08 02 04 01 18 01 01 00 20 01 01 00	
9F 07	Application Usage Control	FF 00 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	BC 50 BC 80 00	
9F 0E	Issuer Action Code - Denial	00 00 00 00 00	
9F 0F	Issuer Action Code - Online	BC 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 43 61 72 64 - 'MasterCard'	
9F 14	Counter 1 Lower Limit [Mastercard]	00	
9F 17	Personal Identification Number (PIN) Try Counter	09	
9F 1F	Track 1 Discretionary Data	30 31 32 33 34 30 39 31 37 32 30 30 30 30 30 30 30 30 30 30 30 30 30 30	
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	

Tag	Element name	Data	v3.x
9F 36	Application Transaction Counter (ATC)	xx xx *	
9F 42	Application Currency Code	08 26 - GBP	
9F 44	Application Currency Exponent	02	
9F 46	ICC Public Key Certificate	2F 97 BD 47 E1 B0 97 9E C8 2A D7 C2 CA 98 0E C9 DA D2 F7 5B 4B 49 58 D9 1D C1 D7 A2 60 C8 1D ED 6E 78 AD CA DB 5F 7D 5D 35 31 03 39 4D A6 4C 5D 90 A5 24 47 11 3C 11 41 4E 5F E2 79 7A AA F2 9D 65 57 C5 4C F0 DA AF E4 10 1D 5D B3 11 01 D9 B4 A5 9E 87 31 0E A0 18 8A 32 AB BA 6A D6 71 B6 53 E3 A1 62 9A 02 2A DB 6C 53 64 C3 64 05 C0 2B 03	
9F 47	ICC Public Key Exponent	03	
9F 48	ICC Public Key Remainder	E2 23 32 E7 D3 40 6B 63 3D E2 D8 56 91 67 A2 70 8D 5E 05 5B 44 69 DF 03 73 B7 41 0F A0 0C C5 97 25 61 D9 7C 47 6A 8C 4B F8 41	
9F 49	Dynamic Data Authentication Data Object List (DDOL)	9F 37 04	
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 6E	Third Party Data [Mastercard]	08 26 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]	09	
C7	CDOL1 Related Data Length [Mastercard]	42	
C8	CRM Country Code [Mastercard]	08 26 - GBR	
C9	Accumulator 1 Currency Code [Mastercard]	08 26 - GBP	
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]	00 00 00	
D1	Accumulator 1 Currency Conversion Table [Mastercard]	08 26 00 01 00 08 26 00 01 00 08 26 00 01 00 08 26 00 01 00 08 26 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	

Tag	Element name	Data	v3.x
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

1.3.3 CTLS: CVM List - Mastercard, AID A000000041010 (PayPass MChip)

Cardholder Verification Method List ('5E03 1F03')			
CVM	Verification Method	Conditions	If unsuccessful
1	Signature (paper)	Terminal supports CVM type	Next CVM
2	No CVM required	Terminal supports CVM type	Fail

1.3.4 CTLS: Application Tag Data - AID A000000041010 (PayPass MChip)

* Tag value changes with card usage

Tag	Element name	Data	v3.x
50	Application Label	4D 41 53 54 45 52 43 41 52 44 - 'MASTERCARD'	
56	Track 1 Equivalent Data [Mastercard]	42 35 31 30 31 30 38 30 30 30 30 30 30 30 30 39 5E 20 2F 5E 32 35 31 32 32 30 31 30	
57	Track 2 Equivalent Data	51 01 08 00 00 00 00 09 D2 51 22 01 01 23 40 91 72 02 9F	
5A	Application Primary Account Number (PAN)	51 01 08 00 00 00 00 09	
5F 24	Application Expiration Date	25 12 31	
5F 25	Application Effective Date	xx xx xx *	
5F 28	Issuer Country Code	08 26 - GBR	
5F 2D	Language Preference	65 6E - 'en' (English)	
5F 34	Application PAN Sequence Number	01	
82	Application Interchange Profile	18 80 BYTE 1: b7 - Offline SDA NOT supported b6 - Offline DDA NOT supported b5 - Cardholder verification supported b4 - Terminal risk mgmt to be performed b3 - Issuer authentication NOT supported via EXTERNAL AUTH command b1 - Combined DDA / GEN AC NOT supported BYTE 2: b8 - EMV Contactless supported	
84	Dedicated File (DF) Name	A0 00 00 00 04 10 10	
87	Application Priority Indicator	01	
8C	Card Risk Management Data Object List 1 (CDOL1)	9F 02 06 9F 03 06 9F 1A 02 95 05 5F 2A 02 9A 03 9C 01 9F 37 04 9F 35 01 9F 45 02 9F 4C 08 9F 34 03 9F 21 03 9F 7C 14	
8D	Card Risk Management Data Object List 2 (CDOL2)	91 0A 8A 02 95 05 9F 37 04 9F 4C 08	
8E	Cardholder Verification Method (CVM) List	00 00 00 00 00 00 00 00 5E 03 1F 03	
8F	Certification Authority Public Key Index	FA	

Tag	Element name	Data	v3.x
90	Issuer Public Key Certificate	18 89 B9 97 E6 FC E8 4B 4A E7 AB 87 43 1C BD B3 DF 8C 1D 5A 55 A7 F6 0D 29 59 AF 3A 51 04 E7 58 83 17 ED 74 08 66 68 CF 1A 05 47 84 F7 49 3C 6D 74 7F A7 96 EC 14 D3 33 A6 8E C7 E0 08 62 95 9A 0B D0 F0 48 20 80 B7 1A C1 B7 62 5B 1B 8B 1F 35 A6 69 19 99 BA 78 F5 92 E2 3F 95 E9 96 09 D1 08 CF 1C 0E 30 8A 8B F6 4F BD E8 37 D3 CE 13 8A 50 DC 50 AF 4B 41 EE 53 D9 8A 11 B6 A8 1D DD 44 CC 43 0C 1E F3 BB 9D 1D 75 A0 2F AA 9C 81 4A FC 58	
92	Issuer Public Key Remainder	D3 52 41 07	
94	Application File Locator (AFL)	08 02 04 01 18 01 01 00 20 01 01 00	
94	Application File Locator (AFL)	08 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 80 80 00	
9F 0E	Issuer Action Code - Denial	00 00 00 00 00	
9F 0F	Issuer Action Code - Online	B4 70 80 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 43 61 72 64 - 'MasterCard'	
9F 14	Counter 1 Lower Limit [Mastercard]	00	
9F 17	Personal Identification Number (PIN) Try Counter	09	
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 26 - GBP	
9F 44	Application Currency Exponent	02	

Tag	Element name	Data	v3.x
9F 46	ICC Public Key Certificate	15 29 C7 6E B2 59 39 EF FA 0D 55 58 4A D5 1D C1 0B FC 74 ED 7F 98 04 90 4F C4 67 8A 0F 68 1F F2 18 47 EE E5 2F 32 BC 9B B8 DB 5E 34 E7 00 FC 8E 33 85 4D 74 3E DB 55 40 1E 03 2A 2B A2 0D E4 83 05 42 BF DD 63 C6 F4 96 9A DB 02 AC 73 41 30 99 3B 2C 3D 46 40 8A A3 DA FC 2D C0 B1 66 85 57 9D 5F 5C 09 75 E8 A0 6C 0F D6 E8 C7 9B 36 FA 80 C6	
9F 47	ICC Public Key Exponent	03	
9F 48	ICC Public Key Remainder	E2 23 32 E7 D3 40 6B 63 3D E2 D8 56 91 67 A2 70 8D 5E 05 5B 44 69 DF 03 73 B7 41 0F A0 0C C5 97 25 61 D9 7C 47 6A 8C 4B F8 41	
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]	xx xx *	
9F 61	CVC3track2 [Mastercard]	xx xx *	
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]	51 01 08 00 00 00 00 09 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 26 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	

Tag	Element name	Data	v3.x
9F 73	Protected Data Envelope 4 [M/Chip Advance]	20 20	
9F 74	Protected Data Envelope 5 [M/Chip Advance]	20 20	
9F 75	Unprotected Data Envelope 1 [M/Chip Advance]	20 20	
9F 76	Unprotected Data Envelope 2 [M/Chip Advance]	20 20	
9F 77	Unprotected Data Envelope 3 [M/Chip Advance]	20 20	
9F 78	Unprotected Data Envelope 4 [M/Chip Advance]	20 20	
9F 79	Unprotected Data Envelope 5 [M/Chip Advance]	20 20	
9F 7E	Application Life Cycle Data [Mastercard]	03 10 0C 12 00 09 00 00 FF 00 04 00 00 02 60 00 00 38 4A 02 11 50 35 43 44 30 37 32 20	
C3	Card Issuer Action Code (Contact) - Decline [M/Chip Advance]	00 00 00	
C4	Card Issuer Action Code (Contact) - Default [M/Chip Advance]	19 50 00	
C5	Card Issuer Action Code (Contact) - Online [M/Chip Advance]	39 FB 00	
C6	PIN Try Limit [M/Chip Advance]	09	
C7	CDOL1 Related Data Length [Mastercard]	42	
C8	CRM Country Code [Mastercard]	08 26 - GBR	
C9	Accumulator 1 Currency Code [Mastercard]	08 26 - GBP	
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]	00 00 00	
D1	Accumulator 1 Currency Conversion Table [Mastercard]	08 26 00 01 00 08 26 00 01 00 08 26 00 01 00 08 26 00 01 00 08 26 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	

Tag	Element name	Data	v3.x
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	
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	

Tag	Element name	Data	v3.x
DF 2E	Counter 2 CVR Dependency Data (Contact) [M/Chip Advance]	00 00 00	
DF 2F	Counter 2 CVR Dependency Data (Contactless) [M/Chip Advance]	00 00 00	
DF 30	Interface Enabling Switch [M/Chip Advance]	03	
DF 35	Security Limits Status (Contactless) [M/Chip Advance]	00	
DF 37	Security Limits Status Common [M/Chip Advance]	00	
DF 3C	CVR Issuer Discretionary Data (Contact) [M/Chip Advance]	00	
DF 3D	CVR Issuer Discretionary Data (Contactless) [M/Chip Advance]	00	
DF 3F	Read Record Filter (Contact) [M/Chip Advance]	00 00 00 00	
DF 40	Read Record Filter (Contactless) [M/Chip Advance]	08 03 03 00	
DF 41	DS Management Control [M/Chip Advance]	20	

* Tag value changes with card usage

1.4 Test Card 04 - Mastercard, DI, Japanese/English, Japan, JPY

A Dual Interface (Contact / Contactless) Mastercard with an Issuer Country Code of Japan and Currency Code of Japanese Yen. Languages supported are Japanese and English.

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

1.4.1 Contact: CVM List - Mastercard, AID A000000041010 (EMV)

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

1.4.2 Contact: Application Tag Data - AID A000000041010 (EMV)

Tag	Element name	Data	v3.x
50	Application Label	4D 41 53 54 45 52 43 41 52 44 - 'MASTERCARD'	
57	Track 2 Equivalent Data	51 20 79 00 00 00 00 00 D2 51 22 01 01 23 40 91 72 02 9F	
5A	Application Primary Account Number (PAN)	51 20 79 00 00 00 00 00	
5F 20	Cardholder Name	45 4C 41 56 4F 4E 20 44 43 43 2F 54 45 53 54 20 43 41 52 44 20 30 34 20 20 20 - 'ELAVON DCC/TEST CARD 04'	
5F 24	Application Expiration Date	25 12 31	
5F 25	Application Effective Date	xx xx xx *	
5F 28	Issuer Country Code	03 92 - JPN	
5F 2D	Language Preference	6A 61 65 6E - 'jpen' (Japanese, English)	
5F 30	Service Code	02 01	

Tag	Element name	Data	v3.x
5F 34	Application PAN Sequence Number	01	
82	Application Interchange Profile	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 - 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 01 41 03 5E 03 1F 03	
8F	Certification Authority Public Key Index	FA	
90	Issuer Public Key Certificate	18 89 B9 97 E6 FC E8 4B 4A E7 AB 87 43 1C BD B3 DF 8C 1D 5A 55 A7 F6 0D 29 59 AF 3A 51 04 E7 58 83 17 ED 74 08 66 68 CF 1A 05 47 84 F7 49 3C 6D 74 7F A7 96 EC 14 D3 33 A6 8E C7 E0 08 62 95 9A 0B D0 F0 48 20 80 B7 1A C1 B7 62 5B 1B 8B 1F 35 A6 69 19 99 BA 78 F5 92 E2 3F 95 E9 96 09 D1 08 CF 1C 0E 30 8A 8B F6 4F BD E8 37 D3 CE 13 8A 50 DC 50 AF 4B 41 EE 53 D9 8A 11 B6 A8 1D DD 44 CC 43 0C 1E F3 BB 9D 1D 75 A0 2F AA 9C 81 4A FC 58	
92	Issuer Public Key Remainder	D3 52 41 07	
94	Application File Locator (AFL)	08 02 04 01 18 01 01 00 20 01 01 00	
94	Application File Locator (AFL)	08 02 04 01 18 01 01 00 20 01 01 00	
9F 07	Application Usage Control	FF 00 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	BC 50 BC 80 00	
9F 0E	Issuer Action Code - Denial	00 00 00 00 00	
9F 0F	Issuer Action Code - Online	BC 70 BC 98 00	

Tag	Element name	Data	v3.x
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 43 61 72 64 - 'MasterCard'	
9F 14	Counter 1 Lower Limit [Mastercard]	00	
9F 17	Personal Identification Number (PIN) Try Counter	09	
9F 1F	Track 1 Discretionary Data	30 31 32 33 34 30 39 31 37 32 30 30 30 30 30 30 30 30 30 30 30 30 30 30	
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	03 92 - JPY	
9F 44	Application Currency Exponent	02	
9F 46	ICC Public Key Certificate	61 62 1A 30 A3 2F AC 29 1E 07 BA 6A 55 21 8A C2 37 47 5D 42 0A DB A3 9E D2 ED 10 B9 67 2B 2B C0 07 8F 36 53 02 F8 FF EE 3C FB C0 19 34 90 76 40 83 A7 92 5E 0B 95 05 35 30 90 9D BB C6 E9 B1 4F 91 D0 DD 09 E3 16 33 DD FF 95 04 C4 33 6F 12 36 46 FC EC 26 FB AC E1 28 B5 24 8D 4A 6A A1 E8 A7 BB 08 6B 86 61 17 7A CD 90 FF 66 A3 B1 97 03 FD	
9F 47	ICC Public Key Exponent	03	
9F 48	ICC Public Key Remainder	94 F7 9C FC 51 D4 B5 C9 A5 2E 43 66 89 D6 18 D2 FB C4 A2 B0 4C 69 2D EF 01 68 00 1C 31 7E 43 B7 3E FB 2A E9 6A BF 7F 6D 15 BF	
9F 49	Dynamic Data Authentication Data Object List (DDOL)	9F 37 04	
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 6E	Third Party Data [Mastercard]	03 92 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	

Tag	Element name	Data	v3.x
9F 73	Protected Data Envelope 4 [M/Chip Advance]	20 20	
9F 74	Protected Data Envelope 5 [M/Chip Advance]	20 20	
9F 75	Unprotected Data Envelope 1 [M/Chip Advance]	20 20	
9F 76	Unprotected Data Envelope 2 [M/Chip Advance]	20 20	
9F 77	Unprotected Data Envelope 3 [M/Chip Advance]	20 20	
9F 78	Unprotected Data Envelope 4 [M/Chip Advance]	20 20	
9F 79	Unprotected Data Envelope 5 [M/Chip Advance]	20 20	
9F 7E	Application Life Cycle Data [Mastercard]	03 10 0C 12 00 09 00 00 FF 00 04 00 00 02 60 00 00 38 4A 02 11 50 35 43 44 30 37 32 20	
C3	Card Issuer Action Code (Contact) - Decline [M/Chip Advance]	00 00 00	
C4	Card Issuer Action Code (Contact) - Default [M/Chip Advance]	19 50 00	
C5	Card Issuer Action Code (Contact) - Online [M/Chip Advance]	39 FB 00	
C6	PIN Try Limit [M/Chip Advance]	09	
C7	CDOL1 Related Data Length [Mastercard]	42	
C8	CRM Country Code [Mastercard]	03 92 - JPN	
C9	Accumulator 1 Currency Code [Mastercard]	03 92 - JPY	
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]	00 00 00	
D1	Accumulator 1 Currency Conversion Table [Mastercard]	03 92 00 01 00 03 92 00 01 00 03 92 00 01 00 03 92 00 01 00 03 92 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	

Tag	Element name	Data	v3.x
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	

Tag	Element name	Data	v3.x
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 CTLS: CVM List - Mastercard, AID A000000041010 (PayPass MChip)

Cardholder Verification Method List ('5E03 1F03')			
CVM	Verification Method	Conditions	If unsuccessful
1	Signature (paper)	Terminal supports CVM type	Next CVM
2	No CVM required	Terminal supports CVM type	Fail

1.4.4 CTLS: Application Tag Data - AID A000000041010 (PayPass MChip)

* Tag value changes with card usage

Tag	Element name	Data	v3.x
50	Application Label	4D 41 53 54 45 52 43 41 52 44 - 'MASTERCARD'	
56	Track 1 Equivalent Data [Mastercard]	42 35 31 32 30 37 39 30 30 30 30 30 30 30 30 30 30 5E 20 2F 5E 32 35 31 32 32 30 31 30	
57	Track 2 Equivalent Data	51 20 79 00 00 00 00 00 D2 51 22 01 01 23 40 91 72 02 9F	
5A	Application Primary Account Number (PAN)	51 20 79 00 00 00 00 00	
5F 24	Application Expiration Date	25 12 31	
5F 25	Application Effective Date	xx xx xx *	
5F 28	Issuer Country Code	03 92 - JPN	
5F 2D	Language Preference	6A 61 65 6E - 'jpen' (Japanese, English)	
5F 34	Application PAN Sequence Number	01	
82	Application Interchange Profile	18 80 BYTE 1: b7 - Offline SDA NOT supported b6 - Offline DDA NOT supported b5 - Cardholder verification supported b4 - Terminal risk mgmt to be performed b3 - Issuer authentication NOT supported via EXTERNAL AUTH command b1 - Combined DDA / GEN AC NOT supported BYTE 2: b8 - EMV Contactless supported	
84	Dedicated File (DF) Name	A0 00 00 00 04 10 10	
87	Application Priority Indicator	01	
8C	Card Risk Management Data Object List 1 (CDOL1)	9F 02 06 9F 03 06 9F 1A 02 95 05 5F 2A 02 9A 03 9C 01 9F 37 04 9F 35 01 9F 45 02 9F 4C 08 9F 34 03 9F 21 03 9F 7C 14	

Tag	Element name	Data	v3.x
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 00 5E 03 1F 03	
8F	Certification Authority Public Key Index	FA	
90	Issuer Public Key Certificate	18 89 B9 97 E6 FC E8 4B 4A E7 AB 87 43 1C BD B3 DF 8C 1D 5A 55 A7 F6 0D 29 59 AF 3A 51 04 E7 58 83 17 ED 74 08 66 68 CF 1A 05 47 84 F7 49 3C 6D 74 7F A7 96 EC 14 D3 33 A6 8E C7 E0 08 62 95 9A 0B D0 F0 48 20 80 B7 1A C1 B7 62 5B 1B 8B 1F 35 A6 69 19 99 BA 78 F5 92 E2 3F 95 E9 96 09 D1 08 CF 1C 0E 30 8A 8B F6 4F BD E8 37 D3 CE 13 8A 50 DC 50 AF 4B 41 EE 53 D9 8A 11 B6 A8 1D DD 44 CC 43 0C 1E F3 BB 9D 1D 75 A0 2F AA 9C 81 4A FC 58	
92	Issuer Public Key Remainder	D3 52 41 07	
94	Application File Locator (AFL)	08 02 04 01 18 01 01 00 20 01 01 00	
94	Application File Locator (AFL)	08 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 80 80 00	
9F 0E	Issuer Action Code - Denial	00 00 00 00 00	
9F 0F	Issuer Action Code - Online	B4 70 80 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 43 61 72 64 - 'MasterCard'	
9F 14	Counter 1 Lower Limit [Mastercard]	00	
9F 17	Personal Identification Number (PIN) Try Counter	09	
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 44	Application Currency Exponent	02	

Tag	Element name	Data	v3.x
9F 46	ICC Public Key Certificate	59 AB 00 8E 12 BA E1 61 A5 70 41 3E 4E 13 09 8B 01 AC 22 71 7D BD E1 AB DB F6 E5 E6 5E EE 30 D3 0D EF DE 27 1F 3F 70 AC 7A 52 11 4F 66 F6 2A B3 EF 3A 5C E2 FB A1 95 C3 67 51 CB 37 A6 E7 F4 83 83 67 0E 01 FF 33 50 08 C9 65 2E CA 67 32 1C 48 CB 88 3F 7E DF 49 35 CE 04 EE 3D 1C 59 DB 94 99 8B 54 4D 6E 1B FD 74 D6 4C C0 D0 A7 83 6D D9 21	
9F 47	ICC Public Key Exponent	03	
9F 48	ICC Public Key Remainder	94 F7 9C FC 51 D4 B5 C9 A5 2E 43 66 89 D6 18 D2 FB C4 A2 B0 4C 69 2D EF 01 68 00 1C 31 7E 43 B7 3E FB 2A E9 6A BF 7F 6D 15 BF	
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]	xx xx *	
9F 61	CVC3track2 [Mastercard]	xx xx *	
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]	51 20 79 00 00 00 00 00 00 D2 51 22 01 00 00 40 00 00 00 0F	
9F 6C	Application Version [Mastercard]	00 01	
9F 6E	Third Party Data [Mastercard]	03 92 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	

Tag	Element name	Data	v3.x
9F 73	Protected Data Envelope 4 [M/Chip Advance]	20 20	
9F 74	Protected Data Envelope 5 [M/Chip Advance]	20 20	
9F 75	Unprotected Data Envelope 1 [M/Chip Advance]	20 20	
9F 76	Unprotected Data Envelope 2 [M/Chip Advance]	20 20	
9F 77	Unprotected Data Envelope 3 [M/Chip Advance]	20 20	
9F 78	Unprotected Data Envelope 4 [M/Chip Advance]	20 20	
9F 79	Unprotected Data Envelope 5 [M/Chip Advance]	20 20	
9F 7E	Application Life Cycle Data [Mastercard]	03 10 0C 12 00 09 00 00 FF 00 04 00 00 02 60 00 00 38 4A 02 11 50 35 43 44 30 37 32 20	
C3	Card Issuer Action Code (Contact) - Decline [M/Chip Advance]	00 00 00	
C4	Card Issuer Action Code (Contact) - Default [M/Chip Advance]	19 50 00	
C5	Card Issuer Action Code (Contact) - Online [M/Chip Advance]	39 FB 00	
C6	PIN Try Limit [M/Chip Advance]	09	
C7	CDOL1 Related Data Length [Mastercard]	42	
C8	CRM Country Code [Mastercard]	03 92 - JPN	
C9	Accumulator 1 Currency Code [Mastercard]	03 92 - JPY	
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]	00 00 00	
D1	Accumulator 1 Currency Conversion Table [Mastercard]	03 92 00 01 00 03 92 00 01 00 03 92 00 01 00 03 92 00 01 00 03 92 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	

Tag	Element name	Data	v3.x
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	

Tag	Element name	Data	v3.x
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

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				