



# Development (DEV) Canada EMV™ Test Card Set

Version 16.00

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## **B2 Contact Information**

Canada  
251 Consumers Road, Suite 1200, Toronto, ON M2J 4R3  
Tel: 416.730.9827

U.S.A.  
1615 S. Congress Avenue, Suite 103, Delray Beach, FL 33445  
Tel: 470.233.7374

## Revision History

Version	Date	Updated By	Revisions
5.50	August 29, 2016	B2PS	Initial document release
5.60	Sept. 21, 2017	B2PS	<ul style="list-style-type: none"> <li>TC08: Card v6.0 has 2-byte Kernel ID</li> </ul>
6.00	January 4, 2018	B2PS	<ul style="list-style-type: none"> <li>TC02 - New version v6.0: Discretionary data updated (CVV)</li> <li>TC07 - EMV Tags for AID A0000000291010 added</li> <li>TC08 - New version v7.0: Increased contactless facility, 'Approval Amount' updated.</li> </ul>
7.00	October 4, 2018	B2PS	<ul style="list-style-type: none"> <li>All cards - Tags 82, 9F07, 9F69 expanded &amp; interpreted</li> <li>Amex card TC07 - Expiry date changed to 24/12</li> <li>Discover card TC08 - Expiry date changed to 23/12</li> </ul>
8.00	February 27, 2019	B2PS	<ul style="list-style-type: none"> <li>TC08 - Tag 57 expiry date corrected</li> </ul>
9.00	May 29, 2019	B2PS	<ul style="list-style-type: none"> <li>TC07 - PAN changed - now ends in '41007', Approval amount changed, AIP contactless changed</li> </ul>
9.01	June 7, 2019	B2PS	<ul style="list-style-type: none"> <li>Set renamed to "DEV Canada EMV Test Card Set". No change to cards themselves.</li> </ul>
10.00	July 31, 2020	B2PS	<ul style="list-style-type: none"> <li>TC01, TC03 - updated cardstock support; where applicable, "MasterCard"&gt;"Mastercard"</li> <li>TC05 - Now Offline Enciphered PIN</li> </ul>
11.00	April 14, 2021	B2PS	<ul style="list-style-type: none"> <li>TC03, TC04 - Expiry Date change</li> </ul>
12.00	January 25, 2022	B2PS	<ul style="list-style-type: none"> <li>TC01, TC02 - Expiry Date change</li> <li>TC05, TC06 - New BIN PAN, Dual Interface</li> </ul>
13.00	March 22, 2022	B2PS	<ul style="list-style-type: none"> <li>TC05, TC06 - New BIN, PAN</li> </ul>
14.00	January 18, 2022	B2PS	<ul style="list-style-type: none"> <li>TC07 - New cardstock (no functional change)</li> <li>TC08 - New cardstock, PAN, Expiry Date</li> </ul>
15.00	March 01, 2023	B2PS	<ul style="list-style-type: none"> <li>TC05, TC06 - New cardstock (no functional change)</li> </ul>
16.00	April 23, 2023	B2PS	<ul style="list-style-type: none"> <li>TC08 – Discover cashback supported in AUC 9F07</li> </ul>

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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 - DEV Canada EMV Test Card Set Profiles

This Development (DEV) Canada EMV Test Card Set contains 8 cards with at least one card from each of the following card brands.



	Test Card 01	Test Card 02	Test Card 03
<b>Brand</b>	Visa	Visa	Mastercard
<b>Type</b>	Credit	Credit	Credit
<b>Description</b>	Offline Capable	Fallback	Mastercard
<b>AID</b>	A0000000031010	-	A0000000041010
<b>PAN</b>	4761 7310 0000 0043	4761 7390 0101 0267	5413 3300 8960 4111
<b>Expiry Date</b>	12/2024	12/2024	12/2025
<b>Service Code</b>	201	201	201
<b>Interface</b>	Contact, Contactless, MSR	MSR	Contact, Contactless, MSR
<b>CVM (Contact) Default Condition: Terminal Supports CVM</b>	Online PIN (ATM) Offline Plaintext PIN Signature No CVM required <a href="#">See card definition</a>	- <a href="#">See card definition</a>	Online PIN (ATM) Offline Enciphered PIN Offline Plaintext PIN Signature No CVM required <a href="#">See card definition</a>
<b>Approval Amount</b>	\$10.00	\$10.00	\$20.00
<b>Issuer Country Code</b>	124 - Canada	-	124 - Canada
<b>Application Currency Code</b>	124 - CAD	-	124 - CAD
<b>Language</b>	'en' - English	-	'fr' - French
<b>Card Version</b>	v7.x	v7.x	v7.x

	Test Card 04	Test Card 05	Test Card 06
Brand	Mastercard	Interac	Interac
Type	Credit	Debit	Debit
Description	Fallback	Canadian Debit	Canadian Debit
AID	-	A0000002771010	A0000002771010
PAN	5413 3300 8902 0029	0012 0300 0000 0003	0012 0300 0000 0003
Expiry Date	12/2025	12/2028	12/2028
Service Code	201	220	220
Interface	MSR	Contact, Contactless, MSR	Contact, Contactless, MSR
CVM (Contact) Default Condition: Terminal Supports CVM	- <a href="#">See card definition</a>	Offline Enciphered PIN Offline Plaintext PIN Online PIN <a href="#">See card definition</a>	Offline Enciphered PIN Offline Plaintext PIN Online PIN <a href="#">See card definition</a>
Approval Amount	\$20.00	\$10.00	\$10.00
Issuer Country Code	-	124 - Canada	124 - Canada
Application Currency Code	-	124 - CAD	124 - CAD
Language	-	'enfr' – English, French	'fren' – French, English
Card Version	v6.x	v9.x	v8.x

	Test Card 07	Test Card 08
Brand	American Express	Discover
Type	Credit	Credit
Description	Online Only	Discover Credit
AID	A000000025010402, A0000000291010	A0000001523010
PAN	3742 450017 41007	6510 0000 0000 0844
Expiry Date	12/2024	05/2026
Service Code	201	201
Interface	Contact, Contactless, MSR	Contact, Contactless, MSR
CVM (Contact) Default Condition: Terminal Supports CVM	Online PIN (ATM) Offline Plaintext PIN Signature No CVM required <a href="#">See card definition</a>	Online PIN (ATM) Offline Plaintext PIN No CVM required <a href="#">See card definition</a>
Approval Amount	\$30.00	\$79.00
Issuer Country Code	124 - Canada	840 - USA
Application Currency Code	124 - CAD	840 - USD
Language	'en' - English	'en' - English
Card Version	v8.x	v11.x

### 1.1 Test Card 01 - Visa, DI, Credit, English, Canada, CAD

A Dual Interface (Contact / Contactless) Visa credit card with Issuer Country Code of 'Canada' and Currency Code of 'CAD'.

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

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

CVM 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	Always	Fail

#### 1.1.2 Contact: Application Tag data AID A000000031010, Visa (EMV)

Tag	Element name	Data	Card v7.x
50	Application Label	56 49 53 41 20 43 52 45 44 49 54 - 'VISA CREDIT'	
57	Track 2 Equivalent Data	47 61 73 10 00 00 00 43 D2 41 22 01 13 03 13 06 00 00 0F	
5A	Application Primary Account Number (PAN)	47 61 73 10 00 00 00 43	
5F 20	Cardholder Name	44 45 56 20 43 41 4E 2F 54 65 73 74 20 43 61 72 64 20 30 31 20 20 20 20 20 20 - 'DEV CAN/Test Card 01'	
5F 24	Application Expiration Date	24 12 31	
5F 25	Application Effective Date	xx xx xx	
5F 28	Issuer Country Code	01 24 - Canada	
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 [VIS]	3C 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 supported via EXTERNAL AUTH command b1 - Combined DDA / GEN AC NOT supported BYTE 2: b8 - Use for Visa NOT supported b7 - Is NOT a 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	92	

Tag	Element name	Data	Card v7.x
90	Issuer Public Key Certificate	04 D6 DC A7 7E 2D DF B5 60 0A 9D DE 4E A2 23 91 BF 4A F3 37 F2 FB 99 41 91 E0 39 70 74 D5 35 E8 AB D2 7F 43 90 6A DD D4 5F 01 54 01 98 EF 23 3C 9D 4C C8 98 AD 56 A9 56 A9 66 D7 38 58 55 86 68 13 F5 E9 29 FB 72 FA E5 E4 40 64 2E B1 EE A3 0D 80 C3 E6 D2 81 E0 E6 FB 51 6B 25 1D D7 5C 01 D5 9C 71 78 28 27 39 1F 89 D8 FF D9 E6 EA 30 2C BE 1B C9 86 BE A0 36 5C 36 F7 A6 DA 9F FD 80 F4 D0 FF 9E D8 9D D5 15 9A 5B 00 3C 78 6A 11 17 94 FD 93 92 3D 6C ED 15 4D 35 4E A7 F0 4E 4A 48 76 1A 74 D9 FC 18 48 48 F1 C6 33 CE 5A DF 54 96 35 BD	
92	Issuer Public Key Remainder	85 AA DF 04 3F AA 38 48 ED 86 9D 6E B3 D9 70 F4 AC 08 A9 74 74 27 88 42 C8 55 84 E3 4B 6F AC C0 72 07 BC 41	
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 44	Application Currency Exponent	02	



Tag	Element name	Data	Card v7.x
9F 46	ICC Public Key Certificate	8C 30 F9 F0 DF 98 58 74 1E BE 22 B7 EF 1A 22 CD 7B BC 5E 4E 6C CA E1 22 D9 EF 9E 72 01 05 7C 11 E5 AB F1 8F F4 26 0B E7 92 07 95 06 55 34 FB 26 1B 82 E9 F0 BE 16 7C 47 3B A1 77 7A E4 55 10 BD 66 B8 B4 99 BB 41 33 6E 3E 83 DF D3 5C 37 BC 26 DB 3C 85 66 C5 49 CE 29 F5 65 E6 BE 0D 94 51 2E CE 5F 6D D8 46 80 19 61 0B 4F FF 9C E4 84 C4 17 E9 73 A3 9A 9D 41 7E 49 C7 BF 19 F5 42 AC B8 DA 51 97 36 F6 14 9B A7 D4 BE 13 2F 0C F7 8E B9 28 35 47 34 5A 3B 1F 2F 6D 77 C3 D9 09 D2 EC EB BC DC F2 54 47 B4 4F 24 57 B0 6C FC DE 96 AC 68 6F	
9F 47	ICC Public Key Exponent	03	
9F 49	Dynamic Data Authentication Data Object List (DDOL)	9F 37 04	
9F 4B	Signed Dynamic Application Data	1E 2C BB D5 AA 37 2F 69 18 21 43 63 83 F2 79 DF AD 73 31 2A D9 4D 0F 1B 8C E0 DA 07 22 03 C6 7A CF 1E 1C E7 77 9F 0F 2D 0B D7 B1 20 03 53 F1 50 C0 BE 85 4B 95 6A 42 07 A4 70 92 0F C9 B1 60 BA D2 47 51 7D 91 B3 52 03 A4 04 B5 7D 9B 69 53 E2 2A FA B7 14 B4 6E 13 C1 19 F6 92 BD 1D 18 C4 51 5B BE C5 FE BB 38 28 B7 10 34 EF 97 82 49 0A 6C	
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]	4E 00 F0 00	
9F 72	Consecutive Transaction Limit (International-Country) [VSDC]	03	
BF 55	Contactless Counters Data Template	DF 11 01 02 DF 21 01 03 DF 31 01 07	
BF 56	Counters Data Template	DF 11 01 02 DF 21 01 03 DF 31 01 07	
BF 57	International Counters Data Template	DF 11 01 02 DF 21 01 03 DF 31 01 07 DF 51 01 05 DF 61 01 03	

Tag	Element name	Data	Card v7.x
BF 58	Amounts Data Template	DF 11 06 00 00 00 01 00 04 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, Visa (qVSDC Online ODA)

Tag	Element name	Data	Card v7.x
50	Application Label	56 49 53 41 20 43 52 45 44 49 54 - 'VISA CREDIT'	
57	Track 2 Equivalent Data	47 61 73 10 00 00 00 43 D2 41 22 01 13 03 13 06 00 00 0F	
5A	Application Primary Account Number (PAN)	47 61 73 10 00 00 00 43	
5F 24	Application Expiration Date	24 12 31	
5F 2D	Language Preference	65 6E - 'en' (English)	
5F 34	Application PAN Sequence Number	01	
82	Application Interchange Profile [VCPS]	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	04 D6 DC A7 7E 2D DF B5 60 0A 9D DE 4E A2 23 91 BF 4A F3 37 F2 FB 99 41 91 E0 39 70 74 D5 35 E8 AB D2 7F 43 90 6A DD D4 5F 01 54 01 98 EF 23 3C 9D 4C C8 98 AD 56 A9 56 A9 66 D7 38 58 55 86 68 13 F5 E9 29 FB 72 FA E5 E4 40 64 2E B1 EE A3 0D 80 C3 E6 D2 81 E0 E6 FB 51 6B 25 1D D7 5C 01 D5 9C 71 78 28 27 39 1F 89 D8 FF D9 E6 EA 30 2C BE 1B C9 86 BE A0 36 5C 36 F7 A6 DA 9F FD 80 F4 D0 FF 9E D8 9D D5 15 9A 5B 00 3C 78 6A 11 17 94 FD 93 92 3D 6C ED 15 4D 35 4E A7 F0 4E 4A 48 76 1A 74 D9 FC 18 48 48 F1 C6 33 CE 5A DF 54 96 35 BD	
92	Issuer Public Key Remainder	85 AA DF 04 3F AA 38 48 ED 86 9D 6E B3 D9 70 F4 AC 08 A9 74 74 27 88 42 C8 55 84 E3 4B 6F AC C0 72 07 BC 41	
94	Application File Locator (AFL)	10 02 02 01 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	Card v7.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	8C 30 F9 F0 DF 98 58 74 1E BE 22 B7 EF 1A 22 CD 7B BC 5E 4E 6C CA E1 22 D9 EF 9E 72 01 05 7C 11 E5 AB F1 8F F4 26 0B E7 92 07 95 06 55 34 FB 26 1B 82 E9 F0 BE 16 7C 47 3B A1 77 7A E4 55 10 BD 66 B8 B4 99 BB 41 33 6E 3E 83 DF D3 5C 37 BC 26 DB 3C 85 66 C5 49 CE 29 F5 65 E6 BE 0D 94 51 2E CE 5F 6D D8 46 80 19 61 0B 4F FF 9C E4 84 C4 17 E9 73 A3 9A 9D 41 7E 49 C7 BF 19 F5 42 AC B8 DA 51 97 36 F6 14 9B A7 D4 BE 13 2F 0C F7 8E B9 28 35 47 34 5A 3B 1F 2F 6D 77 C3 D9 09 D2 EC EB BC DC F2 54 47 B4 4F 24 57 B0 6C FC DE 96 AC 68 6F	
9F 47	ICC Public Key Exponent	03	
9F 4B	Signed Dynamic Application Data	B0 5D 7F C5 A7 19 92 46 06 70 3E 9F 13 41 61 6D A3 C5 A5 D4 08 06 24 11 87 A4 E4 88 07 78 B7 FC A8 C5 CA CF 57 AA 08 0F A0 49 6F DD B6 77 62 F3 37 E9 D8 4A 75 32 CE 52 32 38 60 74 01 AE 30 E5 BE 40 F8 C9 E8 CA 0E 99 64 17 EC 96 3B 55 5D 7D 03 08 B7 5E 86 32 94 DB 4C A5 3D 8B B2 2E 65 C5 0B 78 F5 9B 6F 8F 34 D2 D1 A4 93 B5 68 FD F6 EF	
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 01 24 01 24	
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]	4E 00 F0 00	
9F 69	Card Authentication Related Data [qVSDC]	01 51 A9 44 08 38 00	

Tag	Element name	Data	Card v7.x
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 02 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 04 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

1.1.4 CTLS: Application Tag data - AID A000000031010, Visa (qVSDC Offline)

Tag	Element name	Data	Card v7.x
50	Application Label	56 49 53 41 20 43 52 45 44 49 54 - 'VISA CREDIT'	
57	Track 2 Equivalent Data	47 61 73 10 00 00 00 43 D2 41 22 01 13 03 13 06 00 00 0F	
5A	Application Primary Account Number (PAN)	47 61 73 10 00 00 00 43	
5F 24	Application Expiration Date	24 12 31	
5F 2D	Language Preference	65 6E - 'en' (English)	
5F 34	Application PAN Sequence Number	01	
82	Application Interchange Profile [VCPS]	20 00 BYTE 1: b7 - Offline SDA (online Auth) NOT supported b6 - Offline DDA supported BYTE 2: b8 - MSD NOT supported b7 - Is Mobile handset b6 - Is Contactless transaction	
84	Dedicated File (DF) Name	A0 00 00 00 03 10 10	
8F	Certification Authority Public Key Index	92	

Tag	Element name	Data	Card v7.x
90	Issuer Public Key Certificate	04 D6 DC A7 7E 2D DF B5 60 0A 9D DE 4E A2 23 91 BF 4A F3 37 F2 FB 99 41 91 E0 39 70 74 D5 35 E8 AB D2 7F 43 90 6A DD D4 5F 01 54 01 98 EF 23 3C 9D 4C C8 98 AD 56 A9 56 A9 66 D7 38 58 55 86 68 13 F5 E9 29 FB 72 FA E5 E4 40 64 2E B1 EE A3 0D 80 C3 E6 D2 81 E0 E6 FB 51 6B 25 1D D7 5C 01 D5 9C 71 78 28 27 39 1F 89 D8 FF D9 E6 EA 30 2C BE 1B C9 86 BE A0 36 5C 36 F7 A6 DA 9F FD 80 F4 D0 FF 9E D8 9D D5 15 9A 5B 00 3C 78 6A 11 17 94 FD 93 92 3D 6C ED 15 4D 35 4E A7 F0 4E 4A 48 76 1A 74 D9 FC 18 48 48 F1 C6 33 CE 5A DF 54 96 35 BD	
92	Issuer Public Key Remainder	85 AA DF 04 3F AA 38 48 ED 86 9D 6E B3 D9 70 F4 AC 08 A9 74 74 27 88 42 C8 55 84 E3 4B 6F AC C0 72 07 BC 41	
94	Application File Locator (AFL)	10 02 02 01 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)	40	
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	8C 30 F9 F0 DF 98 58 74 1E BE 22 B7 EF 1A 22 CD 7B BC 5E 4E 6C CA E1 22 D9 EF 9E 72 01 05 7C 11 E5 AB F1 8F F4 26 0B E7 92 07 95 06 55 34 FB 26 1B 82 E9 F0 BE 16 7C 47 3B A1 77 7A E4 55 10 BD 66 B8 B4 99 BB 41 33 6E 3E 83 DF D3 5C 37 BC 26 DB 3C 85 66 C5 49 CE 29 F5 65 E6 BE 0D 94 51 2E CE 5F 6D D8 46 80 19 61 0B 4F FF 9C E4 84 C4 17 E9 73 A3 9A 9D 41 7E 49 C7 BF 19 F5 42 AC B8 DA 51 97 36 F6 14 9B A7 D4 BE 13 2F 0C F7 8E B9 28 35 47 34 5A 3B 1F 2F 6D 77 C3 D9 09 D2 EC EB BC DC F2 54 47 B4 4F 24 57 B0 6C FC DE 96 AC 68 6F	
9F 47	ICC Public Key Exponent	03	

Tag	Element name	Data	Card v7.x
9F 4B	Signed Dynamic Application Data	3F 04 71 6C 40 5F 4C F5 5A DC 6E 81 5D C4 6C 77 46 60 62 93 DD 69 91 E3 04 8A 68 A2 89 19 70 84 F4 B2 77 25 70 7A 7D 31 DF 50 2A 98 37 BE 4A 21 31 AF B5 1F 71 35 E4 E5 38 15 4A A2 28 31 9B 6A 3B B0 58 A3 DA ED 20 2D BA B1 19 C8 71 B1 EB BF 78 D2 10 48 69 77 39 F3 26 6F B6 DA EE EA DC 7E 7F 12 9E 45 A4 81 A9 A1 F0 93 A9 98 1C 7E C2 5F	
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 01 24 01 24	
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]	4E 00 F0 00	
9F 69	Card Authentication Related Data [qVSDC]	01 CA 1F 5E B1 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]	03	
BF 55	Contactless Counters Data Template	DF 11 01 02 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	

Tag	Element name	Data	Card v7.x
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 04 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, Technical Fallback Card

This card has a chip image printed on the card but it does not contain an actual chip.

When inserted, a chip error will be detected.

This should trigger Technical Fallback processing and the transaction should continue as a magstripe Technical Fallback transaction.

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

Note: The test host may Approve / Decline based on its configuration with respect to CVV processing.

## 1.3 Test Card 03 - Mastercard, DI, Credit, French, Canada, CAD

A Dual Interface (Contact / Contactless) Mastercard credit card with Issuer Country Code of 'Canada' and Currency Code of 'CAD'.

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

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

Cardholder Verification Method List ('4201 4403 4103 5E03 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	Signature (paper)	Terminal supports CVM type	Next CVM
5	No CVM required	Terminal supports CVM type	Fail

### 1.3.2 Contact: Application Tag data - AID A000000041010, Mastercard (EMV)

Tag	Element name	Data	Card v7.x
50	Application Label	4D 41 53 54 45 52 43 41 52 44 - '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 45 56 20 43 41 4E 2F 54 65 73 74 20 43 61 72 64 20 30 33 20 20 20 20 20 20 - 'DEV CAN/Test Card 03'	
5F 24	Application Expiration Date	25 12 31	
5F 25	Application Effective Date	xx xx xx	
5F 28	Issuer Country Code	01 24 - Canada	

Tag	Element name	Data	Card v7.x
5F 2D	Language Preference	66 72 - 'fr' (French)	
5F 30	Service Code	02 01	
5F 34	Application PAN Sequence Number	01	
82	Application Interchange Profile	39 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 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 44 03 41 03 5E 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	



Tag	Element name	Data	Card v7.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	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 63 61 72 64 - 'Mastercard'	
9F 14	Counter 1 Lower Limit [Mastercard]	03	
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]	07	
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	
9F 46	ICC Public Key Certificate	E4 36 B5 44 E2 B5 2E 89 80 1F E9 55 01 CB 49 F0 2B EA 62 E1 FD E8 25 FC 1D E0 CF 3A DE 1D CB C4 F4 FC 0E A6 49 F7 A8 85 BB EF DB 7B AA E3 2A 44 36 A3 FD 79 56 93 A3 80 3E E1 5C EC 50 97 95 A5 58 52 66 08 29 BB A4 2B 0B 44 12 87 CB 58 8B 85 17 7D AC CF 64 60 B9 52 CB E2 85 12 24 AB AE D4 D2 93 2A 90 A9 57 CE 12 E4 C8 03 3A 0A 99 80 E4 73 70 A8 A4 E7 7E CA 3F 36 B4 D5 06 15 EF 53 2A 09 99 34 25 FD 5F 7A 10 A3 CD A7 EE 65 11 56 AE F5 55 FE DA 42 D4 6B 54 8B C5 7D A8 1F 55 D1 27 B5 2B 03 69 3A 17 89 AB 5B 75 6E C1 A6 AA D8 76 68 27 FF CD D5 B8 61 82 7B 95 96 56 3D 90 9B 43 0E DB FC 10 AF DE 73 FF 5D 2B 6B 69 00 DC 2C 10 7C DD 6D 4B C4 1E 0A D5 F2 99 49 00 94 09 DB 56 E2 BF 8B 57 BA 34 34 6A EE DA 34 68 7C 1D CF EB	
9F 47	ICC Public Key Exponent	03	
9F 49	Dynamic Data Authentication Data Object List (DDOL)	9F 37 04	

Tag	Element name	Data	Card v7.x
9F 4A	Static Data Authentication Tag List	82	
9F 4B	Signed Dynamic Application Data	B8 27 E2 A0 EA 41 E7 2A 2C 3A BF 32 5D 43 6D 18 0B 13 2F 6F C8 4A 1B 4C CC F3 1F 85 CB 97 48 4C 0A DC 9A C4 47 4F 47 99 0B E0 2C DF 4B 30 42 F4 11 19 8A B4 31 F4 44 6A 6A 26 B2 19 30 10 B9 64 9E A6 94 5B 98 F5 11 88 0C 2E 72 F2 AE F1 13 F9 12 EC 09 FD F4 3E 9C 4E 0C A5 45 8D 6B 7C 1A 90 44 5B D9 3A CF C8 5F C7 F4 93 86 21 FD CC A2 79 20 E4 34 FD BF B6 35 B6 D6 11 8C E2 DB A5 7E CD F6 92 31 B3 91 F2 A7 E5 C3 75 C9 96 26 B2 FA E0 E7 0F 67 F8 30 AF E1 87 64 0D C3 D9 95 F2 B5 F3 BD EB A1 A7 D3 38 66 22 B2 E0 EE D4 D3 7B D7 9A	
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]	01 24 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	

Tag	Element name	Data	Card v7.x
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]	01 24 - CAN	
C9	Accumulator 1 Currency Code [Mastercard]	01 24 - CAD	
CA	Accumulator 1 Lower Limit [Mastercard]	00 00 00 02 00 00	
CB	Accumulator 1 Upper Limit [Mastercard]	00 00 00 04 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]	01 24 00 01 00 01 24 00 01 00 01 24 00 01 00 01 24 00 01 00 01 24 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	

Tag	Element name	Data	Card v7.x
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 - AID A000000041010, Mastercard (PayPass)

Cardholder Verification Method List ('4201 4403 4103 5E03 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	Signature (paper)	Terminal supports CVM type	Next CVM
5	No CVM required	Terminal supports CVM type	Fail

1.3.4 CTLS: Application Tag data - AID A000000041010, Mastercard (PayPass)

Tag	Element name	Data	Card v7.x	
50	Application Label	4D 41 53 54 45 52 43 41 52 44 - '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		
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	01 24 - Canada		
5F 2D	Language Preference	66 72 - 'fr' (French)		
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 b1 - Combined DDA / GEN AC supported BYTE 2: b8 - EMV Contactless supported		
84	Dedicated File (DF) Name	A0 00 00 00 04 10 10		
87	Application Priority Indicator	01		
8C	Card Risk Management Data Object List 1 (CDOL1)	9F 02 06 9F 03 06 9F 1A 02 95 05 5F 2A 02 9A 03 9C 01 9F 37 04 9F 35 01 9F 45 02 9F 4C 08 9F 34 03 9F 21 03 9F 7C 14		
8D	Card Risk Management Data Object List 2 (CDOL2)	91 0A 8A 02 95 05 9F 37 04 9F 4C 08		
8E	Cardholder Verification Method (CVM) List	00 00 00 00 00 00 00 00 5E 03 1F 03		
8F	Certification Authority Public Key Index	EF		

Tag	Element name	Data	Card v7.x
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 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 63 61 72 64 - 'Mastercard'	
9F 14	Counter 1 Lower Limit [Mastercard]	03	
9F 17	Personal Identification Number (PIN) Try Counter	09	
9F 23	Counter 1 Upper Limit [Mastercard]	07	
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	Card v7.x
9F 46	ICC Public Key Certificate	D9 FE DC 4B AE 3C 0D 18 9D 24 F7 4B B7 DC 03 5C 7A ED 3A EB 02 AD 30 E3 51 4B E3 F4 20 29 7D 01 2D DF 5A 31 02 26 F7 23 25 1E C7 2D C9 61 21 D9 B1 AA 87 DD F2 46 A5 A5 63 CE F5 E7 C0 F5 63 9A AE F1 10 50 68 20 CB C1 56 56 6C 33 E5 C8 2F 10 37 53 54 A7 AA B9 29 04 2E 97 A6 FC 89 47 22 0A C5 72 54 72 0B 8D BC 49 C6 31 04 0B 0E 73 A9 91 A9 E2 A2 20 1A C8 70 01 50 94 2F 55 1A 98 39 E6 85 C5 43 23 71 9C 34 7E 80 1E 83 F8 02 50 84 CA B7 C9 3D 13 84 BC 88 A5 C9 5B 90 82 28 D4 73 54 52 F8 E6 D2 77 92 86 1F E9 33 8C 34 74 E8 BA 9B 73 7F 49 6A AA 3E F8 70 60 B6 FB 67 47 DF E3 AA D3 DB DB 57 B3 34 31 28 4D 08 84 31 30 80 F1 79 49 67 A9 17 D2 00 A5 D0 02 46 A1 17 BF 10 43 AB 08 A0 B7 60 85 B7 4D 7F CD E4 43 B4 A4 6F 98 65	
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]	1D E2	
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]	01 24 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	

Tag	Element name	Data	Card v7.x
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]	01 24 - CAN	
C9	Accumulator 1 Currency Code [Mastercard]	01 24 - CAD	
CA	Accumulator 1 Lower Limit [Mastercard]	00 00 00 02 00 00	
CB	Accumulator 1 Upper Limit [Mastercard]	00 00 00 04 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]	01 24 00 01 00 01 24 00 01 00 01 24 00 01 00 01 24 00 01 00 01 24 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	
DF 02	Security Limits Status (Contact) [M/Chip Advance]	00	

\* Tag value changes with card usage

### 1.4 Test Card 04 - Mastercard, Technical Fallback Card

This card has a chip image printed on the card but it does not contain an actual chip.

When inserted, a chip error will be detected.

This should trigger Technical Fallback processing and the transaction should continue as a magstripe Technical Fallback transaction.

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



## 1.5 Test Card 05 - Interac, DI, Debit, Eng/Fre, Canada, CAD

A Dual Interface (Contact / Contactless) Interac debit card with Issuer Country Code of 'Canada' and Currency Code of 'CAD'.

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

### 1.5.1 Contact: CVM List - AID A000002771010, Interac (EMV)

Cardholder Verification Method List ('0403 0103 0203)			
CVM	Verification Method	Conditions	If unsuccessful
1	Offline Enciphered PIN	Always	Fail
2	Offline Plaintext PIN	Terminal Supports CVM type	Fail
3	Online PIN	Terminal Supports CVM type	Fail

### 1.5.2 Contact: Application Tag Data - AID A000002771010, Interac (EMV)

Tag	Element name	Data	Card v9.x
50	Application Label	49 6E 74 65 72 61 63	'Interac'
57	Track 2 Equivalent Data	00 12 03 00 00 00 00 03 D2 81 22 20 08 97 74 00 00 00 1F	
5A	Application Primary Account Number (PAN)	00 12 03 00 00 00 00 03	
5F 20	Cardholder Name	44 45 56 20 43 41 4E 2F 54 65 73 74 20 43 61 72 64 20 30 35 20 20 20 20 20 20	'DEV CAN/Test Card 05'
5F 24	Application Expiration Date	28 12 31	
5F 25	Application Effective Date	xx xx xx	
5F 28	Issuer Country Code	01 24	Canada
5F 2D	Language Preference	65 6E 66 72	'enfr' (English, French)
5F 30	Service Code	02 20	
5F 34	Application PAN Sequence Number	01	
5F 56	Issuer Country Code (alpha3 format)	43 41 4E	'CAN'
82	Application Interchange Profile	19 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 b1 - Combined DDA / GEN AC supported BYTE 2: b8 - EMV Contactless NOT supported	
84	Dedicated File (DF) Name	A0 00 00 02 77 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 45 02 9F 4C 08 9F 34 03	
8D	Card Risk Management Data Object List 2 (CDOL2)	91 0A 8A 02 95 05 9F 37 04 9F 4C 08	
8E	Cardholder Verification Method (CVM) List	00 00 00 00 00 00 00 00 04 03 01 03 02 03	
8F	Certification Authority Public Key Index	07	

Tag	Element name	Data	Card v9.x
90	Issuer Public Key Certificate	7E 37 FF 15 A4 88 1C 32 6D 5F 61 E4 D7 4A 00 39 24 76 D5 44 80 B9 16 92 4A 70 65 B7 B3 40 F3 1F A4 86 84 E1 99 CE 82 DA 3F F6 0C 77 4A 13 D0 0B C8 46 7B 87 1C 9E 00 40 28 FA 44 D9 55 38 0E D5 50 F9 F0 C8 B0 3B 3F 9A CE 0F FA FA 8B A6 B4 0C F9 69 A9 72 AF C9 D1 EC 56 25 A0 0B B8 0E E0 38 6E 57 22 BD FC 5C 7D 89 0C 71 5F 54 67 4F CE B2 0B 5E 0E 80 E8 77 0B 59 9E A4 E6 15 D8 60 2D 30 37 F4 CB B2 CC 6F 4D B2 99 34 78 FC CE 47 A5 23 59 AA 00 A4 94 C5 87 BB D3 2F 3B 64 A9 2E F8 77 47 25 66 A1 A7 24 F2 0B BB C8 24 26 9C 34 80 22 EF E7 83 85 13 A7 AD 3B DE 7B 2B 3D B8 8F 5F B3 A1 DA 45 B8 38 14 16 A1 0F 77 7E 55 07 B8 05 48 33 D3 99 97 C1 5B 34 34 E0 86 A7 B6 7F 6B B0 29 60 E1 F5 59 20 DC 2E 12 38 91 DA 23 34 03 AA D3 97 75 0F 44 56 09 CD 2A	
94	Application File Locator (AFL)	08 01 04 00 10 01 01 01 18 01 04 01	
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	FC 78 FC A8 40	
9F 0E	Issuer Action Code - Denial	00 00 00 00 00	
9F 0F	Issuer Action Code - Online	FC F8 FC F8 70	
9F 10	Issuer Application Data [InteracFlash]	xx 02 xx *	
9F 13	Last Online Application Transaction Counter (ATC) Register	xx xx *	
9F 17	Personal Identification Number (PIN) Try Counter	99	
9F 27	Cryptogram Information Data (CID)	80	
9F 32	Issuer Public Key Exponent	01 00 01	
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	Card v9.x
9F 46	ICC Public Key Certificate	49 F7 09 24 D5 76 59 09 36 DA 64 10 69 59 3C 46 BD 6F EF F2 FE 99 1A D7 E9 38 5E D8 15 FE 59 8B 89 91 46 CA C5 66 4F F8 E3 59 E7 9B D0 F4 D5 72 AC 87 9F 6C BF F6 9F 19 40 30 31 19 00 CA 3A 07 A1 69 66 95 EB DB 00 D4 07 8C BF 9D E2 01 9D BB 41 26 80 40 9E 60 19 92 5D 5E 2F FA F5 61 97 8A A6 FB 1D 0D E3 49 4A FF FC 03 BC 0C 12 4F 2B 2F 69 50 35 90 8A 76 5B 56 DD 22 E2 90 4D 02 0C E5 DC 70 07 1F 88 76 43 56 03 24 10 40 B1 1A 0C 99 BA 8B 51 F2 85 FC C9 97 0E 03 17 22 0F 22 E8 65 16 CB A1 FA A4 BB D2 44 47 D6 EF 36 40 E5 60 87	
9F 47	ICC Public Key Exponent	01 00 01	
9F 48	ICC Public Key Remainder	EC 84 05 6C 46 EF 09 6F 60 8D	
9F 4A	Static Data Authentication Tag List	82	
9F 4D	Transaction Log Entry	0B 0A	
9F 4F	Transaction Log Format	9F 02 06 5F 2A 02 9A 03 9F 36 02 9F 1A 02 95 05 9C 01 8A 02	
9F 62	Card Product Code [InteracFlash]	00 01	
9F 70	Form Factor Indicator [InteracFlash]	00	
DF 62	Application Selection Flag [Canada]	80 80	

\* Tag value changes with card usage

### 1.5.3 CTLS: Application Tag data - AID A000002771010, Interac (Flash)

Tag	Element name	Data	Card v9.x
50	Application Label	49 6E 74 65 72 61 63 - 'Interac'	
57	Track 2 Equivalent Data	00 12 03 00 00 00 00 03 D2 81 22 20 08 97 74 00 00 00 1F	
5A	Application Primary Account Number (PAN)	00 12 03 00 00 00 00 03	
5F 24	Application Expiration Date	28 12 31	
5F 25	Application Effective Date	xx xx xx	
5F 28	Issuer Country Code	01 24 - Canada	
5F 2D	Language Preference	65 6E 66 72 - 'enfr' (English, French)	
5F 30	Service Code	02 20	
5F 34	Application PAN Sequence Number	01	
5F 56	Issuer Country Code (alpha3 format)	43 41 4E - 'CAN'	
82	Application Interchange Profile	01 00 BYTE 1: b7 - Offline SDA NOT supported b6 - Offline DDA NOT supported b5 - Cardholder verification NOT supported b4 - Terminal risk mgmt NOT to be performed b3 - Issuer authentication NOT supported b1 - Combined DDA / GEN AC supported BYTE 2: b8 - EMV Contactless NOT supported	
84	Dedicated File (DF) Name	A0 00 00 02 77 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 45 02 9F 4C 08 9F 34 03	
8F	Certification Authority Public Key Index	07	

Tag	Element name	Data	Card v9.x
90	Issuer Public Key Certificate	7E 37 FF 15 A4 88 1C 32 6D 5F 61 E4 D7 4A 00 39 24 76 D5 44 80 B9 16 92 4A 70 65 B7 B3 40 F3 1F A4 86 84 E1 99 CE 82 DA 3F F6 0C 77 4A 13 D0 0B C8 46 7B 87 1C 9E 00 40 28 FA 44 D9 55 38 0E D5 50 F9 F0 C8 B0 3B 3F 9A CE 0F FA FA 8B A6 B4 0C F9 69 A9 72 AF C9 D1 EC 56 25 A0 0B B8 0E E0 38 6E 57 22 BD FC 5C 7D 89 0C 71 5F 54 67 4F CE B2 0B 5E 0E 80 E8 77 0B 59 9E A4 E6 15 D8 60 2D 30 37 F4 CB B2 CC 6F 4D B2 99 34 78 FC CE 47 A5 23 59 AA 00 A4 94 C5 87 BB D3 2F 3B 64 A9 2E F8 77 47 25 66 A1 A7 24 F2 0B BB C8 24 26 9C 34 80 22 EF E7 83 85 13 A7 AD 3B DE 7B 2B 3D B8 8F 5F B3 A1 DA 45 B8 38 14 16 A1 0F 77 7E 55 07 B8 05 48 33 D3 99 97 C1 5B 34 34 E0 86 A7 B6 7F 6B B0 29 60 E1 F5 59 20 DC 2E 12 38 91 DA 23 34 03 AA D3 97 75 0F 44 56 09 CD 2A	
94	Application File Locator (AFL)	08 01 04 00 10 01 05 03	
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	FC F8 FC F8 00	
9F 0E	Issuer Action Code - Denial	00 00 00 00 00	
9F 0F	Issuer Action Code - Online	FC F8 FC F8 00	
9F 10	Issuer Application Data [InteracFlash]	xx 02 xx *	
9F 13	Last Online Application Transaction Counter (ATC) Register	xx xx *	
9F 17	Personal Identification Number (PIN) Try Counter	99	
9F 27	Cryptogram Information Data (CID)	80	
9F 32	Issuer Public Key Exponent	01 00 01	
9F 36	Application Transaction Counter (ATC)	xx xx *	
9F 38	Processing Options Data Object List (PDOL)	9F 59 03 9F 5A 01 9F 02 06 9F 1A 02 5F 2A 02 9F 37 04 9F 58 01	
9F 42	Application Currency Code	01 24 - CAD	
9F 44	Application Currency Exponent	02	

Tag	Element name	Data	Card v9.x
9F 46	ICC Public Key Certificate	AB F1 B6 88 43 D1 31 82 A6 A8 2E 92 EB 4A 82 FB 41 34 11 28 65 60 81 A2 41 10 71 20 81 24 D7 2A 31 F8 55 F6 D4 82 22 17 CD 31 98 6C 7E A3 77 51 09 DD 58 14 4F 3E F7 2F 23 B9 98 A3 A5 D8 FB E1 FA 1A 74 37 18 0E 60 B3 28 DE B8 77 A2 EC 48 7C 50 74 75 DC 8A 00 94 85 ED 79 C8 7E 6E B6 39 6B BE B2 8E BB 61 5D 5D 73 28 E0 0F FB B0 0E DE 44 D9 18 4A A1 46 D0 C4 4A C3 A3 BD D9 DA ED DF 81 38 9C 2C 50 A3 FC DB 8D C3 2F A5 3C A4 23 D9 09 42 EA 9B 93 B8 2B B0 6E E9 2D 3B C2 71 CA 34 BC BD E9 3F 9B 3D C2 03 1F 16 F6 15 63 B9 B4 45 79	
9F 47	ICC Public Key Exponent	01 00 01	
9F 48	ICC Public Key Remainder	EC 84 05 6C 46 EF 09 6F 60 8D	
9F 4A	Static Data Authentication Tag List	82	
9F 4D	Transaction Log Entry	0B 0A	
9F 4F	Transaction Log Format	9F 02 06 5F 2A 02 9A 03 9F 36 02 9F 1A 02 95 05 9C 01 8A 02	
9F 62	Card Product Code [InteracFlash]	00 01	
9F 63	Card Transaction Information [InteracFlash]	00 10 00 00	
9F 70	Form Factor Indicator [InteracFlash]	00	
DF 62	Application Selection Flag [Canada]	80 80	

\* Tag value changes with card usage

### 1.6 Test Card 06 - Interac, DI, Debit, Fre/Eng, Canada, CAD

A Dual Interface (Contact / Contactless) Interac debit card with Issuer Country Code of ‘Canada’ and Currency Code of ‘CAD’.

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

#### 1.6.1 Contact: CVM List - AID A000002771010, Interac (EMV)

Cardholder Verification Method List ('(0403 0103 0203')			
CVM	Verification Method	Conditions	If unsuccessful
1	Offline Enciphered PIN	Always	Fail
2	Offline Plaintext PIN	Terminal Supports CVM type	Fail
3	Online PIN	Terminal Supports CVM type	Fail

#### 1.6.2 Contact: Application Tag data - AID A000002771010, Interac (EMV)

Tag	Element name	Data	Card v8.x
50	Application Label	49 6E 74 65 72 61 63	- 'Interac'
57	Track 2 Equivalent Data	00 12 03 00 00 00 00 03 D2 81 22 20 08 97 74 00 00 00 1F	
5A	Application Primary Account Number (PAN)	00 12 03 00 00 00 00 03	
5F 20	Cardholder Name	44 45 56 20 43 41 4E 2F 54 65 73 74 20 43 61 72 64 20 30 36 20 20 20 20 20 20 - 'DEV CAN/Test Card 06'	
5F 24	Application Expiration Date	28 12 31	

Tag	Element name	Data	Card v8.x
5F 25	Application Effective Date	xx xx xx	
5F 28	Issuer Country Code	01 24 - Canada	
5F 2D	Language Preference	66 72 65 6E - 'fren' (French, English)	
5F 30	Service Code	02 20	
5F 34	Application PAN Sequence Number	01	
5F 56	Issuer Country Code (alpha3 format)	43 41 4E - 'CAN'	
82	Application Interchange Profile	19 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 b1 - Combined DDA / GEN AC supported BYTE 2: b8 - EMV Contactless NOT supported	
84	Dedicated File (DF) Name	A0 00 00 02 77 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 45 02 9F 4C 08 9F 34 03	
8D	Card Risk Management Data Object List 2 (CDOL2)	91 0A 8A 02 95 05 9F 37 04 9F 4C 08	
8E	Cardholder Verification Method (CVM) List	00 00 00 00 00 00 00 00 04 03 01 03 02 03	
8F	Certification Authority Public Key Index	07	
90	Issuer Public Key Certificate	7E 37 FF 15 A4 88 1C 32 6D 5F 61 E4 D7 4A 00 39 24 76 D5 44 80 B9 16 92 4A 70 65 B7 B3 40 F3 1F A4 86 84 E1 99 CE 82 DA 3F F6 0C 77 4A 13 D0 0B C8 46 7B 87 1C 9E 00 40 28 FA 44 D9 55 38 0E D5 50 F9 F0 C8 B0 3B 3F 9A CE 0F FA FA 8B A6 B4 0C F9 69 A9 72 AF C9 D1 EC 56 25 A0 0B B8 0E E0 38 6E 57 22 BD FC 5C 7D 89 0C 71 5F 54 67 4F CE B2 0B 5E 0E 80 E8 77 0B 59 9E A4 E6 15 D8 60 2D 30 37 F4 CB B2 CC 6F 4D B2 99 34 78 FC CE 47 A5 23 59 AA 00 A4 94 C5 87 BB D3 2F 3B 64 A9 2E F8 77 47 25 66 A1 A7 24 F2 0B BB C8 24 26 9C 34 80 22 EF E7 83 85 13 A7 AD 3B DE 7B 2B 3D B8 8F 5F B3 A1 DA 45 B8 38 14 16 A1 0F 77 7E 55 07 B8 05 48 33 D3 99 97 C1 5B 34 34 E0 86 A7 B6 7F 6B B0 29 60 E1 F5 59 20 DC 2E 12 38 91 DA 23 34 03 AA D3 97 75 0F 44 56 09 CD 2A	
94	Application File Locator (AFL)	08 01 04 00 10 01 01 01 18 01 04 01	

Tag	Element name	Data	Card v8.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	FC 78 FC A8 40	
9F 0E	Issuer Action Code - Denial	00 00 00 00 00	
9F 0F	Issuer Action Code - Online	FC F8 FC F8 70	
9F 10	Issuer Application Data [InteracFlash]	xx 02 xx *	
9F 13	Last Online Application Transaction Counter (ATC) Register	xx xx *	
9F 17	Personal Identification Number (PIN) Try Counter	99	
9F 27	Cryptogram Information Data (CID)	80	
9F 32	Issuer Public Key Exponent	01 00 01	
9F 36	Application Transaction Counter (ATC)	xx xx *	
9F 42	Application Currency Code	01 24 - CAD	
9F 44	Application Currency Exponent	02	
9F 46	ICC Public Key Certificate	4F BB C2 95 BC 38 96 E5 2F 3A 1C 8D F0 C0 D6 FA E1 4B 86 B2 7A D1 88 B1 6A 63 49 75 BF EA 01 22 CA 85 48 51 33 BC 4B 2D 42 99 D0 1B 16 52 C2 19 83 DB 9E 21 51 73 FF 2E 07 62 21 49 39 DC A6 B0 BD 6C F0 F3 1D 4D CE 74 A7 A9 B3 68 3E 84 11 13 4D 53 0E 06 E4 BB 24 7D 52 F0 DD BA 0A 48 5C 07 59 51 9C 85 1A DC 34 29 23 98 3F F1 1C C6 52 ED BE C5 97 26 9B 10 FD 02 96 A9 E5 25 76 0E D6 8C 08 4A 12 CF D5 D5 C3 5E ED 54 68 45 FE F0 FA E9 EC E0 E2 48 27 4F 6B D6 D4 50 C3 19 7D E2 4A 92 2D 29 A6 52 40 58 A1 71 26 13 0F 76 A9 84 51 08	
9F 47	ICC Public Key Exponent	01 00 01	
9F 48	ICC Public Key Remainder	35 50 FD C8 5D 64 6E 44 91 F3	
9F 4A	Static Data Authentication Tag List	82	
9F 4D	Transaction Log Entry	0B 0A	
9F 4F	Transaction Log Format	9F 02 06 5F 2A 02 9A 03 9F 36 02 9F 1A 02 95 05 9C 01 8A 02	
9F 52	Merchant Type Indicator Limits 01	00 00 00 02 50 01 99 99 99 99 99 99	
9F 54	Merchant Type Indicator Limits 02	00 00 00 02 50 01 99 99 99 99 99 99	
9F 55	Merchant Type Indicator Limits 03	00 00 00 02 50 01 99 99 99 99 99 99	
9F 56	Merchant Type Indicator Limits 04	00 00 00 02 50 01 99 99 99 99 99 99	

Tag	Element name	Data	Card v8.x
9F57	Merchant Type Indicator Limits 05	00 00 00 02 50 01 99 99 99 99 99 99	
9F 62	Card Product Code [InteracFlash]	00 01	
9F 70	Form Factor Indicator [InteracFlash]	00	
DF 62	Application Selection Flag [Canada]	80 80	

\* Tag value changes with card usage

1.6.3 CTLS: Application Tag data - AID A000002771010, Interac (Flash)

Tag	Element name	Data	Card v8.x
50	Application Label	49 6E 74 65 72 61 63 - 'Interac'	
57	Track 2 Equivalent Data	00 12 03 00 00 00 00 03 D2 81 22 20 08 97 74 00 00 00 1F	
5A	Application Primary Account Number (PAN)	00 12 03 00 00 00 00 03	
5F 24	Application Expiration Date	28 12 31	
5F 25	Application Effective Date	xx xx xx	
5F 28	Issuer Country Code	01 24 - Canada	
5F 2D	Language Preference	66 72 65 6E - 'fren' (French, English)	
5F 30	Service Code	02 20	
5F 34	Application PAN Sequence Number	01	
5F 56	Issuer Country Code (alpha3 format)	43 41 4E - 'CAN'	
82	Application Interchange Profile	01 00 BYTE 1: b7 - Offline SDA NOT supported b6 - Offline DDA NOT supported b5 - Cardholder verification NOT supported b4 - Terminal risk mgmt NOT to be performed b3 - Issuer authentication NOT supported b1 - Combined DDA / GEN AC supported BYTE 2: b8 - EMV Contactless NOT supported	
84	Dedicated File (DF) Name	A0 00 00 02 77 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 45 02 9F 4C 08 9F 34 03	
8F	Certification Authority Public Key Index	07	



Tag	Element name	Data	Card v8.x
90	Issuer Public Key Certificate	7E 37 FF 15 A4 88 1C 32 6D 5F 61 E4 D7 4A 00 39 24 76 D5 44 80 B9 16 92 4A 70 65 B7 B3 40 F3 1F A4 86 84 E1 99 CE 82 DA 3F F6 0C 77 4A 13 D0 0B C8 46 7B 87 1C 9E 00 40 28 FA 44 D9 55 38 0E D5 50 F9 F0 C8 B0 3B 3F 9A CE 0F FA FA 8B A6 B4 0C F9 69 A9 72 AF C9 D1 EC 56 25 A0 0B B8 0E E0 38 6E 57 22 BD FC 5C 7D 89 0C 71 5F 54 67 4F CE B2 0B 5E 0E 80 E8 77 0B 59 9E A4 E6 15 D8 60 2D 30 37 F4 CB B2 CC 6F 4D B2 99 34 78 FC CE 47 A5 23 59 AA 00 A4 94 C5 87 BB D3 2F 3B 64 A9 2E F8 77 47 25 66 A1 A7 24 F2 0B BB C8 24 26 9C 34 80 22 EF E7 83 85 13 A7 AD 3B DE 7B 2B 3D B8 8F 5F B3 A1 DA 45 B8 38 14 16 A1 0F 77 7E 55 07 B8 05 48 33 D3 99 97 C1 5B 34 34 E0 86 A7 B6 7F 6B B0 29 60 E1 F5 59 20 DC 2E 12 38 91 DA 23 34 03 AA D3 97 75 0F 44 56 09 CD 2A	
94	Application File Locator (AFL)	08 01 04 00 10 01 05 03	
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	FC F8 FC F8 00	
9F 0E	Issuer Action Code - Denial	00 00 00 00 00	
9F 0F	Issuer Action Code - Online	FC F8 FC F8 00	
9F 10	Issuer Application Data [InteracFlash]	xx 02 xx *	
9F 13	Last Online Application Transaction Counter (ATC) Register	xx xx *	
9F 17	Personal Identification Number (PIN) Try Counter	99	
9F 27	Cryptogram Information Data (CID)	80	
9F 32	Issuer Public Key Exponent	01 00 01	
9F 36	Application Transaction Counter (ATC)	xx xx *	
9F 38	Processing Options Data Object List (PDOL)	9F 59 03 9F 5A 01 9F 02 06 9F 1A 02 5F 2A 02 9F 37 04 9F 58 01	
9F 42	Application Currency Code	01 24 - CAD	
9F 44	Application Currency Exponent	02	

Tag	Element name	Data	Card v8.x
9F 46	ICC Public Key Certificate	CC B0 DD 3C FD BC 93 52 1D DE 2A 62 54 F4 D6 9B 39 05 D1 92 FE 8F 87 87 BF 1B AD 88 8F BA 7D DD 69 E7 ED 7C 3B D7 E8 5F 1B D5 3C 06 1A 22 3A 75 FC 70 79 87 3D 5F F5 1E 23 C0 5D AF B0 6C 7B 49 06 C3 D4 6B CA F4 27 79 A5 D3 AB FD 54 90 80 B4 3D FE 3E C9 9E FF 1D 57 5F 15 FC DF BA D9 6D A6 FD 33 2D 08 C5 08 84 D5 B2 5E 77 A7 25 A5 50 05 87 A7 A5 1F B4 6F 18 21 90 A7 F8 63 4B FD 7E E4 E1 8A 6F A4 02 1B 69 32 71 04 07 4E B3 15 D3 71 2C F9 68 8D F9 94 CA 3F 7E 42 0D 8B FE 0E E5 4F A7 45 9E 77 25 9D 1F 1E 35 0C D9 B9 6F 70 32 7D	
9F 47	ICC Public Key Exponent	01 00 01	
9F 48	ICC Public Key Remainder	35 50 FD C8 5D 64 6E 44 91 F3	
9F 4A	Static Data Authentication Tag List	82	
9F 4D	Transaction Log Entry	0B 0A	
9F 4F	Transaction Log Format	9F 02 06 5F 2A 02 9A 03 9F 36 02 9F 1A 02 95 05 9C 01 8A 02	
9F 52	Merchant Type Indicator Limits 01	00 00 00 02 50 01 99 99 99 99 99 99	
9F 54	Merchant Type Indicator Limits 02	00 00 00 02 50 01 99 99 99 99 99 99	
9F 55	Merchant Type Indicator Limits 03	00 00 00 02 50 01 99 99 99 99 99 99	
9F 56	Merchant Type Indicator Limits 04	00 00 00 02 50 01 99 99 99 99 99 99	
9F57	Merchant Type Indicator Limits 05	00 00 00 02 50 01 99 99 99 99 99 99	
9F 62	Card Product Code [InteracFlash]	00 01	
9F 63	Card Transaction Information [InteracFlash]	00 10 00 00	
9F 70	Form Factor Indicator [InteracFlash]	00	
DF 62	Application Selection Flag [Canada]	80 80	

\* Tag value changes with card usage

### 1.7 Test Card 07 - American Express, DI, Credit, English, Canada, CAD

A Dual Interface (Contact / Contactless) American Express credit card with Issuer Country Code of 'Canada' and Currency Code of 'CAD'.

The recommended transaction amount to generate a host approval is \$30.00

#### 1.7.1 Contact: CVM List - A00000025010402, Amex (EMV)

Cardholder Verification Method List ('4201 4103 5E03 5F03')			
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	Next CVM

## 1.7.2 Contact: Application Tag data - A000000025010402, Amex (EMV)

Tag	Element name	Data	Card v8.x
50	Application Label	41 4D 45 52 49 43 41 4E 20 45 58 50 52 45 53 53 - 'AMERICAN EXPRESS'	
57	Track 2 Equivalent Data	37 42 45 00 17 41 00 7D 24 12 20 11 71 01 23 45 00 00 0F	
5A	Application Primary Account Number (PAN)	37 42 45 00 17 41 00 7F	
5F 20	Cardholder Name	44 45 56 20 43 41 4E 2F 54 65 73 74 20 43 61 72 64 20 30 37 20 20 20 20 20 20 - 'DEV CAN/Test Card 07'	
5F 24	Application Expiration Date	24 12 31	
5F 25	Application Effective Date	xx xx xx	
5F 28	Issuer Country Code	01 24 - Canada	
5F 2D	Language Preference	65 6E - 'en' (English)	
5F 30	Service Code	02 01	
5F 34	Application PAN Sequence Number	00	
82	Application Interchange Profile	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 b1 - Combined DDA / GEN AC NOT supported BYTE 2: b8 - EMV Contactless NOT supported	
84	Dedicated File (DF) Name	A0 00 00 00 25 01 04 02	
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	
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 5F 03 00 00	
8F	Certification Authority Public Key Index	B9	

Tag	Element name	Data	Card v8.x
90	Issuer Public Key Certificate	07 88 88 06 CC E9 77 0E CF 35 EB BB 5C 31 27 F0 59 F3 4B 40 48 FA 33 FF B6 69 C1 15 62 75 5E DF C1 87 F4 02 2C 9D 67 21 FC B7 85 FA 89 74 2B 79 F9 90 3F CB 02 68 5C A7 21 6D 42 D7 1C 69 7E 90 3F 39 24 76 8F 3A 82 22 AE 41 6B 68 7A E8 94 60 AF 78 11 CF E7 18 3D B3 68 EF D4 6A D2 29 CD 78 82 38 E0 BB 3D 8E EA AB 7D 40 8C AD 96 36 9F 54 0C 25 98 97 CF 9C AB 1D DD 2F 14 12 DB 45 22 63 80 29 7C DD 68 39 19 17 4B E5 49 F3 7E 02 5A 33 2E 35 18 62 85 11 2B B7 9F DD 36 9A 57 13 00 01 B3 5B 8B 6C EB 58 0E 3F D4 76 C0 78 3F 2B 1C 36 6E 3F A4 2C 3F D3 F1 CC 21 30 0F 94 AF 98 C9 EB 2D A0 C9 62 69 76 F2 D6 C4 35 95 8D B5 11 F3 AD E9 3C EB 4D F8 0C DB EA F1 B8 53 33 89 DC A0 97 DE 50 E8 D9 FA D1 CE E9 84 8A 1B C0 A6 AD E3 B8 A2 85 7B 54 29 8B 07 99	
94	Application File Locator (AFL)	08 01 01 00 08 02 03 01 08 04 06 01	
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 NOT valid b4 - Domestic services valid b3 - International services valid b2 - ATMs NOT valid b1 - non-ATM terminals valid BYTE 2: b8 - Domestic cashback NOT allowed b7 - International cashback NOT allowed	
9F 08	Application Version Number	00 01	
9F 0D	Issuer Action Code - Default	B0 50 FC 98 00	
9F 0E	Issuer Action Code - Denial	00 00 00 00 00	
9F 0F	Issuer Action Code - Online	B0 78 FC 98 00	
9F 10	Issuer Application Data [AEIPS 4.2]	xx xx 01 xx xx xx xx *	
9F 11	Issuer Code Table Index	01	
9F 12	Application Preferred Name	41 6D 65 72 69 63 61 6E 20 45 78 70 72 65 73 73 - 'American Express'	
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 35 01	
9F 42	Application Currency Code	01 24	

Tag	Element name	Data	Card v8.x
9F 46	ICC Public Key Certificate	28 9A FE DF 0E E2 B8 62 AC C2 B1 F2 78 29 83 03 70 8A 93 A8 CF 53 89 41 6B 5D 41 04 4A 05 09 C7 EA ED FA 5D AD C0 BC 50 D6 64 E3 0A BC A6 58 E7 DE 56 0E 32 FD BE 61 DB 61 8F 87 B6 EF 40 E2 4C D6 7E D8 16 42 3B D0 EE 5C 66 FA 07 AB BD A1 E6 DC 1B 7B 8A 4D 36 59 F5 F6 38 AB 50 BF 46 22 CC F9 5A 77 BE 9E FB 96 E1 61 5B C5 C3 4D 56 A5 8D C7 AD 6B 42 70 3E AE 35 89 C6 5E 63 F5 94 3E 45 E2 09 CE 8A 4E 94 2B E8 FC 2B 7B 04 6F 92 12 2B 6D 33 2B F1 CA FB B9 FE 91 36 1F 34 EA 9A E3 54 52 F0 AA C5 34 58 5C 6E 2B E5 39 1F 19 B5 18 66	
9F 47	ICC Public Key Exponent	03	

\* Tag value changes with card usage

1.7.3 CTLS: CVM List - A00000025010402, Amex (ExpressPay)

Cardholder Verification Method List ('4201 5E03 1F02')			
CVM	Verification Method	Conditions	If unsuccessful
1	Online PIN	Unattended Cash	Next CVM
2	Signature (paper)	Terminal supports CVM type	Next CVM
3	No CVM required	Not Unattended Cash, Manual Cash or Cashback	Fail

1.7.4 CTLS: Application Tag data - A00000025010402, Amex (ExpressPay)

Tag	Element name	Data	Card v8.x
50	Application Label	41 4D 45 52 49 43 41 4E 20 45 58 50 52 45 53 53 - 'AMERICAN EXPRESS'	
57	Track 2 Equivalent Data	37 42 45 00 17 41 00 7D 24 12 70 21 71 01 23 45 00 00 0F	
5A	Application Primary Account Number (PAN)	37 42 45 00 17 41 00 7F	
5F 20	Cardholder Name	44 45 56 20 43 41 4E 2F 54 65 73 74 20 43 61 72 64 20 30 37 20 20 20 20 20 20 - 'DEV CAN/Test Card 07'	
5F 24	Application Expiration Date	24 12 31	
5F 25	Application Effective Date	xx xx xx	
5F 28	Issuer Country Code	01 24 - Canada	
5F 2D	Language Preference	65 6E - 'en' (English)	
5F 30	Service Code	02 01	
5F 34	Application PAN Sequence Number	00	

Tag	Element name	Data	Card v8.x
82	Application Interchange Profile [Expresspay 2.0]	18 80 BYTE 1: b7 - SDA NOT supported b6 - DDA NOT supported b5 - Cardholder verification supported b4 - Terminal risk mgmt to be performed b3 - Issuer authentication NOT supported b1 - CDA NOT supported BYTE 2: b8 - EMV & Mag-stripe modes supported b7 - Expresspay Mobile NOT supported b6 - Expresspay Mobile HCE NOT supported	
84	Dedicated File (DF) Name	A0 00 00 00 25 01 04 02	
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	
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 5E 03 1F 02 00 00	
8F	Certification Authority Public Key Index	B9	
90	Issuer Public Key Certificate	07 88 88 06 CC E9 77 0E CF 35 EB BB 5C 31 27 F0 59 F3 4B 40 48 FA 33 FF B6 69 C1 15 62 75 5E DF C1 87 F4 02 2C 9D 67 21 FC B7 85 FA 89 74 2B 79 F9 90 3F CB 02 68 5C A7 21 6D 42 D7 1C 69 7E 90 3F 39 24 76 8F 3A 82 22 AE 41 6B 68 7A E8 94 60 AF 78 11 CF E7 18 3D B3 68 EF D4 6A D2 29 CD 78 82 38 E0 BB 3D 8E EA AB 7D 40 8C AD 96 36 9F 54 0C 25 98 97 CF 9C AB 1D DD 2F 14 12 DB 45 22 63 80 29 7C DD 68 39 19 17 4B E5 49 F3 7E 02 5A 33 2E 35 18 62 85 11 2B B7 9F DD 36 9A 57 13 00 01 B3 5B 8B 6C EB 58 0E 3F D4 76 C0 78 3F 2B 1C 36 6E 3F A4 2C 3F D3 F1 CC 21 30 0F 94 AF 98 C9 EB 2D A0 C9 62 69 76 F2 D6 C4 35 95 8D B5 11 F3 AD E9 3C EB 4D F8 0C DB EA F1 B8 53 33 89 DC A0 97 DE 50 E8 D9 FA D1 CE E9 84 8A 1B C0 A6 AD E3 B8 A2 85 7B 54 29 8B 07 99	
94	Application File Locator (AFL)	08 01 02 00 08 03 07 02	
9F 07	Application Usage Control	3D 00 BYTE 1: b8 - Domestic cash trans. NOT valid b7 - Int'l cash transactions NOT valid b6 - Domestic goods valid b5 - International goods valid b4 - Domestic services valid b3 - International services valid b2 - ATMs NOT valid b1 - non-ATM terminals valid BYTE 2: b8 - Domestic cashback NOT allowed b7 - International cashback NOT allowed	
9F 08	Application Version Number	00 01	

Tag	Element name	Data	Card v8.x
9F 0D	Issuer Action Code - Default	B0 50 FC 98 00	
9F 0E	Issuer Action Code - Denial	00 00 00 00 00	
9F 0F	Issuer Action Code - Online	B0 78 FC 98 00	
9F 10	Issuer Application Data [Expresspay 2.0]	xx xx 01 xx xx xx xx *	
9F 12	Application Preferred Name	41 6D 65 72 69 63 61 6E 20 45 78 70 72 65 73 73 - 'American Express'	
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)	00 02	
9F 38	Processing Options Data Object List (PDOL)	9F 35 01	
9F 42	Application Currency Code	01 24	
9F 46	ICC Public Key Certificate	E3 EA 34 B7 76 3E D8 DF 0C 93 BD 22 8F CF 1A 45 90 42 C8 7C 47 3A 62 17 DA 3D 60 FE C9 F7 1D 3C DC F5 29 1D 0C 38 56 06 87 E4 7D 29 D8 5A 80 EA A5 C8 05 61 56 9A A3 33 37 5F 92 0E 2F 48 B5 78 64 90 F8 88 89 C2 47 E9 56 84 B9 88 E8 EF 89 2C A4 03 76 4B 63 08 C4 2F 3E 7F 0D E9 4B 49 03 C2 E6 8C DB FE 2F 99 EF BA 63 82 1F E4 93 C7 5C D2 14 C3 BA 75 76 EE 8A 00 BD 30 69 2E 8D BD 4B 5B C8 95 C4 BA 06 F2 B4 1E 94 94 CD BD B3 86 8F 32 B7 AC EF AA 98 DB 29 6C E7 8A AC C3 88 5D 0C 2A 25 89 46 11 7F 3E 3F DE 21 33 34 30 2D 81 D8 0B	
9F 47	ICC Public Key Exponent	03	

\* Tag value changes with card usage

1.7.5 Contact: CVM List - A000000291010, Amex (EMV)

Cardholder Verification Method List ('4201 4203 5E03 5F03')			
CVM	Verification Method	Conditions	If unsuccessful
1	Online PIN	Unattended Cash	Next CVM
2	Online PIN	Terminal supports CVM type	Next CVM
3	Signature (paper)	Terminal supports CVM type	Next CVM
4	No CVM required	Terminal supports CVM type	Next CVM

1.7.6 Contact: Application Tag data - A000000291010, Amex (EMV)

Tag	Element name	Data	Card v8.x
50	Application Label	41 4D 45 52 49 43 41 4E 20 45 58 50 52 45 53 53 - 'AMERICAN EXPRESS'	
57	Track 2 Equivalent Data	37 42 45 00 17 41 00 7D 24 12 20 11 71 01 23 45 00 00 0F	
5A	Application Primary Account Number (PAN)	37 42 45 00 17 41 00 7F	
5F 20	Cardholder Name	44 45 56 20 43 41 4E 2F 54 65 73 74 20 43 61 72 64 20 30 37 20 20 20 20 20 20 - 'DEV CAN/Test Card 07'	
5F 24	Application Expiration Date	24 12 31	
5F 25	Application Effective Date	xx xx xx	
5F 28	Issuer Country Code	01 24 - Canada	

Tag	Element name	Data	Card v8.x
5F 2D	Language Preference	65 6E - 'en' (English)	
5F 30	Service Code	02 01	
5F 34	Application PAN Sequence Number	00	
82	Application Interchange Profile	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 b1 - Combined DDA / GEN AC NOT supported BYTE 2: b8 - EMV Contactless NOT supported	
84	Dedicated File (DF) Name	A0 00 00 00 29 10 10	
87	Application Priority Indicator	02	
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 5F 03 00 00	
8F	Certification Authority Public Key Index	B9	
90	Issuer Public Key Certificate	07 88 88 06 CC E9 77 0E CF 35 EB BB 5C 31 27 F0 59 F3 4B 40 48 FA 33 FF B6 69 C1 15 62 75 5E DF C1 87 F4 02 2C 9D 67 21 FC B7 85 FA 89 74 2B 79 F9 90 3F CB 02 68 5C A7 21 6D 42 D7 1C 69 7E 90 3F 39 24 76 8F 3A 82 22 AE 41 6B 68 7A E8 94 60 AF 78 11 CF E7 18 3D B3 68 EF D4 6A D2 29 CD 78 82 38 E0 BB 3D 8E EA AB 7D 40 8C AD 96 36 9F 54 0C 25 98 97 CF 9C AB 1D DD 2F 14 12 DB 45 22 63 80 29 7C DD 68 39 19 17 4B E5 49 F3 7E 02 5A 33 2E 35 18 62 85 11 2B B7 9F DD 36 9A 57 13 00 01 B3 5B 8B 6C EB 58 0E 3F D4 76 C0 78 3F 2B 1C 36 6E 3F A4 2C 3F D3 F1 CC 21 30 0F 94 AF 98 C9 EB 2D A0 C9 62 69 76 F2 D6 C4 35 95 8D B5 11 F3 AD E9 3C EB 4D F8 0C DB EA F1 B8 53 33 89 DC A0 97 DE 50 E8 D9 FA D1 CE E9 84 8A 1B C0 A6 AD E3 B8 A2 85 7B 54 29 8B 07 99	
94	Application File Locator (AFL)	08 01 01 00 08 02 03 01 08 04 06 01	



Tag	Element name	Data	Card v8.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 NOT valid b4 - Domestic services valid b3 - International services valid b2 - ATMs NOT valid b1 - non-ATM terminals valid BYTE 2: b8 - Domestic cashback NOT allowed b7 - International cashback NOT allowed	
9F 08	Application Version Number	00 01	
9F 0D	Issuer Action Code - Default	B0 50 FC 98 00	
9F 0E	Issuer Action Code - Denial	00 00 00 00 00	
9F 0F	Issuer Action Code - Online	B0 78 FC 98 00	
9F 10	Issuer Application Data [AEIPS 4.2]	xx xx 01 xx xx xx xx *	
9F 11	Issuer Code Table Index	01	
9F 12	Application Preferred Name	41 6D 65 72 69 63 61 6E 20 45 78 70 72 65 73 73 - 'American Express'	
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 35 01	
9F 42	Application Currency Code	01 24	
9F 46	ICC Public Key Certificate	28 9A FE DF 0E E2 B8 62 AC C2 B1 F2 78 29 83 03 70 8A 93 A8 CF 53 89 41 6B 5D 41 04 4A 05 09 C7 EA ED FA 5D AD C0 BC 50 D6 64 E3 0A BC A6 58 E7 DE 56 0E 32 FD BE 61 DB 61 8F 87 B6 EF 40 E2 4C D6 7E D8 16 42 3B D0 EE 5C 66 FA 07 AB BD A1 E6 DC 1B 7B 8A 4D 36 59 F5 F6 38 AB 50 BF 46 22 CC F9 5A 77 BE 9E FB 96 E1 61 5B C5 C3 4D 56 A5 8D C7 AD 6B 42 70 3E AE 35 89 C6 5E 63 F5 94 3E 45 E2 09 CE 8A 4E 94 2B E8 FC 2B 7B 04 6F 92 12 2B 6D 33 2B F1 CA FB B9 FE 91 36 1F 34 EA 9A E3 54 52 F0 AA C5 34 58 5C 6E 2B E5 39 1F 19 B5 18 66	
9F 47	ICC Public Key Exponent	03	

\* Tag value changes with card usage

## 1.8 Test Card 08 - Discover, DI, Credit, English, USA, USD

A Dual Interface (Contact / Contactless) Discover credit card with Issuer Country Code of 'USA' and Currency Code of 'USD'.

The recommended transaction amount to generate a host approval is \$79.00.

### 1.8.1 Contact: CVM List - A000001523010, Discover (EMV)

Cardholder Verification Method List ('4201 4103 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	No CVM required	Terminal supports CVM type	Fail

### 1.8.2 Contact: Application Tag data - A000001523010, Discover (EMV)

Tag	Element name	Data	Card v11.x
50	Application Label	44 49 53 43 4F 56 45 52 -	'DISCOVER'
57	Track 2 Data [Discover]	65 10 00 00 00 00 08 44 D2 60 52 01 11 11 19 10 00 00 0F	
5A	Application Primary Account Number (PAN)	65 10 00 00 00 00 08 44	
5F 20	Cardholder Name	44 45 56 20 43 41 4E 2F 54 65 73 74 20 43 61 72 64 20 30 38 20 20 20 20 20 20 - 'DEV CAN/Test Card 08'	
5F 24	Application Expiration Date	26 05 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	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 supported b1 - Combined DDA / GEN AC NOT supported BYTE 2: b8 - EMV Contactless NOT supported	
84	Dedicated File (DF) Name	A0 00 00 01 52 30 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 34 03	
8D	Card Risk Management Data Object List 2 (CDOL2)	91 0A 8A 02 95 05 9F 37 04	
8E	Cardholder Verification Method (CVM) List	00 00 00 00 00 00 00 00 42 01 41 03 1F 03	
94	Application File Locator (AFL)	08 01 01 00 18 01 02 01	

Tag	Element name	Data	Card v11.x
9F 07	Application Usage Control	FF C0 BYTE 1: b8 - Domestic cash trans. valid b7 - Int'l cash transactions valid b6 - Domestic goods valid b5 - International goods NOT valid b4 - Domestic services valid b3 - International services valid b2 - ATMs NOT valid b1 - non-ATM terminals valid BYTE 2: b8 - Domestic cashback allowed b7 - International cashback allowed	
9F 08	Application Version Number	00 01	
9F 0D	Issuer Action Code - Default	30 40 E4 28 00	
9F 0E	Issuer Action Code - Denial	00 10 00 00 40	
9F 0F	Issuer Action Code - Online	30 68 C4 F8 00	
9F 10	Issuer Application Data [DPAS]	xx 06 xx xx xx xx xx xx *	
9F 11	Issuer Code Table Index	01	
9F 12	Application Preferred Name	44 69 73 63 6F 76 65 72 - 'Discover'	
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 36	Application Transaction Counter (ATC)	00 04	
9F 4D	Transaction Log Entry	0B 0A	
9F 4F	Transaction Log Format	9F 02 06 5F 2A 02 9A 03 9F 36 02 9F 34 03 9F 52 06 9F 1A 02 95 05 9C 01 8A 02 9F 37 04 9F 03 06 9F 53 08 9F 66 04 9F 71 02	
9F 78	Application State [D-PAS]	01	
C1	Application Configuration Options [DPAS]	15 E0	
C2	Issuer Life Cycle Data (ILCD) [DPAS]	00 00	
C3	Currency Conversion Codes 1 [DPAS]	08 40 00 00 02	
C4	Currency Conversion Codes 2 [DPAS]	08 40 00 00 02	
C5	Card Action Code - Denial [DPAS]	01 00	
C6	Card Action Code - Default [DPAS]	22 0B	
C7	Card Action Code - Online [DPAS]	F6 7F	
D2	CRM Country Code [DPAS]	08 40	
D3	CRM Currency Code [DPAS]	08 40	
DF 20	Transaction Profile Objects(TPO0) [DPAS]	00 18 00 08 01 01 00 18 01 02 01 00 01 00 F6 7F 22 0B 00	

\* Tag value changes with card usage

1.8.3 CTLS: CVM List - A0000001523010, Discover (D-PAS EMV Online)

Cardholder Verification Method List ('4201 4103 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	No CVM required	Terminal supports CVM type	Fail

1.8.4 CTLS: Application Tag data - A0000001523010, Discover (D-PAS EMV Online)

Tag	Element name	Data	Card v11.x
50	Application Label	44 49 53 43 4F 56 45 52 20 43 4C - 'Discover CL'	
57	Track 2 Data [Discover]	65 10 00 00 00 00 08 44 D2 60 52 01 11 11 19 10 00 00 0F	
5A	Application Primary Account Number (PAN)	65 10 00 00 00 00 08 44	
5F 20	Cardholder Name	44 45 56 20 43 41 4E 2F 54 65 73 74 20 43 61 72 64 20 30 38 20 20 20 20 20 20 - 'DEV CAN/Test Card 08'	
5F 24	Application Expiration Date	26 05 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 [DPAS CL]	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: RFU	
84	Dedicated File (DF) Name	A0 00 00 01 52 30 10	
87	Application Priority Indicator	01	
8E	Cardholder Verification Method (CVM) List	00 00 00 00 00 00 00 00 42 01 41 03 1F 03	
94	Application File Locator (AFL)	08 02 02 00 18 03 04 01	
9F 07	Application Usage Control	FF C0 BYTE 1: b8 - Domestic cash trans. valid b7 - Int'l cash transactions valid b6 - Domestic goods valid b5 - International goods NOT valid b4 - Domestic services valid b3 - International services valid b2 - ATMs NOT valid b1 - non-ATM terminals valid BYTE 2: b8 - Domestic cashback allowed b7 - International cashback allowed	
9F 08	Application Version Number	00 01	
9F 0D	Issuer Action Code - Default	00 00 00 00 00	
9F 0E	Issuer Action Code - Denial	00 00 00 00 00	
9F 0F	Issuer Action Code - Online	00 00 00 00 00	
9F 10	Issuer Application Data [DPAS CL]	xx 15 xx xx xx xx xx xx xx xx *	

Tag	Element name	Data	Card v11.x
9F 11	Issuer Code Table Index	01	
9F 12	Application Preferred Name	44 69 73 63 6F 76 65 72 20 43 4C - 'Discover CL'	
9F 26	Application Cryptogram (AC)	xx xx xx xx xx xx xx xx *	
9F 27	Cryptogram Information Data (CID)	80	
9F 36	Application Transaction Counter (ATC)	00 02	
9F 38	Processing Options Data Object List (PDOL)	9F 66 04 9F 02 06 9F 03 06 9F 1A 02 5F 2A 02 9A 03 9C 01 9F 37 04	
9F 4F	Transaction Log Format	9F 02 06 5F 2A 02 9A 03 9F 36 02 9F 34 03 9F 52 06 9F 1A 02 95 05 9C 01 8A 02 9F 37 04 9F 03 06 9F 53 08 9F 66 04 9F 71 02	
9F 71	Card Processing Requirements [DPAS]	00 0F BYTE 1 (Transient Data): b8 - Online PIN NOT required b7 - Signature NOT required b6 - PID Limit NOT reached b5 - Consumer Device CVM NOT performed BYTE 2 (Permanent Data): b8 - Do NOT switch to other interface if unable to process online b7 - Do NOT process online if CDA failed b6 - Do NOT decline/switch other interface if CDA failed b5 - Issuer Update Processing NOT supported b4 - Do process online if card expired b3 - Do decline if card expired b2 - CVM Fallback to Signature allowed b1 - CVM Fallback to 'No CVM' allowed	
9F 78	Application State [D-PAS]	01	
BF 51	Contactless D-PAS MS and ZIP Default Profile	82 02 00 00 94 04 08 01 01 00	
C0	Contactless Application Configuration Options (CL-ACO)	00 80	
C2	Issuer Life Cycle Data (ILCD) [DPAS]	00 00	
C3	Currency Conversion Codes 1 [DPAS]	08 40 00 00 02	
C4	Currency Conversion Codes 2 [DPAS]	08 40 00 00 02	
C8	Lower Consecutive Offline Amount (LCOA) Limit [DPAS]	00 00 00 00 00 00	
C9	Upper Consecutive Offline Amount Limit (UCOA) [DPAS]	00 00 00 00 00 00	
CA	Single Transaction Amount (STA) Limit [DPAS]	00 00 00 00 00 00	
CB	Lower Consecutive Offline Limit (LCOL) [DPAS]	00	
CC	Upper Consecutive Offline Transaction Limit (UCOL) [DPAS]	00	
CD	Number of Consecutive Offline Transactions (NCOT) [DPAS]	00	
CE	Cumulative Offline Amount [DPAS]	00 00 00 00 00 00	
D1	Offline Balance [DPAS]	00 00 00 00 00 00	
D2	CRM Country Code [DPAS]	08 40	

Tag	Element name	Data	Card v11.x
D3	CRM Currency Code [DPAS]	08 40	
D4	CVM-Accumulator [DPAS]	00 00 00 00 00 00	
D5	CVM-Cum limit 1	00 00 00 00 00 00	
D6	CVM-Cum limit 2	00 00 00 00 00 00	
D7	CVM-STA limit 1	00 00 00 00 00 00	
D8	CVM-STA limit 2	00 00 00 00 00 00	
D9	CVM-Counter	00	
DA	CVM-Cons limit 1	00	
DB	CVM-Cons limit 2	00	
DE	Counter and Accumulator Control Options (CACO) [D-PAS]	C1 01 21 01 01 00	
DF 30	CRM-CAC Switch Interface [D-PAS]	00 00 00	
DF 31	CRM-CAC Denial [D-PAS]	00 00 00	
DF 32	CRM-CAC Online [D-PAS]	C8 FE FF	
DF 33	CRM-CAC Default [D-PAS]	98 FE EB	
DF 34	CVM Card Action Codes - Online	40 80	
DF 35	CVM Card Action Codes - Signature	00 80	
DF 40	CL-Accumulator	00 00 00 00 00 00	
DF 41	CL-Cum Limit	00 00 00 00 00 00	
DF 42	CL-STA	00 00 00 00 00 00	
DF 43	CL-Counter	00	
DF 44	CL-Cons Limit	00	

\* Tag value changes with card usage

1.8.5 CVM List - A000001523010, Discover (D-PAS EMV Offline)

Cardholder Verification Method List ('4201 4103 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	No CVM required	Terminal supports CVM type	Fail

1.8.6 CTLS: Application Tag data - A000001523010, Discover (D-PAS EMV Offline)

Tag	Element name	Data	Card v11.x
50	Application Label	44 49 53 43 4F 56 45 52 20 43 4C - 'Discover CL'	
57	Track 2 Data [Discover]	65 10 00 00 00 00 08 44 D2 60 52 01 11 11 19 10 00 00 0F	
5A	Application Primary Account Number (PAN)	65 10 00 00 00 00 08 44	
5F 20	Cardholder Name	44 45 56 20 43 41 4E 2F 54 65 73 74 20 43 61 72 64 20 30 38 20 20 20 20 20 20 - 'DEV CAN/Test Card 08'	
5F 24	Application Expiration Date	26 05 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	Card v11.x
82	Application Interchange Profile [DPAS CL]	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: RFU	
84	Dedicated File (DF) Name	A0 00 00 01 52 30 10	
87	Application Priority Indicator	01	
8E	Cardholder Verification Method (CVM) List	00 00 00 00 00 00 00 00 42 01 41 03 1F 03	
94	Application File Locator (AFL)	08 02 02 00 18 03 04 01	
9F 07	Application Usage Control	FF C0 BYTE 1: b8 - Domestic cash trans. valid b7 - Int'l cash transactions valid b6 - Domestic goods valid b5 - International goods NOT valid b4 - Domestic services valid b3 - International services valid b2 - ATMs NOT valid b1 - non-ATM terminals valid BYTE 2: b8 - Domestic cashback allowed b7 - International cashback allowed	
9F 08	Application Version Number	00 01	
9F 0D	Issuer Action Code - Default	00 00 00 00 00	
9F 0E	Issuer Action Code - Denial	00 00 00 00 00	
9F 0F	Issuer Action Code - Online	00 00 00 00 00	
9F 10	Issuer Application Data [DPAS CL]	xx 15 xx xx xx xx xx xx xx xx *	
9F 11	Issuer Code Table Index	01	
9F 12	Application Preferred Name	44 69 73 63 6F 76 65 72 20 43 4C - 'Discover CL'	
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)	00 01	
9F 38	Processing Options Data Object List (PDOL)	9F 66 04 9F 02 06 9F 03 06 9F 1A 02 5F 2A 02 9A 03 9C 01 9F 37 04	
9F 4F	Transaction Log Format	9F 02 06 5F 2A 02 9A 03 9F 36 02 9F 34 03 9F 52 06 9F 1A 02 95 05 9C 01 8A 02 9F 37 04 9F 03 06 9F 53 08 9F 66 04 9F 71 02	

Tag	Element name	Data	Card v11.x
9F 71	Card Processing Requirements [DPAS]	00 0F BYTE 1 (Transient Data): b8 - Online PIN NOT required b7 - Signature NOT required b6 - PID Limit NOT reached b5 - Consumer Device CVM NOT performed BYTE 2 (Permanent Data): b8 - Do NOT switch to other interface if unable to process online b7 - Do NOT process online if CDA failed b6 - Do NOT decline/switch other interface if CDA failed b5 - Issuer Update Processing NOT supported b4 - Do process online if card expired b3 - Do decline if card expired b2 - CVM Fallback to Signature allowed b1 - CVM Fallback to 'No CVM' allowed	
9F 78	Application State [D-PAS]	01	
BF 51	Contactless D-PAS MS and ZIP Default Profile	82 02 00 00 94 04 08 01 01 00	
C0	Contactless Application Configuration Options (CL-ACO)	00 80	
C2	Issuer Life Cycle Data (ILCD) [DPAS]	00 00	
C3	Currency Conversion Codes 1 [DPAS]	08 40 00 00 02	
C4	Currency Conversion Codes 2 [DPAS]	08 40 00 00 02	
C8	Lower Consecutive Offline Amount (LCOA) Limit [DPAS]	00 00 00 00 00 00	
C9	Upper Consecutive Offline Amount Limit (UCOA) [DPAS]	00 00 00 00 00 00	
CA	Single Transaction Amount (STA) Limit [DPAS]	00 00 00 00 00 00	
CB	Lower Consecutive Offline Limit (LCOL) [DPAS]	00	
CC	Upper Consecutive Offline Transaction Limit (UCOL) [DPAS]	00	
CD	Number of Consecutive Offline Transactions (NCOT) [DPAS]	00	
CE	Cumulative Offline Amount [DPAS]	00 00 00 00 00 00	
D1	Offline Balance [DPAS]	00 00 00 00 00 00	
D2	CRM Country Code [DPAS]	08 40	
D3	CRM Currency Code [DPAS]	08 40	
D4	CVM-Accumulator [DPAS]	00 00 00 00 00 00	
D5	CVM-Cum limit 1	00 00 00 00 00 00	
D6	CVM-Cum limit 2	00 00 00 00 00 00	
D7	CVM-STA limit 1	00 00 00 00 00 00	
D8	CVM-STA limit 2	00 00 00 00 00 00	
D9	CVM-Counter	00	
DA	CVM-Cons limit 1	00	
DB	CVM-Cons limit 2	00	
DE	Counter and Accumulator Control Options (CACO) [D-PAS]	C1 01 21 01 01 00	
DF 30	CRM-CAC Switch Interface [D-PAS]	00 00 00	
DF 31	CRM-CAC Denial [D-PAS]	00 00 00	



Tag	Element name	Data	Card v11.x
DF 32	CRM-CAC Online [D-PAS]	C8 FE FF	
DF 33	CRM-CAC Default [D-PAS]	98 FE EB	
DF 34	CVM Card Action Codes - Online	40 80	
DF 35	CVM Card Action Codes - Signature	00 80	
DF 40	CL-Accumulator	00 00 00 00 00 00	
DF 41	CL-Cum Limit	00 00 00 00 00 00	
DF 42	CL-STA	00 00 00 00 00 00	
DF 43	CL-Counter	00	
DF 44	CL-Cons Limit	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	<b>NUL</b>	44	00101100	2C	,	88	01011000	58	<b>X</b>
01	00000001	01	<b>SOH</b>	45	00101101	2D	-	89	01011001	59	<b>Y</b>
02	00000010	02	<b>STX</b>	46	00101110	2E	.	90	01011010	5A	<b>Z</b>
03	00000011	03	<b>ETX</b>	47	00101111	2F	/	91	01011011	5B	[
04	00000100	04	<b>EOT</b>	48	00110000	30	<b>0</b>	92	01011100	5C	\
05	00000101	05	<b>ENQ</b>	49	00110001	31	<b>1</b>	93	01011101	5D	]
06	00000110	06	<b>ACK</b>	50	00110010	32	<b>2</b>	94	01011110	5E	^
07	00000111	07	<b>BEL</b>	51	00110011	33	<b>3</b>	95	01011111	5F	_
08	00001000	08	<b>BS</b>	52	00110100	34	<b>4</b>	96	01100000	60	`
09	00001001	09	<b>HT</b>	53	00110101	35	<b>5</b>	97	01100001	61	<b>a</b>
10	00001010	0A	<b>LF</b>	54	00110110	36	<b>6</b>	98	01100010	62	<b>b</b>
11	00001011	0B	<b>VT</b>	55	00110111	37	<b>7</b>	99	01100011	63	<b>c</b>
12	00001100	0C	<b>FF</b>	56	00111000	38	<b>8</b>	100	01100100	64	<b>d</b>
13	00001101	0D	<b>CR</b>	57	00111001	39	<b>9</b>	101	01100101	65	<b>e</b>
14	00001110	0E	<b>SO</b>	58	00111010	3A	:	102	01100110	66	<b>f</b>
15	00001111	0F	<b>SI</b>	59	00111011	3B	;	103	01100111	67	<b>g</b>
16	00010000	10	<b>DLE</b>	60	00111100	3C	<	104	01101000	68	<b>h</b>
17	00010001	11	<b>DC1</b>	61	00111101	3D	=	105	01101001	69	<b>i</b>
18	00010010	12	<b>DC2</b>	62	00111110	3E	>	106	01101010	6A	<b>j</b>
19	00010011	13	<b>DC3</b>	63	00111111	3F	?	107	01101011	6B	<b>k</b>
20	00010100	14	<b>DC4</b>	64	01000000	40	@	108	01101100	6C	<b>l</b>
21	00010101	15	<b>NAK</b>	65	01000001	41	<b>A</b>	109	01101101	6D	<b>m</b>
22	00010110	16	<b>SYM</b>	66	01000010	42	<b>B</b>	110	01101110	6E	<b>n</b>
23	00010111	17	<b>ETB</b>	67	01000011	43	<b>C</b>	111	01101111	6F	<b>o</b>
24	00011000	18	<b>CAN</b>	68	01000100	44	<b>D</b>	112	01110000	70	<b>p</b>
25	00011001	19	<b>EM</b>	69	01000101	45	<b>E</b>	113	01110001	71	<b>q</b>
26	00011010	1A	<b>SUB</b>	70	01000110	46	<b>F</b>	114	01110010	72	<b>r</b>
27	00011011	1B	<b>ESC</b>	71	01000111	47	<b>G</b>	115	01110011	73	<b>s</b>
28	00011100	1C	<b>FS</b>	72	01001000	48	<b>H</b>	116	01110100	74	<b>t</b>
29	00011101	1D	<b>GS</b>	73	01001001	49	<b>I</b>	117	01110101	75	<b>u</b>
30	00011110	1E	<b>RS</b>	74	01001010	4A	<b>J</b>	118	01110110	76	<b>v</b>
31	00011111	1F	<b>US</b>	75	01001011	4B	<b>K</b>	119	01110111	77	<b>w</b>
32	00100000	20	<b>SP</b>	76	01001100	4C	<b>L</b>	120	01111000	78	<b>x</b>
33	00100001	21	!	77	01001101	4D	<b>M</b>	121	01111001	79	<b>y</b>
34	00100010	22	"	78	01001110	4E	<b>N</b>	122	01111010	7A	<b>z</b>
35	00100011	23	#	79	01001111	4F	<b>O</b>	123	01111011	7B	{
36	00100100	24	\$	80	01010000	50	<b>P</b>	124	01111100	7C	
37	00100101	25	%	81	01010001	51	<b>Q</b>	125	01111101	7D	}
38	00100110	26	&	82	01010010	52	<b>R</b>	126	01111110	7E	~
39	00100111	27	'	83	01010011	53	<b>S</b>	127	01111111	7F	<b>DEL</b>
40	00101000	28	(	84	01010100	54	<b>T</b>				
41	00101001	29	)	85	01010101	55	<b>U</b>				
42	00101010	2A	*	86	01010110	56	<b>V</b>				
43	00101011	2B	+	87	01010111	57	<b>W</b>				