



**Bermuda
EMV™ Test Card Set**

Version 2.00

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Revision History

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1.00	February 12, 2020	B2PS	<ul style="list-style-type: none">• Initial document release
2.00	March 20, 2023	B2PS	<ul style="list-style-type: none">• TC01, TC02, TC03, TC04 - updated Expiry Date• TC05 change cardstock – NO change to functionality

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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 - Global Payments Bermuda EMV Test Card Set Profiles

This Global Payments User Acceptance Testing Bermuda EMV Test Card Set contains 5 cards including samples from the following card brands.



	Test Card 01	Test Card 02	Test Card 03
Brand	Visa	Visa	Mastercard
Type	Credit	Debit	Credit
AID	A0000000031010	A0000000031010	A0000000041010
PAN	4761 7390 0101 0119	4761 7390 0101 0135	5413 3300 8960 4111
Expiry Date	12/2024	12/2024	12/2025
Service Code	201	201	201
Interface	Contact, Contactless, MSR	Contact, Contactless, MSR	Contact, Contactless, MSR
CVM (Contact) Default Condition: Terminal Supports CVM	Online PIN (ATM) Online PIN (MCash) Signature (MCash) Signature (CBack) Signature Fail (Not ATM, MCash, CBack) See card definition	Online PIN (ATM) Online PIN (MCash) Signature (MCash) Online PIN (CBack) Online PIN Signature Fail (Not ATM, MCash, CBack) See card definition	Online PIN (ATM) Offline Enc. PIN Offline Plaintext PIN Signature See card definition
Approval Amount	\$10.00	\$10.00	\$20.00
Issuer Country Code	060 – Bermuda	060 – Bermuda	060 – Bermuda
Application Currency Code	060 – BMD	060 – BMD	060 – BMD
Language(s)	'enesptfr' - English, Spanish, Portuguese, French	'enesptfr' - English, Spanish, Portuguese, French	'en' – English
Card Version	v3.0	v3.0	v3.0

	Test Card 04	Test Card 05
Brand	Mastercard	Amex
Type	Debit	Credit
AID	A0000000041010	A000000025010402 A0000000291010
PAN	5413 3300 8909 9130	3742 450027 71003
Expiry Date	12/2025	12/2024
Service Code	201	201
Interface	Contact, Contactless, MSR	Contact, Contactless, MSR
CVM (Contact) Default Condition: <i>Terminal Supports CVM</i>	Online PIN (ATM) Offline Enc. PIN Offline Plaintext PIN Signature See card definition	Online PIN (ATM) Offline Plaintext PIN Signature See card definition
Approval Amount	\$20.00	\$68.00
Issuer Country Code	060 – Bermuda	060 – Bermuda
Application Currency Code	060 – BMD	060 – BMD
Language(s)	'en' – English	'en' – English
Card Version	v3.0	v3.0

1.1 Test Card 01 – Visa, DI, Credit, Eng/Spa/Por/Fre, Bermuda, BMD

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

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

1.1.1 Contact: CVM List - AID A000000031010 (EMV)

Cardholder Verification Method List ('0201 0204 1E04 1E05 1E03 1F02 0000')			
CVM	Verification Method	Conditions	If unsuccessful
1	Online PIN	Unattended Cash	Fail
2	Online PIN	Manual Cash	Fail
3	Signature (paper)	Manual Cash	Fail
4	Signature (paper)	Purchase with Cashback	Fail
5	Signature (paper)	Terminal supports CVM type	Fail
6	No CVM required	Not Unattended Cash, Manual Cash or Cashback	Fail
7	Fail CVM Processing	Always	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	47 61 73 90 01 01 01 19 D2 41 22 01 11 43 80 44 00 00 0F	
5A	Application Primary Account Number (PAN)	47 61 73 90 01 01 01 19	
5F 20	Cardholder Name	47 50 43 20 42 45 52 4D 55 44 41 2F 54 65 73 74 20 43 61 72 64 20 30 31 20 20 - 'GPC BERMUDA/Test Card 01'	
5F 24	Application Expiration Date	24 12 31	
5F 25	Application Effective Date	xx xx xx	
5F 28	Issuer Country Code	00 60 - BMU	
5F 2D	Language Preference	65 6E 65 73 70 74 66 72 - 'enesptfr' (English, Spanish, Portuguese, French)	
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 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 02 01 02 04 1E 04 1E 05 1E 03 1F 02 00 00	

Tag	Element name	Data	v3.x
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 80 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 allowed b7 - International cashback NOT allowed	
9F 08	Application Version Number [VIS]	00 96	
9F 0D	Issuer Action Code - Default	98 68 C4 A8 00	
9F 0E	Issuer Action Code - Denial	24 10 28 00 00	
9F 0F	Issuer Action Code - Online	98 68 D4 F8 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	v3.x
9F 46	ICC Public Key Certificate	4E 48 B8 CF 85 92 B7 5B E6 DA 90 2E FE D2 D1 B5 D5 0D A9 16 29 3E E8 47 EC B7 7B C3 25 06 A0 0F 96 2E 79 4E BB 97 91 D9 D7 C8 3F 8D E2 40 FC 7D 1D 1F 82 3C BD EB 8E EA 2A A2 66 4D 8B D1 E9 42 00 8E 3D DF 43 6A 77 AF B0 39 06 EC F4 6E 79 B8 35 CD B1 57 FC 0A 0D D2 6B 18 20 13 AA F2 94 3B 92 2D 82 2D CE 38 6D E9 1C 13 BD AD C5 AE 7F 9E BE CF 65 45 3D 43 98 AA AA 99 29 9F D8 56 FA 0F C7 BC E3 D5 2F 9A 6F D9 F4 43 69 25 2C 5E 13 8C 4A 8B FD 90 51 B7 39 4F 84 37 4D AF 94 F8 C2 8F DF 46 AB 07 D5 B8 4A 4D DE EC BB A8 D8 F5 88 75	
9F 47	ICC Public Key Exponent	03	
9F 49	Dynamic Data Authentication Data Object List (DDOL)	9F 37 04	
9F 4A	Static Data Authentication Tag List	82	
9F 4B	Signed Dynamic Application Data	70 C1 07 39 A9 89 19 0B 90 CE 83 1B 71 AB A2 35 FA 0B E6 57 80 05 0D 03 A4 EF 0E D1 8D F3 88 0A DE A1 B8 A7 DA 0D 98 F3 B9 45 97 DF 5A 24 F4 6A 32 D7 6F FB 29 D0 43 5F E4 E8 4B 04 78 A6 81 0A 45 36 5F B4 D5 76 C5 1E 43 A9 2D 45 9A 2C 78 F0 15 7B 41 9B D1 F0 F6 0C D1 ED 6D 57 6A 1C 84 04 EA 60 2E 5B BA D0 1D 8E 7C AA B5 74 C2 F3 8A 0B B9 CF 64 20 F6 57 5C 41 5B 2C 11 4F 9C 54 59 9B	
9F 51	Application Currency Code [VSDC]	00 60 – BMD	
9F 52	Application Default Action [VSDC VIS 1.5]	C3 38 1B 00 00 00	
9F 53	Consecutive Transaction Limit (International) [VSDC]	00	
9F 54	Cumulative Total Transaction Amount Limit [VSDC]	00 00 00 00 00 00	
9F 56	Issuer Authentication Indicator [VSDC]	80	
9F 57	Issuer Country Code [VSDC]	00 60	
9F 58	Consecutive Transaction Counter Limit [VSDC]	00	
9F 59	Consecutive Transaction Counter Upper Limit [VSDC]	00	
9F 5C	Cumulative Total Transaction Amount Upper Limit [VSDC]	00 00 00 00 00 00	
9F 5E	Consecutive Transaction International Upper Limit [VSDC]	00	
9F 68	Card Additional Processes [qVSDC VCPS 2.1]	4D 90 10 00	
9F 72	Consecutive Transaction Limit (International-Country) [VSDC]	00	
BF 55	Contactless Counters Data Template	DF 11 01 01 DF 21 01 00 DF 31 01 00	
BF 56	Counters Data Template	DF 11 01 00 DF 21 01 00 DF 31 01 00	
BF 57	International Counters Data Template	DF 11 01 00 DF 21 01 00 DF 31 01 00 DF 51 01 00 DF 61 01 00	
BF 58	Amounts Data Template	DF 11 06 00 00 00 00 00 00 00 DF 21 06 00 00 00 00 00 00 DF 31 06 00 00 00 00 00 00	
BF 5B	Application Internal Data Template	DF 01 02 00 00	

* Tag value changes with card usage

1.1.3 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	47 61 73 90 01 01 01 19 D2 41 22 01 11 43 80 44 00 00 0F	
5A	Application Primary Account Number (PAN)	47 61 73 90 01 01 01 19	
5F 24	Application Expiration Date	24 12 31	
5F 2D	Language Preference	65 6E 65 73 70 74 66 72 - 'enesptfr' (English, Spanish, Portuguese, French)	
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	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	7D 83 62 D9 39 DF C2 13 9F B1 1D B1 17 7E 80 08 A2 20 F8 64 EC C1 1E 99 73 B8 DE 7F BC AB B8 57 D3 0B AC 30 26 E3 10 B9 60 3B 46 BA B5 10 17 5A 74 02 B7 44 0D 30 B4 37 20 74 3F E9 5B 40 9F 29 F0 26 97 22 2A DA 12 77 15 9D AF 21 AB 8E A5 FB 7B 28 E9 55 90 3C 4D 40 F1 F2 69 0C BD 09 68 A1 7A B0 06 D1 9E 23 87 ED AD 40 38 F2 4D D7 C7 D2 7D 9C B9 E7 AB F9 9A B2 2C C5 AD 30 E2 08 ED 50 81 F3 F9 B4 86 8F 41 10 79 86 8C B6 92 0A 11 A4 13 3B 07 1E 0C A0 1B 95 2F 75 CF 88 2F 87 80 CD B3 11 A3 C8 B4 E9 31 3A F9 19 DB CD 17 55 98 01	
9F 47	ICC Public Key Exponent	03	
9F 4A	Static Data Authentication Tag List	82	
9F 4B	Signed Dynamic Application Data	1E D8 1F C2 E6 5C 10 DA 2F F2 D6 FE 53 D7 59 7B 11 94 EC 68 AA 89 01 EC 4F 87 F2 84 3A 31 72 2B 7A DD 06 D7 8F E2 83 03 13 FC 94 42 14 02 68 7A 4E F1 F5 CA 78 F3 CA F1 0E 4A 37 04 82 9E BC 54 D3 D4 E2 62 9F D4 E2 30 9A 76 B4 14 D5 F1 1D 36 DD CF AC 41 11 D4 9D CE D2 E3 81 47 20 DB C6 A1 7E 14 99 F0 BB 36 8E DD CD 28 F7 0A C0 AA FD 49 2A 14 FD D8 7B DC C4 82 EF F8 C9 58 85 5A 8C 4F	
9F 51	Application Currency Code [VSDC]	00 60 – BMD	
9F 52	Application Default Action [VSDC VIS 1.5]	C3 38 1B 00 00 00	
9F 53	Consecutive Transaction Limit (International) [VSDC]	00	
9F 54	Cumulative Total Transaction Amount Limit [VSDC]	00 00 00 00 00 00	
9F 56	Issuer Authentication Indicator [VSDC]	80	
9F 57	Issuer Country Code [VSDC]	00 60	
9F 58	Consecutive Transaction Counter Limit [VSDC]	00	
9F 59	Consecutive Transaction Counter Upper Limit [VSDC]	00	
9F 5A	Application Program Identifier	52 00 60 00 60	
9F 5C	Cumulative Total Transaction Amount Upper Limit [VSDC]	00 00 00 00 00 00	
9F 5E	Consecutive Transaction International Upper Limit [VSDC]	00	
9F 68	Card Additional Processes [qVSDC VCPS 2.1]	4D 90 10 00	

Tag	Element name	Data	v3.x
9F 69	Card Authentication Related Data [qVSDC]	01 04 15 93 E5 28 40 LAST TWO BYTES: 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 NOT 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 Support Issuer Update Processing at POS	
9F 6C	Card Transaction Qualifiers [qVSDC VCPS 2.1]	28 40	
9F 6E	Form Factor Indicator [qVSDC]	20 70 00 00	
9F 72	Consecutive Transaction Limit (International-Country) [VSDC]	00	
BF 55	Contactless Counters Data Template	DF 11 01 01 DF 21 01 00 DF 31 01 00	
BF 56	Counters Data Template	DF 11 01 00 DF 21 01 00 DF 31 01 00	
BF 57	International Counters Data Template	DF 11 01 00 DF 21 01 00 DF 31 01 00 DF 51 01 00 DF 61 01 00	
BF 58	Amounts Data Template	DF 11 06 00 00 00 00 00 00 DF 21 06 00 00 00 00 00 00 DF 31 06 00 00 00 00 00 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 (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	47 61 73 90 01 01 01 19 D2 41 22 01 11 43 80 44 00 00 0F	
5F 2D	Language Preference	65 6E 65 73 70 74 66 72 - 'enesptfr' (English, Spanish, Portuguese, French)	
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	
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	

Tag	Element name	Data	v3.x
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]	00 60 – BMD	
9F 52	Application Default Action [VSDC VIS 1.5]	C3 38 1B 00 00 00	
9F 53	Consecutive Transaction Limit (International) [VSDC]	00	
9F 54	Cumulative Total Transaction Amount Limit [VSDC]	00 00 00 00 00 00	
9F 56	Issuer Authentication Indicator [VSDC]	80	
9F 57	Issuer Country Code [VSDC]	00 60	
9F 58	Consecutive Transaction Counter Limit [VSDC]	00	
9F 59	Consecutive Transaction Counter Upper Limit [VSDC]	00	
9F 5A	Application Program Identifier	52 00 60 00 60	
9F 5C	Cumulative Total Transaction Amount Upper Limit [VSDC]	00 00 00 00 00 00	
9F 5E	Consecutive Transaction International Upper Limit [VSDC]	00	
9F 68	Card Additional Processes [qVSDC VCPS 2.1]	4D 90 10 00	
9F 6C	Card Transaction Qualifiers [qVSDC VCPS 2.1]	28 40 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 NOT 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 Support Issuer Update Processing at POS	
9F 6E	Form Factor Indicator [qVSDC]	20 70 00 00	
9F 72	Consecutive Transaction Limit (International-Country) [VSDC]	00	
BF 55	Contactless Counters Data Template	DF 11 01 01 DF 21 01 00 DF 31 01 00	
BF 56	Counters Data Template	DF 11 01 00 DF 21 01 00 DF 31 01 00	
BF 57	International Counters Data Template	DF 11 01 00 DF 21 01 00 DF 31 01 00 DF 51 01 00 DF 61 01 00	
BF 58	Amounts Data Template	DF 11 06 00 00 00 00 00 00 00 DF 21 06 00 00 00 00 00 00 DF 31 06 00 00 00 00 00 00	
BF 5B	Application Internal Data Template	DF 01 02 00 00	

* Tag value changes with card usage

1.2 Test Card 02 – Visa, DI, Debit, Eng/Spa/Por/Fre, Bermuda, BMD

A Dual Interface Visa credit card with Issuer Country Code of ‘Bermuda’ and Currency Code of ‘BMD’.

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

1.2.1 Contact: CVM List - AID A000000031010 (EMV)

Cardholder Verification Method List ('0201 0204 1E04 0205 0203 1E03 1F02 0000')			
CVM	Verification Method	Conditions	If unsuccessful
1	Online PIN	Unattended Cash	Fail
2	Online PIN	Manual Cash	Fail
3	Signature (paper)	Manual Cash	Fail
4	Online PIN	Purchase with Cashback	Fail
5	Online PIN	Terminal supports CVM type	Fail
6	Signature (paper)	Terminal supports CVM type	Fail
7	No CVM required	Not Unattended Cash, Manual Cash or Cashback	Fail
8	Fail CVM Processing	Always	Fail

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

Tag	Element name	Data	v3.x
50	Application Label	56 49 53 41 20 44 45 42 49 54 - 'VISA DEBIT'	
57	Track 2 Equivalent Data	47 61 73 90 01 01 01 35 D2 41 22 01 19 55 94 58 00 00 0F	
5A	Application Primary Account Number (PAN)	47 61 73 90 01 01 01 35	
5F 20	Cardholder Name	47 50 43 20 42 45 52 4D 55 44 41 2F 54 65 73 74 20 43 61 72 64 20 30 32 20 20 - 'GPC BERMUDA/Test Card 02'	
5F 24	Application Expiration Date	24 12 31	
5F 25	Application Effective Date	xx xx xx	
5F 28	Issuer Country Code	00 60 - BMU	
5F 2D	Language Preference	65 6E 65 73 70 74 66 72 - 'enesptfr' (English, Spanish, Portuguese, French)	
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 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	

Tag	Element name	Data	v3.x
8E	Cardholder Verification Method (CVM) List	00 00 00 00 00 00 00 00 02 01 02 04 1E 04 02 05 02 03 1E 03 1F 02 00 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 80 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 allowed b7 - International cashback NOT allowed	
9F 08	Application Version Number [VIS]	00 96	
9F 0D	Issuer Action Code - Default	98 68 C4 A8 00	
9F 0E	Issuer Action Code - Denial	24 10 28 00 00	
9F 0F	Issuer Action Code - Online	98 68 D4 F8 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 44 65 62 69 74 - 'Visa Debit'	
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 30 30 34 34 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	v3.x
9F 46	ICC Public Key Certificate	2E 90 B2 8B 0B F5 48 1A 44 70 85 B2 EE 42 1F 3F 5B 27 9D 86 5B F7 AC 96 91 5B 90 5B C6 72 97 EF DC F0 D5 EC E6 54 27 BB E5 F1 58 70 A5 FD 52 E9 20 6D 91 B3 06 E8 90 22 8F 97 11 5F F3 19 B4 A4 89 FC E0 2C 54 3A EB 9B 22 7F A7 D7 F2 E1 7E 8A E0 83 19 F0 B7 DA 62 87 D7 7D 81 EC 45 20 A2 B3 20 44 4B DE 2F B3 D7 D3 87 61 F1 52 78 88 21 CB 33 1F 12 38 4E 67 2E 25 65 03 83 0E 43 0D A4 03 6D 30 07 2D 1B 6A 43 1B F2 AF 66 D2 8E D5 47 0C B0 D5 39 4C 12 FA 72 36 B4 74 FB EB 22 CC E1 C9 40 27 D6 48 72 2D FA C9 2C 6E 79 3B 1B 98 37 CE	
9F 47	ICC Public Key Exponent	03	
9F 49	Dynamic Data Authentication Data Object List (DDOL)	9F 37 04	
9F 4A	Static Data Authentication Tag List	82	
9F 4B	Signed Dynamic Application Data	B6 95 CF 74 F6 C3 11 ED E4 95 59 2D 11 49 B3 13 E8 2B 45 EF FC AA B1 DF D6 38 D9 0F E1 2D 9C AE 6A B5 4A 63 CE EB 78 17 1A 5D 9F 67 7A 37 CE 10 A9 8F 47 D9 4F E2 DC C9 6D AC 10 E1 26 0E 9D 0C 25 1D 41 60 30 E2 39 33 26 BF D1 89 DA 90 35 06 B5 FC 17 3B F2 C3 41 BB 47 E5 F8 8F 2B 62 72 86 F3 20 76 67 D1 F2 FB 85 B1 E4 16 BC 28 A2 94 F8 25 92 1A 12 7D 0B 72 46 CC 96 0E 47 BE D8 9E 66	
9F 51	Application Currency Code [VSDC]	00 60 – BMD	
9F 52	Application Default Action [VSDC VIS 1.5]	C0 30 00 80 00 00	
9F 53	Consecutive Transaction Limit (International) [VSDC]	00	
9F 54	Cumulative Total Transaction Amount Limit [VSDC]	00 00 00 00 00 00	
9F 56	Issuer Authentication Indicator [VSDC]	00	
9F 57	Issuer Country Code [VSDC]	00 60	
9F 58	Consecutive Transaction Counter Limit [VSDC]	00	
9F 59	Consecutive Transaction Counter Upper Limit [VSDC]	00	
9F 5C	Cumulative Total Transaction Amount Upper Limit [VSDC]	00 00 00 00 00 00	
9F 5E	Consecutive Transaction International Upper Limit [VSDC]	00	
9F 68	Card Additional Processes [qVSDC VCPS 2.1]	4D 90 D0 00	
9F 72	Consecutive Transaction Limit (International-Country) [VSDC]	00	
BF 55	Contactless Counters Data Template	DF 11 01 00 DF 21 01 00 DF 31 01 00	
BF 56	Counters Data Template	DF 11 01 02 DF 21 01 00 DF 31 01 00	
BF 57	International Counters Data Template	DF 11 01 02 DF 21 01 00 DF 31 01 00 DF 51 01 02 DF 61 01 00	
BF 58	Amounts Data Template	DF 11 06 00 00 00 00 00 00 DF 21 06 00 00 00 00 00 00 DF 31 06 00 00 00 00 00 00	
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 44 45 42 49 54 - 'VISA DEBIT'	
57	Track 2 Equivalent Data	47 61 73 90 01 01 01 35 D2 41 22 01 19 55 94 58 00 00 0F	
5A	Application Primary Account Number (PAN)	47 61 73 90 01 01 01 35	
5F 24	Application Expiration Date	24 12 31	
5F 2D	Language Preference	65 6E 65 73 70 74 66 72 - 'enesptfr' (English, Spanish, Portuguese, French)	
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	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	BA EF 5F D7 A3 BA 76 5A 58 D7 E1 0E D5 D1 0A D4 F0 FF C0 F7 03 21 40 A5 CB CA 6B FD 49 10 1C 25 AC 89 AC EF DE 90 75 97 7E E2 1F CD 19 41 B9 D3 C7 D1 D9 13 9B F4 61 A2 36 A6 08 A3 19 A6 E3 5B 3C D2 9E 80 8F 4F 6A 06 CA CD 38 37 D5 DF FF 03 8F 97 23 07 D7 D1 C0 66 E7 9D 0F AC 91 63 29 F3 87 34 12 20 3B 59 A7 BA 77 17 3E 41 20 C4 9C 2D 18 9B 7C D1 1A A7 12 11 74 33 5D 73 2D 95 B5 00 E4 21 B5 95 DA BB 6C 8F B6 47 DD 48 7F E0 B0 FA 41 2B DD 91 6F 5F C7 24 5F CB 03 C8 19 69 34 60 31 92 6C 5E 7B 2E CE 57 F3 0B B9 B1 34 B8 49 7C	
9F 47	ICC Public Key Exponent	03	
9F 4A	Static Data Authentication Tag List	82	
9F 4B	Signed Dynamic Application Data	75 BE E5 A7 BA CA 6D 4B 88 96 86 F5 6B FB 16 26 94 47 75 BE 81 3A 9A B9 38 69 2A D2 90 45 E7 2F 09 40 02 5A 67 0E 81 24 71 CE 9B 32 39 1D E8 18 D3 CD B1 C4 BE ED 75 36 6E 72 9D 7D 41 60 A9 C3 80 70 A0 9A 1F 19 64 1F CA 5C 2C 9A BE 56 01 4A 75 16 4F 16 B4 AB 35 39 AB 96 C6 CD DB B1 60 D3 1C 35 18 84 4F 53 CA 25 84 55 2F C4 5B 1D 9E E9 55 49 B7 15 58 DC DE D5 CC 8C 05 25 95 8C CA EC	
9F 51	Application Currency Code [VSDC]	00 60 – BMD	
9F 52	Application Default Action [VSDC VIS 1.5]	C0 30 00 80 00 00	
9F 53	Consecutive Transaction Limit (International) [VSDC]	00	
9F 54	Cumulative Total Transaction Amount Limit [VSDC]	00 00 00 00 00 00	
9F 56	Issuer Authentication Indicator [VSDC]	00	
9F 57	Issuer Country Code [VSDC]	00 60	
9F 58	Consecutive Transaction Counter Limit [VSDC]	00	
9F 59	Consecutive Transaction Counter Upper Limit [VSDC]	00	
9F 5A	Application Program Identifier	52 00 60 00 60	
9F 5C	Cumulative Total Transaction Amount Upper Limit [VSDC]	00 00 00 00 00 00	
9F 5E	Consecutive Transaction International Upper Limit [VSDC]	00	
9F 68	Card Additional Processes [qVSDC VCPS 2.1]	4D 90 D0 00	

Tag	Element name	Data	v3.x
9F 69	Card Authentication Related Data [qVSDC]	01 04 35 B5 04 28 40 LAST TWO BYTES: 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 NOT 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 Support Issuer Update Processing at POS	
9F 6C	Card Transaction Qualifiers [qVSDC VCPS 2.1]	28 40	
9F 6E	Form Factor Indicator [qVSDC]	20 70 00 00	
9F 72	Consecutive Transaction Limit (International-Country) [VSDC]	00	
BF 55	Contactless Counters Data Template	DF 11 01 00 DF 21 01 00 DF 31 01 00	
BF 56	Counters Data Template	DF 11 01 01 DF 21 01 00 DF 31 01 00	
BF 57	International Counters Data Template	DF 11 01 01 DF 21 01 00 DF 31 01 00 DF 51 01 01 DF 61 01 00	
BF 58	Amounts Data Template	DF 11 06 00 00 00 00 00 00 DF 21 06 00 00 00 00 00 00 DF 31 06 00 00 00 00 00 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 44 45 42 49 54 - 'VISA DEBIT'	
57	Track 2 Equivalent Data	47 61 73 90 01 01 01 35 D2 41 22 01 19 55 94 58 00 00 0F	
5F 2D	Language Preference	65 6E 65 73 70 74 66 72 - 'enesptfr' (English, Spanish, Portuguese, French)	
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	
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	

Tag	Element name	Data	v3.x
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]	00 60 – BMD	
9F 52	Application Default Action [VSDC VIS 1.5]	c0 30 00 80 00 00	
9F 53	Consecutive Transaction Limit (International) [VSDC]	00	
9F 54	Cumulative Total Transaction Amount Limit [VSDC]	00 00 00 00 00 00	
9F 56	Issuer Authentication Indicator [VSDC]	00	
9F 57	Issuer Country Code [VSDC]	00 60	
9F 58	Consecutive Transaction Counter Limit [VSDC]	00	
9F 59	Consecutive Transaction Counter Upper Limit [VSDC]	00	
9F 5A	Application Program Identifier	52 00 60 00 60	
9F 5C	Cumulative Total Transaction Amount Upper Limit [VSDC]	00 00 00 00 00 00	
9F 5E	Consecutive Transaction International Upper Limit [VSDC]	00	
9F 68	Card Additional Processes [qVSDC VCPS 2.1]	4D 90 D0 00	
9F 6C	Card Transaction Qualifiers [qVSDC VCPS 2.1]	28 40 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 NOT 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 Support Issuer Update Processing at POS	
9F 6E	Form Factor Indicator [qVSDC]	20 70 00 00	
9F 72	Consecutive Transaction Limit (International-Country) [VSDC]	00	
BF 55	Contactless Counters Data Template	DF 11 01 00 DF 21 01 00 DF 31 01 00	
BF 56	Counters Data Template	DF 11 01 01 DF 21 01 00 DF 31 01 00	
BF 57	International Counters Data Template	DF 11 01 01 DF 21 01 00 DF 31 01 00 DF 51 01 01 DF 61 01 00	
BF 58	Amounts Data Template	DF 11 06 00 00 00 00 00 00 00 DF 21 06 00 00 00 00 00 00 DF 31 06 00 00 00 00 00 00	
BF 5B	Application Internal Data Template	DF 01 02 00 00	

* Tag value changes with card usage

1.3 Test Card 03 – Mastercard, DI, Credit, English, Bermuda, BMD

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

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

1.3.1 Contact: CVM List - AID A0000000041010

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 A0000000041010 (EMV)

Tag	Element name	Data	v3.x
50	Application Label	4D 41 53 54 45 52 43 41 52 44 -	
57	Track 2 Equivalent Data	'MASTERCARD'	
5A	Track 2 Equivalent Data	54 13 33 00 89 60 41 11 D2 51 22 01	
5A	Application Primary Account Number (PAN)	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	54 13 33 00 89 60 41 11	
5F 20	Cardholder Name	47 50 43 20 42 45 52 4D 55 44 41 2F	
5F 20	Cardholder Name	54 65 73 74 20 43 61 72 64 20 30 33	
5F 20	Cardholder Name	20 20 - 'GPC BERMUDA/Test Card 03'	
5F 24	Application Expiration Date	25 12 31	
5F 25	Application Effective Date	xx xx xx	
5F 28	Issuer Country Code	00 60 - BMU	
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 b2 - On device Cardholder verification NOT supported 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 44 03 41 03 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 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 9C 88 00	
9F 0E	Issuer Action Code - Denial	00 00 00 00 00	
9F 0F	Issuer Action Code - Online	BC 70 9C 98 00	
9F 10	Issuer Application Data [M/Chip Advance]	xx 10 xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx *	
9F 11	Issuer Code Table Index	01	
9F 12	Application Preferred Name	4D 61 73 74 65 72 63 61 72 64 - '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	00 60 – BMD	
9F 44	Application Currency Exponent	02	
9F 46	ICC Public Key Certificate	83 FA 5A 89 34 4D D8 D1 7C D1 35 21 45 88 24 84 CA FD 17 81 CB 9D 2D 1B 3B 71 39 61 7E E7 D7 D6 E9 66 D1 22 46 0C B5 FA A3 12 F9 B5 2F 5F 35 C2 38 03 95 4F 0C 0E 37 64 9F 50 DC 3C 7D 5D CE D0 64 C1 E8 F8 F3 1C E6 88 6D 7D E3 77 FA F8 BB 21 D5 AF 6B CF 95 28 A2 31 ED 1B F5 8A 12 9B F8 A4 F3 49 00 A2 69 35 4E 72 E4 47 5C 01 28 3B EE 73	
9F 47	ICC Public Key Exponent	03	

Tag	Element name	Data	v3.x
9F 48	ICC Public Key Remainder	48 67 AE E2 C8 30 A9 82 E8 37 F0 07 DC EA 2B 81 B8 01 AF 83 5A 34 D6 A9 31 AD 39 01 B6 21 E2 6E 42 21 44 42 CD 97 04 41 F7 71	
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]	00 60 00 00 30 30 00	
9F 70	Protected Data Envelope 1 [M/Chip Advance]	20 20	
9F 71	Protected Data Envelope 2 [M/Chip Advance]	20 20	
9F 72	Protected Data Envelope 3 [M/Chip Advance]	20 20	
9F 73	Protected Data Envelope 4 [M/Chip Advance]	20 20	
9F 74	Protected Data Envelope 5 [M/Chip Advance]	20 20	
9F 75	Unprotected Data Envelope 1 [M/Chip Advance]	20 20	
9F 76	Unprotected Data Envelope 2 [M/Chip Advance]	20 20	
9F 77	Unprotected Data Envelope 3 [M/Chip Advance]	20 20	
9F 78	Unprotected Data Envelope 4 [M/Chip Advance]	20 20	
9F 79	Unprotected Data Envelope 5 [M/Chip Advance]	20 20	
9F 7E	Application Life Cycle Data [Mastercard]	03 10 0C 12 00 09 00 00 FF 00 04 00 00 02 60 00 00 38 4A 02 11 50 35 43 44 30 37 32 20	
C3	Card Issuer Action Code (Contact) - Decline [M/Chip Advance]	00 00 00	
C4	Card Issuer Action Code (Contact) - Default [M/Chip Advance]	00 50 00	
C5	Card Issuer Action Code (Contact) - Online [M/Chip Advance]	00 FB 00	
C6	PIN Try Limit [M/Chip Advance]	09	
C7	CDOL1 Related Data Length [Mastercard]	42	
C8	CRM Country Code [Mastercard]	00 60 - BMU	
C9	Accumulator 1 Currency Code [Mastercard]	00 60 - BMD	

Tag	Element name	Data	v3.x
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]	00 60 00 01 00 00 60 00 01 00 00 60 00 01 00 00 60 00 01 00 00 60 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 10	
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	

Tag	Element name	Data	v3.x
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 (PayPass)

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)

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 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	

Tag	Element name	Data	v3.x
5F 28	Issuer Country Code	00 60 - BMU	
5F 2D	Language Preference	65 6E - 'en' (English)	
5F 34	Application PAN Sequence Number	01	
82	Application Interchange Profile	19 80 BYTE 1: b7 - Offline SDA NOT supported b6 - Offline DDA NOT supported b5 - Cardholder verification supported b4 - Terminal risk mgmt to be performed b3 - Issuer authentication NOT supported via EXTERNAL AUTH command b2 - On device Cardholder verification NOT supported b1 - Combined DDA / GEN AC supported BYTE 2: b8 - 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	
90	Issuer Public Key Certificate	18 89 B9 97 E6 FC E8 4B 4A E7 AB 87 43 1C BD B3 DF 8C 1D 5A 55 A7 F6 0D 29 59 AF 3A 51 04 E7 58 83 17 ED 74 08 66 68 CF 1A 05 47 84 F7 49 3C 6D 74 7F A7 96 EC 14 D3 33 A6 8E C7 E0 08 62 95 9A 0B D0 F0 48 20 80 B7 1A C1 B7 62 5B 1B 8B 1F 35 A6 69 19 99 BA 78 F5 92 E2 3F 95 E9 96 09 D1 08 CF 1C 0E 30 8A 8B F6 4F BD E8 37 D3 CE 13 8A 50 DC 50 AF 4B 41 EE 53 D9 8A 11 B6 A8 1D DD 44 CC 43 0C 1E F3 BB 9D 1D 75 A0 2F AA 9C 81 4A FC 58	
92	Issuer Public Key Remainder	D3 52 41 07	
94	Application File Locator (AFL)	08 01 01 00 10 01 01 01 18 01 01 00 20 01 02 00	
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 9C 88 00	
9F 0E	Issuer Action Code - Denial	00 00 00 00 00	
9F 0F	Issuer Action Code - Online	BC 70 9C 98 00	

Tag	Element name	Data	v3.x
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 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]	00	
9F 17	Personal Identification Number (PIN) Try Counter	09	
9F 23	Counter 1 Upper Limit [Mastercard]	00	
9F 27	Cryptogram Information Data (CID)	80	
9F 32	Issuer Public Key Exponent	03	
9F 36	Application Transaction Counter (ATC)	xx xx *	
9F 42	Application Currency Code	00 60 – BMD	
9F 44	Application Currency Exponent	02	
9F 46	ICC Public Key Certificate	29 FC 1E 78 9E 6F F9 A8 A8 D4 2F 37 94 53 98 67 B6 54 6C D5 20 B0 AA DD 6E AA 10 1A FD 43 B2 BF 97 AC 49 D4 03 CF 8D EC AE AF CC DD 79 0F C0 3A 7B AF FD 3A C5 1C CE 44 0F A4 84 43 0C D8 B2 34 33 D2 F7 E9 D5 D9 67 56 96 7E 4B DA C0 86 9C 16 F2 05 5D 0B 10 86 49 C7 DF C9 22 F0 6A F7 0C A8 BA 06 E9 B1 27 60 63 53 79 4D 66 63 80 08 25 D6	
9F 47	ICC Public Key Exponent	03	
9F 48	ICC Public Key Remainder	48 67 AE E2 C8 30 A9 82 E8 37 F0 07 DC EA 2B 81 B8 01 AF 83 5A 34 D6 A9 31 AD 39 01 B6 21 E2 6E 42 21 44 42 CD 97 04 41 F7 71	
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]	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]	00 60 00 00 30 30 00	
9F 70	Protected Data Envelope 1 [M/Chip Advance]	20 20	

Tag	Element name	Data	v3.x
9F 71	Protected Data Envelope 2 [M/Chip Advance]	20 20	
9F 72	Protected Data Envelope 3 [M/Chip Advance]	20 20	
9F 73	Protected Data Envelope 4 [M/Chip Advance]	20 20	
9F 74	Protected Data Envelope 5 [M/Chip Advance]	20 20	
9F 75	Unprotected Data Envelope 1 [M/Chip Advance]	20 20	
9F 76	Unprotected Data Envelope 2 [M/Chip Advance]	20 20	
9F 77	Unprotected Data Envelope 3 [M/Chip Advance]	20 20	
9F 78	Unprotected Data Envelope 4 [M/Chip Advance]	20 20	
9F 79	Unprotected Data Envelope 5 [M/Chip Advance]	20 20	
9F 7E	Application Life Cycle Data [Mastercard]	03 10 0C 12 00 09 00 00 FF 00 04 00 00 02 60 00 00 38 4A 02 11 50 35 43 44 30 37 32 20	
C3	Card Issuer Action Code (Contact) - Decline [M/Chip Advance]	00 00 00	
C4	Card Issuer Action Code (Contact) - Default [M/Chip Advance]	00 50 00	
C5	Card Issuer Action Code (Contact) - Online [M/Chip Advance]	00 FB 00	
C6	PIN Try Limit [M/Chip Advance]	09	
C7	CDOL1 Related Data Length [Mastercard]	42	
C8	CRM Country Code [Mastercard]	00 60	
C9	Accumulator 1 Currency Code [Mastercard]	00 60	
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]	00 60 00 01 00 00 60 00 01 00 00 60 00 01 00 00 60 00 01 00 00 60 00 01 00	
D3	Additional Check Table [Mastercard]	00 00 00 FF FF FF FF FF FF FF FF FF FF FF FF FF FF	
D5	Application Control [M/Chip Advance]	8C 00 80 00 86 02	
D6	Default ARPC Response Code [M/Chip Advance]	00 10	
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	

Tag	Element name	Data	v3.x
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, Debit, English, Bermuda, BMD

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

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

1.4.1 Contact: CVM List - AID A000000041010 (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

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

Tag	Element name	Data	v3.x
50	Application Label	44 45 42 49 54 20 4D 41 53 54 45 52 43 41 52 44 - 'DEBIT MASTERCARD'	
57	Track 2 Equivalent Data	54 13 33 00 89 09 91 30 D2 51 22 01 11 48 35 94 90 00 0F	
5A	Application Primary Account Number (PAN)	54 13 33 00 89 09 91 30	
5F 20	Cardholder Name	47 50 43 20 42 45 52 4D 55 44 41 2F 54 65 73 74 20 43 61 72 64 20 30 34 20 20 - 'GPC BERMUDA/Test Card 04'	
5F 24	Application Expiration Date	25 12 31	
5F 25	Application Effective Date	xx xx xx	
5F 28	Issuer Country Code	00 60 - BMU	
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	v3.x
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 b2 - On device Cardholder verification NOT supported 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 44 03 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	44 65 62 69 74 20 4D 61 73 74 65 72 63 61 72 64 - 'Debit Mastercard'	

Tag	Element name	Data	v3.x
9F 14	Counter 1 Lower Limit [Mastercard]	00	
9F 17	Personal Identification Number (PIN) Try Counter	09	
9F 1F	Track 1 Discretionary Data	31 34 38 33 35 39 34 39 30 30 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	00 60 – BMD	
9F 44	Application Currency Exponent	02	
9F 46	ICC Public Key Certificate	0E 1A 24 49 0F 12 9C BD BB 79 AC B8 81 4D BB B7 10 E8 B9 30 01 AF 0E 89 BF B4 FD 03 55 0B 3F EF 2F BD 0B 3A F6 00 8A 4A 71 9C 5C 4A A5 91 A1 20 CB E5 64 2D 29 57 3D F3 F4 24 9F 91 64 06 02 7A B1 B7 D6 A6 15 5A 69 17 B4 AD 08 5D BA C1 95 6C D6 80 6A 90 D5 2C BA DD 98 D7 8E DF 16 C5 34 9D D0 B8 12 34 2D 5D FE CA 33 39 C6 D9 19 24 74 B3	
9F 47	ICC Public Key Exponent	03	
9F 48	ICC Public Key Remainder	26 AA 9C F0 DF 72 0B 9C 1C B1 A3 FF EE 07 3F A2 89 0C C4 B1 14 24 5D F8 0B FE 9B 7C A3 41 E4 BD CD F2 14 9D 57 8B 31 94 3B 97	
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]	00 60 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]	00 60 - BMU	
C9	Accumulator 1 Currency Code [Mastercard]	00 60 - BMD	
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]	00 60 00 01 00 00 60 00 01 00 00 60 00 01 00 00 60 00 01 00 00 60 00 01 00	
D3	Additional Check Table [Mastercard]	00 00 00 FF FF FF FF FF FF FF FF FF FF FF FF FF FF	
D5	Application Control [M/Chip Advance]	8C 00 80 00 86 02	
D6	Default ARPC Response Code [M/Chip Advance]	00 12	
D7	Application Control [M/Chip Advance]	40 01 40 00 86 02	
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

1.4.3 CTLS: CVM list - AID A000000041010 (PayPass)

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)

Tag	Element name	Data	v3.x
50	Application Label	44 45 42 49 54 20 4D 41 53 54 45 52 43 41 52 44 - 'DEBIT MASTERCARD'	
56	Track 1 Equivalent Data [Mastercard]	42 35 34 31 33 33 33 30 30 38 39 30 39 39 31 33 30 5E 20 2F 5E 32 35 31 32 32 30 31 30	
57	Track 2 Equivalent Data	54 13 33 00 89 09 91 30 D2 51 22 01 11 48 35 94 90 00 0F	
5A	Application Primary Account Number (PAN)	54 13 33 00 89 09 91 30	
5F 24	Application Expiration Date	25 12 31	
5F 25	Application Effective Date	xx xx xx	
5F 28	Issuer Country Code	00 60 - BMU	
5F 2D	Language Preference	65 6E - 'en' (English)	
5F 34	Application PAN Sequence Number	01	
82	Application Interchange Profile	19 80 BYTE 1: b7 - Offline SDA NOT supported b6 - Offline DDA NOT supported b5 - Cardholder verification supported b4 - Terminal risk mgmt to be performed b3 - Issuer authentication NOT supported via EXTERNAL AUTH command b2 - On device Cardholder verification NOT supported b1 - Combined DDA / GEN AC supported BYTE 2: b8 - 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 01 01 00 10 01 01 01 18 01 01 00 20 01 02 00	
94	Application File Locator (AFL)	08 02 04 01 18 01 01 00 20 01 01 00	
9F 07	Application Usage Control	FF 00	
9F 08	Application Version Number	00 02	
9F 0D	Issuer Action Code - Default	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	44 65 62 69 74 20 4D 61 73 74 65 72 63 61 72 64 - 'Debit 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 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	00 60 – BMD	
9F 44	Application Currency Exponent	02	
9F 46	ICC Public Key Certificate	80 2C B1 DC 2F B2 DD 8A 3D 52 2A 62 F4 07 C5 C8 3F 8E DD B2 40 3D DA 08 23 1F 69 57 BF 87 FC 6C 06 2E 63 4B 52 B6 FE 33 DB 7E 98 C9 9F 99 BA ED A9 B2 D9 41 BD B4 40 00 22 44 C1 F5 0E 9B D2 5A 8F 30 F9 EB DF 8A BA A1 74 DA B0 75 E3 F9 C9 75 4E E3 80 04 72 FD 6A FE 87 41 D2 0F FB 62 AD ED 74 7D 42 94 73 9C 84 00 2D 54 F0 6F F3 0F 61 4A	
9F 47	ICC Public Key Exponent	03	
9F 48	ICC Public Key Remainder	26 AA 9C F0 DF 72 0B 9C 1C B1 A3 FF EE 07 3F A2 89 0C C4 B1 14 24 5D F8 0B FE 9B 7C A3 41 E4 BD CD F2 14 9D 57 8B 31 94 3B 97	
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 *	

Tag	Element name	Data	v3.x
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 09 91 30 D2 51 22 01 10 00 59 00 00 00 0F	
9F 6C	Application Version [Mastercard]	00 01	
9F 6E	Third Party Data [Mastercard]	00 60 00 00 30 30 00	
9F 70	Protected Data Envelope 1 [M/Chip Advance]	20 20	
9F 71	Protected Data Envelope 2 [M/Chip Advance]	20 20	
9F 72	Protected Data Envelope 3 [M/Chip Advance]	20 20	
9F 73	Protected Data Envelope 4 [M/Chip Advance]	20 20	
9F 74	Protected Data Envelope 5 [M/Chip Advance]	20 20	
9F 75	Unprotected Data Envelope 1 [M/Chip Advance]	20 20	
9F 76	Unprotected Data Envelope 2 [M/Chip Advance]	20 20	
9F 77	Unprotected Data Envelope 3 [M/Chip Advance]	20 20	
9F 78	Unprotected Data Envelope 4 [M/Chip Advance]	20 20	
9F 79	Unprotected Data Envelope 5 [M/Chip Advance]	20 20	
9F 7E	Application Life Cycle Data [Mastercard]	03 10 0C 12 00 09 00 00 FF 00 04 00 00 02 60 00 00 38 4A 02 11 50 35 43 44 30 37 32 20	
C3	Card Issuer Action Code (Contact) - Decline [M/Chip Advance]	00 00 00	
C4	Card Issuer Action Code (Contact) - Default [M/Chip Advance]	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	

Tag	Element name	Data	v3.x
C8	CRM Country Code [Mastercard]	00 60 – BMU	
C9	Accumulator 1 Currency Code [Mastercard]	00 60 – BMD	
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]	00 60 00 01 00 00 60 00 01 00 00 60 00 01 00 00 60 00 01 00 00 60 00 01 00	
D3	Additional Check Table [Mastercard]	00 00 00 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF	
D5	Application Control [M/Chip Advance]	8C 00 80 00 86 02	
D6	Default ARPC Response Code [M/Chip Advance]	00 12	
D7	Application Control [M/Chip Advance]	40 01 40 00 86 02	
D9	Application File Locator (Contactless)	08 01 01 00 10 01 01 01 18 01 01 00 20 01 02 00	
DE	Log Data Table [M/Chip Advance]	00 00 00 00 00 00 00 00 00	
DF 02	Security Limits Status (Contact) [M/Chip Advance]	00	
DF 11	Accumulator 1 Control (Contact) [M/Chip Advance]	C1	
DF 12	Accumulator 1 Control (Contactless) [M/Chip Advance]	C1	
DF 14	Accumulator 2 Control (Contact) [M/Chip Advance]	00	
DF 15	Accumulator 2 Control (Contactless) [M/Chip Advance]	00	
DF 16	Accumulator 2 Currency Code [Mastercard]	09 99	
DF 17	Accumulator 2 Currency Conversion Table [Mastercard]	09 99 00 01 00 09 99 00 01 00 09 99 00 01 00 09 99 00 01 00 09 99 00 01 00	
DF 18	Accumulator 2 Lower Limit [Mastercard]	00 00 00 00 00 00	
DF 19	Accumulator 2 Upper Limit [Mastercard]	00 00 00 00 00 00	
DF 1A	Counter 1 Control (Contact) [M/Chip Advance]	C1	
DF 1B	Counter 1 Control (Contactless) [M/Chip Advance]	C1	
DF 1D	Counter 2 Control (Contact) [M/Chip Advance]	00	
DF 1E	Counter 2 Control (Contactless) [M/Chip Advance]	00	
DF 1F	Counter 2 Lower Limit [Mastercard]	00	
DF 21	Counter 2 Upper Limit [Mastercard]	00	
DF 22	MTA CVM (Contact) [M/Chip Advance]	00 00 00 00 00 00	
DF 23	MTA CVM (Contactless) [M/Chip Advance]	00 00 00 00 00 00	
DF 24	MTA Currency Code [M/Chip Advance]	09 99	
DF 25	MTA NoCVM (Contact) [M/Chip Advance]	00 00 00 00 00 00	

Tag	Element name	Data	v3.x
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

1.5 Test Card 05 – Amex, DI, Credit, English, Bermuda, BMD

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

The recommended transaction amount to generate a host approval is \$68.

1.5.1 Contact: CVM List - AID A000000025010402 (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

1.5.2 Contact: Application Tag Data - AID A00000025010402 (EMV)

Tag	Element name	Data	v3.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 27 71 00 3D 24 12 20 11 50 21 23 45 00 00 0F	
5A	Application Primary Account Number (PAN)	37 42 45 00 27 71 00 3F	
5F 20	Cardholder Name	47 50 43 20 42 45 52 4D 55 44 41 2F 54 65 73 74 20 43 61 72 64 20 30 35 20 20 - 'GPC BERMUDA/Test Card 05'	
5F 24	Application Expiration Date	24 12 31	
5F 25	Application Effective Date	xx xx xx	
5F 28	Issuer Country Code	00 60 - BMU	
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 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	v3.x
9F 07	Application Usage Control	FF 00 BYTE 1: b8 - Domestic cash trans. valid b7 - Int'l cash transactions valid b6 - Domestic goods valid b5 - International goods valid b4 - Domestic services valid b3 - International services valid b2 - ATMs valid b1 - non-ATM terminals valid BYTE 2: b8 - Domestic cashback NOT allowed b7 - International cashback NOT allowed	
9F 08	Application Version Number	00 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	00 60 - BMD	
9F 46	ICC Public Key Certificate	E8 52 3E 8A 50 B7 A6 82 82 68 EE 6C 72 E3 CD EB 85 B5 DB AF A9 91 25 64 F1 B4 EA 2F 2A C2 A8 BC 32 1A C3 BB 45 67 B1 44 5D EE B9 A8 E1 48 1F DB A9 DD BB 4F 37 55 DB E7 85 24 52 7C 03 52 59 BA 75 E2 06 8A 79 27 98 B2 BC DD BD 96 3E 27 B6 3A C7 3D 8F C6 BD 76 BC 44 8A 48 7B F9 44 1F 7D E8 DA 31 45 5A D8 1F 47 E4 B1 86 C2 59 01 1A 2C 08 76 59 BB F9 49 3E AB 10 FE 33 35 E4 D3 E9 97 66 BD 66 71 D8 13 4A E2 1D 88 91 7B 0A CE 7B 0D BF 32 B3 E8 12 00 4E 25 95 0C 6D 95 84 70 49 71 85 22 9D 92 F5 60 3E E0 95 11 63 FF 24 FE 39 71 85	
9F 47	ICC Public Key Exponent	03	

* Tag value changes with card usage

1.5.3 Contact: CVM List - AID A000000291010 (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

1.5.4 Contact: Application Tag Data - AID A000000291010 (EMV)

Tag	Element name	Data	v3.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 27 71 00 3D 24 12 20 11 50 21 23 45 00 00 0F	
5A	Application Primary Account Number (PAN)	37 42 45 00 27 71 00 3F	
5F 20	Cardholder Name	47 50 43 20 42 45 52 4D 55 44 41 2F 54 65 73 74 20 43 61 72 64 20 30 35 20 20 - 'GPC BERMUDA/Test Card 05'	
5F 24	Application Expiration Date	24 12 31	
5F 25	Application Effective Date	xx xx xx	
5F 28	Issuer Country Code	00 60 - BMU	
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 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	v3.x
9F 07	Application Usage Control	FF 00 BYTE 1: b8 - Domestic cash trans. valid b7 - Int'l cash transactions valid b6 - Domestic goods valid b5 - International goods valid b4 - Domestic services valid b3 - International services valid b2 - ATMs valid b1 - non-ATM terminals valid BYTE 2: b8 - Domestic cashback NOT allowed b7 - International cashback NOT allowed	
9F 08	Application Version Number	00 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	00 60 – BMD	
9F 46	ICC Public Key Certificate	E8 52 3E 8A 50 B7 A6 82 82 68 EE 6C 72 E3 CD EB 85 B5 DB AF A9 91 25 64 F1 B4 EA 2F 2A C2 A8 BC 32 1A C3 BB 45 67 B1 44 5D EE B9 A8 E1 48 1F DB A9 DD BB 4F 37 55 DB E7 85 24 52 7C 03 52 59 BA 75 E2 06 8A 79 27 98 B2 BC DD BD 96 3E 27 B6 3A C7 3D 8F C6 BD 76 BC 44 8A 48 7B F9 44 1F 7D E8 DA 31 45 5A D8 1F 47 E4 B1 86 C2 59 01 1A 2C 08 76 59 BB F9 49 3E AB 10 FE 33 35 E4 D3 E9 97 66 BD 66 71 D8 13 4A E2 1D 88 91 7B 0A CE 7B 0D BF 32 B3 E8 12 00 4E 25 95 0C 6D 95 84 70 49 71 85 22 9D 92 F5 60 3E E0 95 11 63 FF 24 FE 39 71 85	
9F 47	ICC Public Key Exponent	03	

* Tag value changes with card usage

1.5.5 CTLS: CVM list - AID A00000025010402 (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

1.5.6 CTLs: Application Tag Data - AID A00000025010402 (Expresspay)

Tag	Element name	Data	v3.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 27 71 00 3D 24 12 70 21 50 21 23 45 00 00 0F	
5A	Application Primary Account Number (PAN)	37 42 45 00 27 71 00 3F	
5F 20	Cardholder Name	47 50 43 20 42 45 52 4D 55 44 41 2F 54 65 73 74 20 43 61 72 64 20 30 35 20 20 - 'GPC BERMUDA/Test Card 05'	
5F 24	Application Expiration Date	24 12 31	
5F 25	Application Effective Date	xx xx xx	
5F 28	Issuer Country Code	00 60 - BMU	
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 [Expresspay 3.0]	1C 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 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	

Tag	Element name	Data	v3.x
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	
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 06	
9F 38	Processing Options Data Object List (PDOL)	9F 35 01	
9F 42	Application Currency Code	00 60 – BMD	
9F 46	ICC Public Key Certificate	1A 0C 3A 0F 8D D5 AB 01 97 59 00 37 BF CB C7 B9 1B A8 3A 39 17 AB 7C 30 27 5B 51 85 BA 18 86 D1 5D B8 32 58 FD F0 0D E7 2F B2 61 B5 CB 2A C7 AE 13 0B 2E DF 42 5C 85 DF AD 27 D1 A1 BB 63 B6 95 71 B7 14 99 92 55 FC 33 16 7E B6 AE 9B B3 4A 9C 41 23 87 77 A6 46 02 FC DC 9C 99 FC C2 C5 E8 A0 C4 80 19 FE F8 E0 54 15 86 42 04 67 DA 45 60 29 C5 D2 D8 AB 78 D0 CA 1A B3 47 CD 39 CE BF A6 15 49 97 86 E1 C4 2B A6 02 7C 16 92 23 DA 54 2B D4 B7 D1 9C 3D FF 2C 9C 4F 70 D6 DB 87 35 12 90 E5 DA 79 7E 1C AE 8A 5A BE 73 06 3B E4 18 8F CB 09	
9F 47	ICC Public Key Exponent	03	

* 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				